

**The 13th Anniversary
India-Japan Fest**



BICON-2018



The Proceedings of Conference
Volume-II

SUSTAINABLE DEVELOPMENT

Environmental Sensitivity and Sustainable Development

November 27, 2018

ISBN : 978-93-83462-63-6

Organized by :



Biyani Group of Colleges
Department of Science and Nursing
Jaipur, India

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Jaipur (India)

All papers of the present proceeding were peer reviewed by no less than two independent reviewers. Acceptance was granted when both reviewers's recommendation were positive.

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- Dr. Manish Biyani
- Dr. Priyanka Dadupanthi
- Dr. Aditi Tripathi

Editors :

- Dr. Aditi Tripathi
- Ms. Rajshri Nagar
- Ms. Pratibha Dwivedi

Designed by:

Mr. Nilesh Sharma

Welcome to India-Japan Fest-2018 and Pink City Jaipur, India!

This year we are celebrating the 13th Anniversary of India-Japan Fest at Biyani Girls College, Jaipur. Since, the first conference in 2006, it has become an annual feature of our institution and has continued to grow. The institution is leaving no stone unturned in encouraging the spirit of research and innovations and strengthening the bilateral academic relationship between India and Japan. Every year, this event receives increasing number of participants from both the countries, India and Japan, and we continue to evolve, adapt and develop new collaborative programs between various institutions in India and Japan.

We are privileged to announce the new academic alliance with two more universities, Kwansei Gakuin University, Japan and AIST, Japan. We are also welcoming “WELL GROUP” as the placement partner for our students enrolled for Technical Internship Training Program (TITP). The most attractive feature of this year event is the honouring of Prof. Yuzuru Husimi with the “Biyani Life Time Achievement Award-2018” for his exemplary work in the field of Evolutionary Molecular Engineering”.

We are the proud to announce that Biyani Group of Colleges has been empanelled as a SENDING ORGANIZATION by NSDC, MSDE, New Delhi. This program will provide opportunity to our technically qualified youth in enhancing their skills as well as getting placed in the top organizations of JAPAN. The objective of the seminar on TITP is to guide the participants regarding the eligibility criteria, sectors available and the placement opportunities in Japan.

Biyani Group of Colleges is organizing this mega event in joint collaboration with **DAICENTER** (a joint India-Japan research center between **DBT** and **AIST**) and partner institutes from Japan including **Japan Advanced Institute of Science and Technology, Akita Prefectural University, Saitama University, Kyushu University**. This event is also co-sponsored by **Indian Council for Social Science Research, New Delhi**.

The theme of **BICON-2018** is to promote India-Japan activities on **sustainable development** guided by different departments including Commerce & Management and Information Technology (Day-1), Science and Nursing (Day-2) and Social Science and Law (Day-3) based on ‘multidisciplinary-to-interdisciplinary’ approach. This is an initiation to introduce and promote sustainable development among nations and identify the challenges hindering the same.

BICON-2018 has decided to call for Abstract of the paper to be published in the conference proceeding with ISBN numbers. The Technical Program Committee is charged with reviewing all abstracts to accommodate the growing number of paper submissions. In a rigorous and time-consuming review process, the committee members worked hard to ensure the continued high

quality of accepted papers. In this year's conference program, there are 24 invited talks (11 Japan + 13 India).

The months of planning, hard work and team effort by dedicated people has culminated into the success of this event for which we would like to thank the management committee who trusted us to organize this conference and contributed significant funds to support this event. We would also like to thank the technical program committee and the reviewers for their excellent work in reviewing the abstracts as well as their invaluable input and advice. We would also like to express our sincere thanks to all the dedicated BICON-Team members for their active role and support in all aspects of this conference from collecting abstracts, assisting in coordination, helping to plan the agenda, recruiting sponsors and assisting in organizing the conference. We cannot thank them enough for their constant support and dedication for being a brilliant and amazing team. I want to thank all the conveners of each symposia : Dr. B.N. Gaur (Commerce & Management), Er. Vivek Sharma (Information Technology), , Dr. Malti Saxena (Social Science), Dr. Priyanka Dadupanthi (Science), Dr. N L Gurjar (Law) and Dr. Satish Gupta (Nursing) and Graphic designer Mr. Nilesh Sharma and team for editing the conference proceeding in the last running moments and beautifully designing the brochure and other materials.

Finally, we want to express our sincere thanks to all the invited speakers, offline and online, who have joined us from India and Japan taking out time from their busy schedule to participate in this conference. It has been a great pleasure to interact with them and receiving their interest in collaborating in the future.

The venue of this conference is located in pink city Jaipur and we have tried to promote a sense of the local culture and North-Indian cuisine to the attendees during this conference. We hope that this conference is intellectually stimulating, enjoyable, professionally satisfying and memorable for all the attendees.

With warmest regards,



Manish Biyani

Dr. Manish Biyani
Organizing Chair

- Res. Director,
Biyani Group of Colleges,
India
- Res. Asso. Professor,
JAIST, Japan



Neha Pandey

Dr. Neha Pandey
Convener

Vice Principal
Biyani Group of Colleges,
Jaipur



Devika Agarwal

Dr. Devika Agarwal
Secretary
Head-Training,
Biyani Group of Colleges,
Jaipur



VASUNDHARA RAJE
CHIEF MINISTER RAJASTHAN

Message

It is good to know that the Biyani Girls College, Jaipur is organising the 13th India-Japan Bilateral Conference (BICON-2018) from November 25th to 28th, 2018.

Rajasthan maintains special relations with Japan in terms of investment. This relationship has strengthened during the past years as investment made by the Japanese companies in the state has brought prosperity to the region.

I hope that this event shall be a good forum to discuss the issues related to the bilateral relations of India and Japan.

I wish the conference the very best.

(Vasundhara Raje)



गुलाबचन्द कटारिया
मंत्री
गृह एवं न्याय, गृह रक्षा एवं नागरिक सुरक्षा, जेल,
आपदा प्रबंधन एवं सहायता विभाग



2119, मुख्य भवन
शासन सचिवालय, जयपुर
(ऑ) 0141-2227362
(नि) 0141-2228741

MESSAGE

I am very happy to learn that Biyani Girls College, Jaipur is organising 13th Indian-Japan Bilateral Conference to be held in Biyani Girls College from 25th November 2018

I hope that this conference will attract bilateral academic/research agreements and promote further stronger relationship between Japan (Akita prefectural University, Saitama University, Kyushu University) and Higher level Indian Institutes. Participation of the accomplished girls from Biyani College in this event shall Foster Women empowerment in our state.

I wish great success to the conference.

(Gulab Chand Kataria)

Dr. Rajeev Biyani,
Chairman,
Biyani Girls College,
Sector-3, Vidhyadhar Nagar, Jaipur-39



कालीचरण सराफ मंत्री

चिकित्सा एवं स्वास्थ्य, चिकित्सा एवं
स्वास्थ्य सेवाएं (ईएसआई), चिकित्सा शिक्षा,
आयुर्वेद एवं भारतीय चिकित्सा पद्धति विभाग



6116, मंत्रालय भवन,

शासन सचिवालय,

जयपुर-302005 (राज.)

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संदेश

मुझे यह जानकर अत्यन्त प्रसन्नता हुई कि बियानी ग्रुप ऑफ कॉलेज,
जयपुर द्वारा "13th India-Japan Bilateral Conference (BICON-2018)" का
आयोजन किया जा रहा है।

मुझे आशा है कि आयोजित सेमिनार में दोनो देशों के कल्याण एवं
विकास के संबंध में विचार-विमर्श होगा। साथ ही दोनों देशों के संबंध भी
मजबूत होंगे, जो कि देश के विकास में एक अहम कदम साबित होगा।

मैं सेमिनार एवं इस अवसर पर प्रकाशित होने वाली स्मारिका के सफल
आयोजन की हार्दिक शुभकामनाएं प्रेषित करता हूँ।


(कालीचरण सराफ)



किरण माहेश्वरी
मंत्री
उच्च, तकनीकी एवं संस्कृत शिक्षा
विज्ञान एवं प्रौद्योगिकी विभाग
राजस्थान सरकार
Kiran Maheshwari
Minister
Higher, Technical and Sanskrit Education,
Science and Technology Department
Government of Rajasthan



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email- saikiran.udr@gmail.com

Jaipur, Date: 19th November, 2018

Message

I am very happy to learn that Biyani Girls College, Jaipur is organizing 13th India-Japan Bilateral Conference (BICON-2018) to be held in Biyani Girls College from November, 25th to 28th, 2018.

I hope that this conference will attract bilateral academic/research agreements and promote further stronger relationship between Japan and India especially Rajasthan.

This event is organized to celebrate the bilateral research agreements and promote strong relationship between JAIST and Indian Institutes.

I wish Biyani Group of Colleges a great success for the conference.

Kiran Maheshwari
(Kiran Maheshwari)



राजेन्द्र राठौड़
मंत्री



ग्रामीण विकास एवं पंचायतीराज,
संसदीय मामलात एवं निर्वाचन विभाग
राजस्थान सरकार, जयपुर-302005

DO Letter No-Minister /RD&PR/E&A/2018/

JAIPUR, Dated:

MESSAGE

I am glad to know that Biyani Group of colleges, Jaipur is organising 13th India-Japan Bilateral Conference (BICON-2018) between 25th -28th November, 2018. It is jointly organized by Biyani Group of colleges (India) and partner in stitutes from Japan (Japan Advanced Institutes of science and Technology, Akita prefectural University, Saitama University, Kyushu University).

Through the programme, relationship between the countries India and Japan will be stronger. The theme of the conference Technical Intern Training programme, Skill Development and Entrepreneurship is Impressive.

The prospects of such activities have much more scope for the younger generation to uncap their talents and touch greater heights of achievement.

I wish to convey Biyani Group of Colleges a great success in the event.

With best wishes.


(RAJENDRA RATHORE)

Minister

Dr. Rajeev Biyani
Chairman
Biyani Girls College,
Sector-3, Vidhadhar Nagar, Jaipur.
PIN 302039.



MESSAGE

Dear Dr. Manish Biyani, Directors of Biyani Group, I should like to express a word of gratitude for your decision on the first Biyani Life Time Achievement Award. First, I do apologize for not attending this ceremony because of my health problem.

At Saitama University for the most time, I have been developing for 40 years the field of Evolutionary Molecular Engineering, which was coined by Professor Manfred Eigen in 1984.

“Directed evolution of proteins”, which was a title of Nobel Prize 2018 Chemistry, is a small part of this field. Objects of this field are not only proteins but also nucleic acids and even synthetic copolymers.

Evolutionary Molecular Engineering is performed with an evolution-reactor process. There are two types of evolution-reactors, that is, a natural selection-type and an artificial selection-type. An example of the former is cellstat, which we made for measuring rapid evolution of recombinant fd phage in 1982, and an example of the latter is phage display panning. “Directed evolution” is the artificial selection-type evolution-reactor process.

Evolutionary Molecular Engineering has been providing not only various commercial nucleic acids, proteins and peptides, but also various insights on basic science of biopolymers, including the realistic possibility of “RNA world” in Origins of Life. In fact, I have been studying on the origin of biological information using evolutionary molecular engineering. It was revealed that “evolvability of biopolymers” is a very important key-word in this basic science.

Dr. Manish Biyani has also been developing this field for long years, starting at Saitama University and Saitama Bio Project on evolutionary design of advanced biomolecules. He invented several innovative evolution-reactor processes. During this activity, he constructed a broad academic personal network, which, I believe, was the basis of this India-Japan BICON. Ten years ago, I myself visited this beautiful Pink City, invited by him to attend the 3rd India-Japan BICON. I do not forget warm hospitality of the Biyani Group.

Thank you very much for your recognition of my work on the occasion when Nobel Prize has celebrated Directed Evolution of proteins. Thank you very much also for your contribution to the advancement of education, research and practical implementation in this field.

I would like to end this word of gratitude with an earnest hope for the great success of this India-Japan Bilateral Conference.

November 27, 2018

Yuzuru Husimi



प्रो. आर. के. कोठारी
Prof. R. K. Kothari



कुलपति
Vice-Chancellor
राजस्थान विश्वविद्यालय, जयपुर
University of Rajasthan, Jaipur

19th November 2018

Message

I am extremely delighted to know that the Biyani Girls College, Jaipur is jointly organizing the 13th India-Japan Bilateral Conference (BICON-2018) from 25th to 28th November 2018 and that a Souvenir is being brought out on this occasion. It is equally good to know that a joint India-Japan Technical Intern Training Programme (TITP) will be launched on this occasion. Certainly such an initiative will richly benefit the students to explore various job opportunities available in both the countries.

I congratulate the organizers and convey my best wishes to the participants of the 13th India-Japan Bilateral Conference.

प्रो. आर. के. कोठारी
(R K Kothari) 19-11-18



Rajasthan Technical University, Kota

Rawatbhata Road, Kota (Raj.) 324010

Prof. N.P. Kaushik
Vice Chancellor

No.RTU/VCS/F(1)26/2018/

Date 22-11-2018



MESSAGE

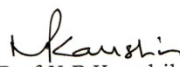
It gives me immense pleasure to know that Biyani group of Colleges is organizing 13th India-Japan Bilateral Conference (BICON-2018) from 25th to 28th Nov.2018.

It is also happy to note that this is an annual event organized by Biyani Group of Colleges, DAICENTER and partner institutes from Japan including Japan Advanced Institute of Science & Technology, Akita Prefectural University and others.

A very contemporary and relevant theme of sustainable development in Computing Technologies for Business world has been selected for the Conference of this year.

I am confident that this conference would provide a platform to the technocrats, academicians and stakeholders to exchange their ideas which will be beneficial to the next generation.

I convey my best wishes for the grand success of the Conference.


(Prof.N.P.Kaushik)

Phone No. 0744-2473001 Fax. No. 0744-2473002 website: www.rtu.ac.in
Email : vcoffcertu@yahoo.co.in, vcoffice@rtu.ac.in, npkaushik@rtu.ac.in



MESSAGE

I am glad to convey my warm congratulations to Biyani Group of Colleges on occasion of the 13th India-Japan Bilateral Conference (BICON-2018) on sustainable development, going to be organised from 25-28 November, 2018. It is remarkable that JAIST and other Institutes from Japan has been working with Indian Universities to enhance collaborative endeavour between India and Japan.

I am pleased to note that this event will promote India-Japan activities on sustainable development and hence mark out the hindering challenges. The launch of joint India-Japan activities for Technical Intern Training Program will provide immense opportunities for student's skill development.

I wish great success to Biyani Group of Colleges for their efforts to organize such prestigious event.


(Rajendra Sharma)
Registrar

Rajasthan Nursing Council,
Jaipur



Rajasthan ILD Skills University (RISU)

(Established under the Act No. 6 of 2017)

Dr. Lalit K. Panwar
IAS (R)
Vice Chancellor
Former Secretary Tourism; GoI
Tel. No. 0141-7154211
Mob. No. +91 9650687888

Message

I am delighted to convey my warmest congratulations to Biyani Group of Colleges on the occasion of the 13th India-Japan Fest to be organized from 25-28 November, 2018 in Jaipur.

I also congratulate Biyani Group of Colleges for being empanelled as a "Sending Organization" by NSDC, MSDE for India-Japan TECHNICAL Internship Training Programme.

I am glad to note that Japan Advanced Institute of Science and Technology (JAIST) is working with various Indian Universities to enhance collaborative endeavors between India and Japan.

It is particularly heartening to note that JAIST is encouraging young scientists, faculty members, corporate personnel and research scholars from both countries to participate in these conferences.

I am confident that the scientific deliberations at the Conferences will lead to constructive recommendations for strengthening scientific collaboration between the two countries.

I am sure the scientific and academic fraternity in India and Japan will take full advantage of the opportunities offered by this collaboration.

I wish the 13th India-Japan Fest a Grand Success.

Dr. Lalit K. Panwar, IAS (R)

Dated : November 20, 2018

6/2, Jamdoli, ILD Campus, Jaipur 302031, Rajasthan
Phone: +91-141-7154217
E-mail : risujaipur@gmail.com, Website: -www.ildindia.org



MESSAGE

I am delighted to know that Biyani Group of Colleges is geared up for organizing the 13th India-Japan Fest from 25th November to 28th November, 2018.

I extend my heartfelt gratitude to the Group for their efforts at accelerating the potential of Indian youth by providing them with internship opportunities through the India- Japan Technical Intern Training Program.

I would like to convey my best wishes to Biyani Group and sincerely hope that with their relentless efforts many youth would be benefitted by becoming educated and employable in Japan.

Manish Kumar

MD, NSDC

New Delhi

CENTRAL UNIVERSITY OF RAJASTHAN

राजस्थान केन्द्रीय विश्वविद्यालय

ARUN K PUJARI
Vice Chancellor
अरुण कुमार पुजारी
कुलपति



Bandarsindri, NH-8, Kishangarh,
District- Ajmer-305817
Rajasthan, INDIA



Date: November 03, 2018

No. CURAJ/VCS/Msg/2017-18/0123

MESSAGE

I am glad to know that Biyani Girls College Jaipur is organizing “**13th India-Japan Bilateral Conference**” between November 26-28, 2018 jointly with DAILAB and partner Institutes Japan Advanced Institute of Science and Technology, Akila Prefectural University, Saitama University, Kyushu University Japan and cosponsored by ICSSR New Delhi to celebrate ongoing bilateral academic and research activities and to promote further stronger relationships between India and Japan.

I extend my good wishes and heartiest greeting for organizing this Bilateral Conference and look forward that budding Research Scholars, Academician, Students and other professionals across the world to be benefitted with this conference. It's my sincere hope that this conference will proliferate the knowledgebase of its various stakeholders. I congratulate the organizing team of this event.

I extend my best wishes for successful conduct of this mega event.

(Prof. Arun K Pujari)

Sushil Sharma

Chairman,
The Bar Council of
Rajasthan Jodhpur
(M) 9414042660
E- mail Id: sushilsharma023@gmail.com



Message

I am immensely happy to know that Biyani Group of Colleges, Jaipur is organizing International Conference on eve of rejoicings the 13th Anniversary India-Japan Fest-BICON-2018 on "Sustainable Development" on 25th to 28th November, 2018. The thematic and sub-thematic thrust areas has deep Philosophical, ideological, academic and practical implications for development and progress of mankind.

The "Sustainable Development" is a multidimensional process encompassing social, economic, educational, Political, technical, management, environmental, ecological and development aspect & any nation in pursuance of sustainability must creates society based one equity and non difference.

I am sure the participants will discuss in depth all these sub-thematic in thrust areas and there dissensions related to the "Sustainable Development".

I am confident that deliration & the outcome of this important conference would significant by contribute in bringing all about better understanding on them at topic challenges, issues and perspectives.

I convey my heartiest greeting and felicitations to all the Participants and organizers of the conference and wish the conference a grand success.



Sushil Sharma
Chairman
BCR Jaipur

Resi- B 479 Mahesh Nager Jaipur 302015
(M) 9928209954




सत्यमेव जयते
D. B. Gupta
IAS
डी. बी. गुप्ता, आईएएस



Chief Secretary
मुख्य सचिव
GOVERNMENT OF RAJASTHAN
राजस्थान सरकार
Government Secretariat, Jaipur-302 005
शासन सचिवालय, जयपुर-302 005

Message

I am delighted to learn that the 13th India- Japan Bilateral Conference (**BICON- 2018**) is being organized under the joint auspices of Biyani Group of Colleges, DAICENTER (an Indo- Japan research partnership between DST and AIST), NAAC, ICSSR and a couple of prominent Japanese institutions, from November 25th to 28th, 2018 at Jaipur.

It is heartening to note that the event is dedicated to promote collaboration between India and Japan on issues related to sustainable development.

It is commendable that the forthcoming event also proposes to launch Technical Intern Training Program (**TITP**).

I am confident that this event will cement the Indo-Japan relationship further and provide a forum for exploring and sharing best practices of sustainable development, which is the need of the hour.

I compliment the Biyani Group of Colleges for their efforts to string a multitude of prestigious institutions in order to curate this event and wish it a grand success.


(D. B. Gupta)

Prof. U.C. Sankhla

Former Vice - Chancellor
Dr. Bhimrao Ambedkar
Law University Jaipur
Dean, Students Welfare
& Department of Law
Former Principal & Director
University Law College Centers
University of Rajasthan Jaipur



Message

It a matter of immense pleasure and pride to know that the Biyani Shikshan Samiti Jaipur India is going to Organize and sponsoring 4 days 13th Anniversary India - Japan Fest- BICON - 2018 from November 25-28, 2018 and that is co-sponsored by the India Council of Social Science Research and the National Assessment and Accreditation Council Bangalore in collaboration with its Valued Partner Institutes in Japan a dedication to the Education.

The Biyani Shikshan Samiti is running a group of Various College's / Institutes / Faculties in Various Discipline namely Law, Social Science, Nursing, Science, Management and Information Technology Avowed Object to Prepare and send Young India Talents for Advanced Knowledge and Training in Industries in Japan made in Japan skill and guiding long term career in industries/profession in India delivered make in India concepts.

I hope that the discussions and deliberations made in this 13 the Japan-India Bilateral International Conference would turn out to be exceptionally prolific. I Wish The Success of the Conference.



(Prof. U.C. Sankhla)

N.M. Ranka

Senior Advocate, Tax
Consultant & Social Activist
Former President, All India
taxation Association/
Rajasthan Tax Consultant
Association Jaipur 302004

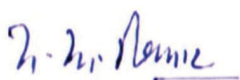


Message

I am happy and delighted on invitation at 13th India - Japan Bilateral International Conference organized by most prestigious and pioneer Biyani Girls College's Jaipur on 25-28 Nov. 2018.

It shall provide an opportunity to interact between two cultures with "Sustainable Development". Subjects for discussions and deliberations are of great important and would be addressed by eminent experts. It would over all improve the qualities and virtues in the youth the future of India.

I wish the conference a grand success with best wishes.



(N.M. Ranka)
Senior - Advocate

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FROM THE CONVENER'S DESK

It gives me great pleasure to extend to you all a very warm welcome on behalf of Department of Science and Nursing, Biyani Girls' College. We are grateful to all the speakers, delegates, organizers and guests, who have accepted our invitation to participate in the BICON 2018.

It is an opportune time to renew contacts and discuss opportunities of mutual interest with delegates from both Japan and India bilaterally.

It is gratifying to note that the agenda of the Seminar covers a wide range of very interesting items relating to higher education frontiers in India and Japan, and resulting opportunities for both countries.

No matter how much we can do by ourselves on the national level, whether it be research or development, it is never enough. In a spirit of true cooperation, we in Asia, and particularly in Japan and India, are proud of nurturing past and present civilizations and cultures. We must join in an action-oriented effort to recognize and capitalize on the bilateral opportunities in the higher education sector in both countries.

The utter sincerity and dedication of the management, the teaching faculty, non-teaching staff and the students at Biyani Girls' College has brought this event to fruition. It is an outcome of the hard work and persistent efforts of all our colleagues. We hope that their efforts shine through, and all the delegates and participants have a fulfilling and rewarding experience here, that carries forward long after the event itself is over. Once again, a very warm welcome to you all.



Dr. Priyanka Dadupanthi
(Dept. of Science)
Convener



Dr. Satish Gupta
(Principal, Nursing)
Convener



Dr. Aditi Tripathi
(Dept. of Science)
Co-Convener

CORE COMMITTEE :

- Ms. Pushpa Biyani (Mentor)
- Dr. Rajeev Biyani (Chairman)
- Prof. Sanjay Biyani (Director-Acad.)
- Prof. Manish Biyani (Director-R&D)
- Prof. Neeta Maheshwari (Principal, BGC)
- Ms. Sujata Biyani (Asst. Director)
- Ms. Priyanka Biyani (Asst. Director)
- Dr. Madhu Biyani (Asst. Director)
- Dr. Neha Pandey (Registrar)
- Ms. Renu Tandon (HR Manager)
- Dr. Satish Gupta
- Dr. Priyanka Dadupanthi

ORGANIZING COMMITTEE :

- | | |
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| • Ms. Anita Choudhary | • Ms. Shipra Grace |
| • Mr. Rakesh Sharma | • Ms. Jyoti Sharma |
| • Ms. Simran Gill | • Ms. Rumana Ali |

PROGRAMME AT A GLANCE

Timing	Programme
08:30-09:00	Registration
09:00-10:35	Inaugural Session and Lifetime Achievement Award Ceremony
09:00-09:05	Lighting of the Lamp
09:05-09:30	Welcome address and Lifetime Achievement Award Ceremony- Manish Biyani, Chair-BICON2018
09:30-10:00	Invited Talk-1:Shinsuke Fujiwara, Kwansei Gakuin University, Japan
10:00-10:30	Invited Talk-2:Yoshiaki Onishi, AIST, Japan
10:30-10:35	Group Photo
10:35-11:00	Tea Break
11:00-13:00	Pre-lunch session
11:00-11:30	InvitedTalk-3:Kiyoshi Yasukawa, Kyoto University, Japan
11:30-12:00	InvitedTalk-4:Mun'de Vestergaard, Kagoshima University, Japan
12:00-12:30	InvitedTalk-5:Reena Mathur, University of Rajasthan, India
12:30-13:00	InvitedTalk-6:Hideaki Takata, AIST, Japan
13:00-15:00	Lunch Break and Poster/Exhibition display
15:00-17:00	Post-lunch session
15:00-15:30	InvitedTalk-7: Sunil Kaul, AIST, Japan
15:30-16:00	InvitedTalk-8: Renu Wadhwa, AIST, Japan
16:00-16:30	InvitedTalk-9: Ajai Kumar, IIT-Guwahati, India
16:30-17:00	Young oral talks (5 min each)
17:00-17:10	Closing remarks and Group Photo
17:10-18:00	Student mixer with Tea break and Adjourn for the day
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Invited Lecture 1

Hyperthermophile as the Most Primitive Life



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1990-1992	Nihon ShokuhinKakoCo.Ltd. (Japan)
1992-1994	Research Associate in University of Illinois at Chicago (U.S.A.)
1994-2001	Asst. Prof in Osaka University (Japan)
2001-2002	Asso. Prof in Osaka University (Japan)
2002-	Prof in Kwansei-Gakuin University (Japan)

Major Publications:

1. Gao, L., Imanaka,T.,andFujiwara,S. A mutant chaperonin that is functional at lower temperatures enables hyperthermophilic archaea to grow under cold-stress conditions.J.Bacteriol., 19, 2642-2652 (2015) (DOI: 10.1128/JB.00279-15).
2. Gao, L., Hidese,R., and Fujiwara,S. Function of a thermophilic archaeal chaperonin is enhanced by electrostatic interactions with its targets J. Biosci. Bioeng.124,283-288(2017) (DOI: 10.1016/j.jbiosc.2017.04.008.)
3. Gao, L. and Fujiwara,S. Functional distribution of archaeal chaperonins. *In*Santosh Kumar, Shekhar Mande Prokaryotic Chaperonins (Springer Co.Ltd., New York)(2017)

4. Hidese, R., Tse, K., Kimura, S., Mizohata, E., Fujita, J., Horai, Y., Umezawa, N., Higuchi, T., Niitsu, M., Oshima, T., Imanaka, T., Inoue, T., Fujiwara, S. Active site geometry of a novel aminopropyltransferase for biosynthesis of hyperthermophile-specific branched-chain polyamine. *FEBS J.* 284/21, 3684-3701 (2017) (DOI:10.1111/febs.14262)
5. Akasaka, N., Kato, Saori., Kato, Saya., Hidese, R., Wagu, Y., Sakoda, H., and Fujiwara, S. Agmatine production by *Aspergillus oryzae* is elevated by low pH during solid-state cultivation., *Appl. Environ. Microbiol.* (2018) in press (DOI: 10.1128/AEM.00722-18)

Abstract

Hyperthermophile as the most Primitive Life

Shinsuke Fujiwara

Department of Bioscience, School of Science of Technology, Japan

Abstract

Thermophilic microorganisms grow optimally above 45°C and inhabit environments with higher temperatures such as hot springs, terrestrial solfatara, deep-sea hydrothermal vents, and composting organic matter. Extreme thermophiles, also known as hyperthermophiles, grow optimally above 80°C; these species are distributed throughout the archaeal and bacterial domains and are positioned near the root of the microbial phylogenetic tree (Fig.1).

Such placement has led to the speculation that most ancient life forms dwelt in hotter environments, and that these ancestors gradually evolved into modern-day microorganisms, which subsequently adapted to cooler environments. It is noteworthy that hyperthermophilic archaea which grow wide temperature range possess a unique cold-stress inducible molecular chaperonin in addition to the heat-inducible ones. These two chaperonins share high sequence identity, except in their carboxy-terminal regions. Furthermore, depletion of cold-inducible or heat-inducible chaperonin gene results in growth defects under cold stress or heat stress, respectively, but not at the optimal temperature. We speculate that cold stress tolerant hyperthermophiles have adapted to lower temperature environments by acquiring an additional cold-inducible chaperonin during the course of evolution. Likewise, several extremophilic archaea encode paralogous chaperonins that are differentially regulated during stresses such as heat, cold, high salt, pH, pressure, and nutrient deprivation, suggesting that these chaperonins might encounter different substrates depending on the type of stress confronting the cell.

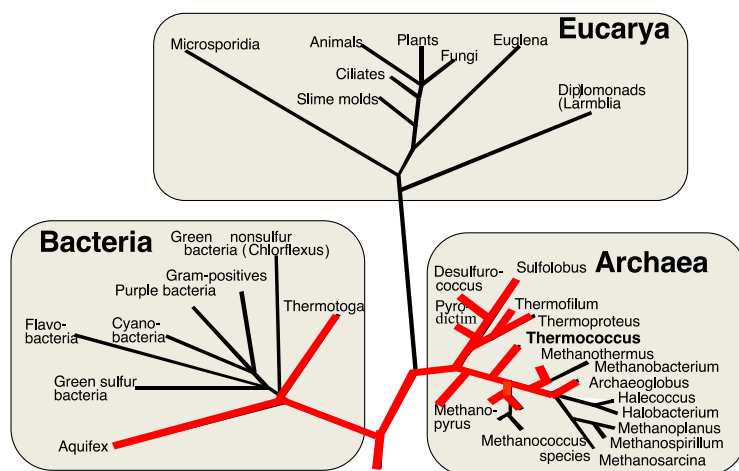


Fig.1 Pylogenetic situation of hyperthermophiles(Bold line indicates positions of hyperthermophiles)

Keywords: Archaea, evolution, hyperthermophile, thermostable enzyme.



Invited Lecture 2

How Living Cells can be used as a Model System for Screening of Circadian Modulators?



Yoshiaki Onishi

Affiliation & Contact:

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Research Interest

Yoshiaki Onishi, male, molecular biologist, was born in Hiroshima, Japan in 1963. He received the Ph.D. degree from Hiroshima University, Hiroshima, Japan and joined the Department of Biochemistry, Tokyo Dental College, Chiba, Japan as an Assistant Professor in 1991. Since 1998, he has been with National Institute of Advanced and Industrial Science and Technology, Tsukuba, Japan where he is currently a Deputy Director. His research interests the basic and applied analysis of cell mechanisms, especially transcriptional controls of genes

Education & Professional Career

1987 – 1991 Department of Biochemistry, Hiroshima University, School of Dentistry
Ph.D. in Biochemistry

1981 – 1987 Hiroshima University, Hiroshima, Japan, D.D.S. in Dentistry

Research Experiences:

1987-1991 Laboratory of Kuichiro Okuda, Ph.D., Professor, Department of Biochemistry,
Hiroshima University, Hiroshima, Japan

1991-1998	Asistant Professor, Laboratory of Harutoshi Kizaki, M.D., Ph.D., Professorm Department of Biochemistry, Tokyo Dental Collage, Chiba, Japan
1998-2004	Gene Dynamics Research group (Team Leader: Ryoiti Kiyama, Ph.D.), National Institute of Advanced and Industrial Science and Technology (AIST), Japan
2004-2012	Clock Gene Research group (Team Leader: Norio Ishida, Ph.D.), National Institute of Advanced and Industrial Science and Technology (AIST), Japan
2012-2014	Leader of Physiologically Active Substances Research Group, National Institute of Advanced and Industrial Science and Technology (AIST), Japan
2014-2016	Director, Research Planning Office of Life Science & Biotechnology, National Institute of Advanced and Industrial Science and Technology (AIST)
2016-Presetnt	Deputy Director, Biomedical Research Institute, National Institute of Advanced and Industrial Science and Technology (AIST), Kansai Center

Major Publications (Total 76 original papers and 18 reviews)

1. Molecular cloning and sequence analysis of cDNA encoding Δ^4 -3-ketosteroid 5 Δ -reductase of rat liver. (1991) FEBS Letters. 283, 215-218. Y. Onishi, M. Noshiro, T. Shimosato and K. Okuda
2. Δ^4 -3-Oxosteroid 5 Δ -reductase, structure and function. (1991) Biol. Chem. Hoppe-Seyler. 372, 1039-1049, Y. Onishi, M. Noshiro, T. Shimosato and K. Okuda
3. Topoisomerase inhibitors induce apoptosis in thymocytes. (1993) Biochim. Biophys. Acta.1175, 147-154, Y. Onishi, Y. Azuma, Y. Sato, Y. Mizuno, T. Tadakuma and H. Kizaki
4. Tumor Necrosis Factor- α enhances cAMP-induced programmed cell death in mouse thymocytes. (1993) Cytokine, 5, 342-347, H. Kizaki, S. Nakada, Y. Onishi, Y. Azuma, Y. Mizuno and T. Tadakuma
5. An assay method for DNA topoisomerase activity based on separation of relaxed DNA from supercoiled DNA using high-performance liquid chromatography. (1993) Anal. Biochem. 210, 63-68, Y. Onishi, Y. Azuma and H. Kizaki
6. Molecular cloning of the genes suppressed in RVC lymphoma cells by topoisomerase inhibitors. (1996) Biochem. Biophys. Res. Commun., 228, 7-13, Y. Onishi and H. Kizaki
7. The lymphoma cell line resistant to 4-piperidinopiperidine were less-sensitive to CPT-11. (1997) Cancer Chemother. Pharmacol., 39, 473-478, Y. Onishi, M. Oguro and H. Kizaki
8. Topoisomerase II inhibitor-induced apoptosis in thymocytes and lymphoma cells. (1997) Advanced in Enzyme Regulation, 37, 403-423, H. Kizaki and Y. Onishi
9. 4-Piperidinopiperidine-resistant lymphoma cells were resistant to dexamethasone- and A23187-induced apoptosis. (1998) Cancer Letters, 127, 147-153, Y. Onishi, M. Oguro and H. Kizaki

10. Cloning of the TIS gene suppressed by topoisomerase inhibitors. (1998) *Gene*, 215, 453-459, Y. Onishi, S. Hashimoto and H. Kizaki
11. Expression-dependent perturbation of nucleosomal phase at HS2 of the human α -LCR: Possible correlation with periodic bent DNA. (1998) *J. Mol. Biol.*, 284, 989-1004, Y. Onishi, Y. Wada-Kiyama and R. Kiyama
12. Enhancer activity of HS2 of the human α -LCR is modulated by distance from the key nucleosomes. (2001) *Nucl. Acids Res.*, 29, 3448-3457, Y. Onishi and R. Kiyama
13. Ligand-dependent transcriptional enhancement by DNA curvature between two half motifs of the estrogen response element in the human estrogen receptor α gene. (2002) *Gene*, 294, 279-290, X-M. Li, Y. Onishi, K. Kuwabara, J-Y. Rho, Y. Wada-Kiyama, Y. Sakuma and R. Kiyama
14. Interaction of NF-E2 in the human α -globin locus control region before chromatin remodeling. (2003) *J. Biol. Chem.*, 278, 8163-8171, Y. Onishi and R. Kiyama
15. Dinucleosome DNA of human K562 cells: experimental and computational characterizations. (2003) *J. Mol. Biol.*, 332, 111-125, M. Kato, Y. Onishi, Y. Wada-Kiyama, T. Abe, T. Ikemura, S. Kogan, A. Bolshoy, E. N. Trifonof and R. Kiyama
16. Preparation and characterization of an anti-DNA monoclonal antibody showing size selectivity toward DNA fragments. (2004) *Hybridoma and Hybridomics*, 23, 311-317, Y. Onishi, M. Kato and Y. Hanyu
17. Alternative splicing of the human Kank gene produces two types of Kank protein. (2005) *Biochem. Biophys. Res. Commun.*, 330, 1247-1253, Y. Wang, Y. Onishi, N. Kakinuma, B. C. Roy, T. Aoyagi and R. Kiyama
18. Biochemical Screening of Stable Dinucleosomes Using DNA Fragments from a Dinucleosome DNA Library. (2005) *J. Mol. Biol.*, 350, 215-227, M. Kato, Y. Onishi, Y. Wada-Kiyama, R. Kiyama
19. A novel E4BP4 element drives circadian expression of mPeriod2. (2007) *Nucl. Acids Res.*, 35, 648-655, T. Ohno, Y. Onishi and N. Ishida
20. Rhythmic SAF-A binding underlies circadian transcription of the Bmal1 gene. (2008) *Mol. Cell. Biol.*, 28, 3477-3488, Y. Onishi, S. Hanai, T. Ohno, Y. Hara and N. Ishida
21. Molecular characterization of Mybbp1a as a co-repressor on the mPeriod2 promoter. (2009) *Nucl. Acids Res.*, 37, 1115-1126, Y. Hara, Y. Onishi, K. Oishi, K. Miyazaki, A. Fukamizu and N. Ishida
22. HSG cells, a model in the submandibular clock. (2010) *Biosci. Rep.*, 31, 57-62, Y. Onishi
23. The harmala alkaloid, harmine is a modulator of circadian Bmal1 transcription. (2011) *Biosci. Rep.*, 32, 45-52, Y. Onishi, K. Oishi, Y. Kawano and Y. Yamazaki
24. Lycorine, a candidate for the control of period length in mammalian cells. (2012) *Cell. Physiol. Biochem.*, 22, 407-416, Y. Onishi, Y. Kawano and Y. Yamazaki
25. Rhythmic binding of Topoisomerase I impacts on the transcription of Bmal1 and circadian period. (2012) *Nucl. Acids Res.*, 40, 9482-9492, Y. Onishi and Y. Kawano

26. DNA methylation of the BMAL1 promoter. (2013) *Biochem. Biophys. Res. Commun.*, 440, 449-453, R. Satou, N. Sugihara, Y. Ishizuka, T. Matsukubo and Y. Onishi
27. Shikonin shortens the circadian period: possible involvement of Top2 inhibition. (2014) *Biochem. Biophys. Res. Commun.*, 443, 339-343, Y. Ogawa, Y. Kawano, Y. Yamazaki and Y. Onishi
28. Epigenetic regulation of the circadian clock: role of 5-aza-2'-deoxycytidine. (2017) *Biosci Rep.*, 37, BSR20170053, T. Tomita, R. Kurita and Y. Onishi

Abstract

How Living Cells can be used as a Model System for Screening of Circadian Modulators?

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Abstract

Circadian rhythms control all aspects of physiology and are associated with diseases including cancer through effects on the cardiovascular, renal, immune, endocrine, neuropsychiatric and metabolic systems. Many physiological processes cannot be harmonized when the intrinsic rhythm is aberrant and such dyssynchrony leads to many diseases. In addition, diseases with circadian rhythm disturbance are closely related to mental activities, eg. Schizophrenia, Senile dementia, Bipolar disorder and so on. Therefore, it is important for improving the quality of life in stress and disease to regulate the circadian rhythms. Circadian rhythms are generated by a cell-autonomous clock system that drives the rhythmic cascade of clock genes. After we elucidated the transcriptional mechanism of the non-redundant essential unique clock gene, *Bmal1*, we developed a circadian functional assay system that consists of luminescent reporter cells and the application of *Bmal1* findings. Using this assay system we have analyzed traditional herbal plants and succeeded to find components as a circadian modulator from them. I would like to introduce our recent screening results and also touch briefly on its possible mechanism.

□□□

Invited Lecture 3

Next-generation sequencing-based analysis of reverse transcriptase fidelity



Kiyoshi Yasukawa

Affiliation & Contact:

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Graduate School of Agriculture, Kyoto University
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Research Interest:

Enzyme Chemistry, Protein Engineering

Education & Professional Career:

1978-1982	University of Tokyo
1982-1984	Graduate School of Science, University of Tokyo
1984-2004	Researcher in Tosoh Corporation
1989	Ph.D. Osaka University (Medicine)
2004-2013	Assoc. Prof in Kyoto University
2013-	Prof in Kyoto University

Major Publications:

1. Yasukawa, K., Iida, K., Okano, H., Hidese, R., Baba, M., Yanagihara, I., Kojima, K., Takita, T., and Fujiwara, S.: Next-generation sequencing-based analysis of reverse transcriptase fidelity. *Biochem. Biophys. Res. Commun.* 492: 147-153 (2017)

2. Okano, H., Baba, M., Kawato, K., Hidese, R., Yanagihara, I., Kojima, K., Takita, T., Fujiwara, S., and Yasukawa, K.: High sensitive RNA detection by one-step RT-PCR using the genetically engineered variant of DNA polymerase with reverse transcriptase activity from hyperthermophilies. *J. Biosci. Bioeng.* 125: 275-281 (2018)
3. Okano, H., Baba, M., Hidese, R., Iida, K., Li, T., Kojima, K., Takita, T., Yanagihara, I., Fujiwara, S., and Yasukawa, K. Accurate fidelity analysis of the reverse transcriptase by a modified next-generation sequencing. *Enzyme Microb. Technol.* 115: 81-85 (2018)
4. Nakatani, K., Katano, Y., Kojima, K., Takita, T., Yatsunami, R., Nakamura, S., and Yasukawa, K. Increase in the thermostability of *Bacillus* sp. strain TAR-1 xylanase using a site saturation mutagenesis library. *Biosci. Biotechnol. Biochem.* 82: 1715-1723 (2018)

Abstract

Next-Generation Sequencing-Based Analysis of Reverse Transcriptase Fidelity

Kiyoshi Yasukawa, Hiroyuki Okano, Misato Baba, Kei Iida, Ryota Hidese³, Itaru Yanagihara⁴, Kenji Kojima¹, Teisuke Takita¹, Shinsuke Fujiwara³

¹*Division of Food Science and Biotechnology, Graduate School of Agriculture, Kyoto University, Sakyo-ku, Kyoto 606-8502, Japan*

²*Medical Research Support Center, Graduate School of Medicine, Kyoto University, Yoshida-Konoe-cho, Sakyo-ku, Kyoto 606-8501, Japan*

³*Department of Bioscience, School of Science and Technology, Kwansei-Gakuin University, 2-1 Gakuen, Sanda, Hyogo 669-1337, Japan,*

⁴*Department of Developmental Medicine, Research Institute, Osaka Women's and Children's Hospital, 840 Murodocho, Izumi, Osaka, 594-1101, Japan*

Abstract

We devised a simple and rapid method to analyze fidelity of reverse transcriptase (RT) using next-generation sequencing (NGS). The method comprises a cDNA synthesis reaction from standard RNA with a primer containing a tag of 14 randomized bases and the RT to be tested, PCR using high-fidelity DNA polymerase, and NGS. By comparing the sequence of each read with the reference sequence, mutations were identified. The mutation can be identified to be due to an error introduced by either cDNA synthesis, PCR, or NGS based on whether the

sequence reads with the same tag contain the same mutation or not. The error rates in cDNA synthesis with thermostable variant of Moloney mouse leukemia virus (MMLV) RT, MM4 (E286R/E302K/L435R/D524A), or the recently developed 16-tuple variant of family B DNA polymerase with RT activity, RTX, from *Thermococcus kodakarensis*, were $0.75\text{--}1.0 \times 10^{-4}$ errors/base, while that in the reaction with the wild-type human immunodeficiency virus type 1 (HIV-1) RT was 2.6×10^{-4} errors/base. Overall, our method could precisely evaluate the fidelity of various RTs with different reaction conditions in a high-throughput manner without the use of expensive optics and troublesome adaptor ligation.

We next optimized the conditions so that one NGS run could handle cDNA products from multiple cDNA synthesis reactions performed at different conditions. This was achieved by using a primer containing not only the tag of 14 randomized bases to label each cDNA molecule but also a tag of five bases to label each reaction condition. With this method, we quantitated the error rates of 44 cDNA synthesis reactions by retroviral RTs or genetically engineered DNA polymerases with RT activity under different conditions. The results indicated that high concentrations of MgCl_2 , $\text{Mn}(\text{OCOCH}_3)_2$, and dNTP decrease the fidelity and that these effects are more pronounced in reactions using RT from human immunodeficiency virus type 1.

Keywords: cDNA, DNA polymerase, error rate, NGS, reverse transcriptase



Invited Lecture 4

Bio-Based and Bio-Inspired Technologies: Exploiting Nature for sustainable Development



Mun'delanji C. Vestergaard

Affiliation & Contact:

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Research Interest:

Nanobiosensors, Nanobiotechnologies and Functional Foods: Exploitation, development of bio-inspired and bio mimicking technologies (i) for elucidating biomolecular interactions/processes, and (ii) for quick, simple and low-cost detection of biomolecules of interest. Our laboratory is also interested in bio-efficacy of natural products, and functional foods for sustainable development. We are focusing on, but not limited to applications in food, agriculture and biomedical fields.

Education & Professional Career:

Education:

- 2003, 6 PhD, Biochemistry and Microbiology, Department of Agriculture, University of Aberdeen and Rowett Research Institute, Scotland, UK
- 1993, 6 Postgraduate Diploma, Department of Agriculture, University of Aberdeen and Rowett Research Institute, Scotland, UK;
Certificate in Applied Chemistry, by the Royal Society of Chemistry, UK

1991, 7 BSc. (Hon), Department of Forestry, University of Aberdeen, Scotland, UK

1985, 7 A' Level Certificate, Kamuzu Academy High School, Malawi.

Employment History:

2015 ~ Associate Professor, Department of Food Science & Biotechnology Faculty of Agriculture, Kagoshima University(current), Japan

2011-17 Visiting Associate Professor Graduate School of Engineering, Osaka University (concurrent), Japan

2013-15 Faculty Development Unit Leader, Center for Graduate Education Initiative, JAIST (promoted position)

2010-15 Research Associate Professor, Center for Graduate Education Initiative, and School of Materials Science (Adjunct), JAIST, Japan

2008-10 JSPS Postdoctoral Research Fellow, School of Materials Science, JAIST, Japan

2003-08 Postdoctoral Research Fellow, School of Materials Science, JAIST, Japan

1993-00 Chemistry Analyst/Assistant Chemistry Analyst: Scottish Water Authorities (NOSWA and ESWA), Scotland, United Kingdom (until 2000, 10).

1988-89 Civil Servant: Ministry of Forestry and Natural Resources, Malawi

Major Publications:

1. Lien, T.T.N., Takamura, T., Tamiya, E. Vestergaard, M.C.*,Anal. Chim. Acta. 892, 69, 2015.
2. Phan, H.T.T., Yoda, T., Chahal, B., Morita, M., Takagi, M.,Vestergaard, M.C.*Biochim. Biophys. Acta, Biomembr., 1838, 2670, 2014,
3. Vestergaard, M.C., Masamune, M., Hamada T., Takagi M*. Biochim. Biophys. Acta, Biomembr.,1828, 1314, 2013.
4. Hoa, L.Q., Vestergaard, M.C., Yoshikawa, H., Saito, M., Tamiya, E.*J. Mater. Chem., 22, 14705, 2012.
5. Hamada, T., Morita, Miyakawa, M., Sugimoto, R.,Vestergaard, M.C., Takagi, M.*, J. Am. Chem Soc., 134, 13990, 2012.
6. Hoa, L.Q., Vestergaard, M.C., Yoshikawa, H., Saito, M., Tamiya, E.* Electrochem. Commun., 13, 746-49, 2011.
7. Sugano, Y., Vestergaard, M.C., Saito, M., Tamiya, E.*Chem. Commun., 47, 7176, 2011.

8. Vestergaard, M.,* Kim, D-K., Kerman, K., Ha, M.H., Tamiya, E. *Talanta*, 74, 1038-42, 2008.
9. Kerman, K., Vestergaard, M., Nagatani, N., Takamura, Y., Tamiya, E*. *Anal. Chem.*, 78, 2182-89, 2006.
10. Vestergaard, M.,* Kerman, K., Saito, M., Nagatani, N., Takamura, Y., Tamiya, E. *J. Am. Chem. Soc.*, 127: 1192, 2005.

Abstract

Bio-Based and Bio-Inspired Technologies: Exploiting nature for sustainable development

Mun'delanji C. Vestergaard

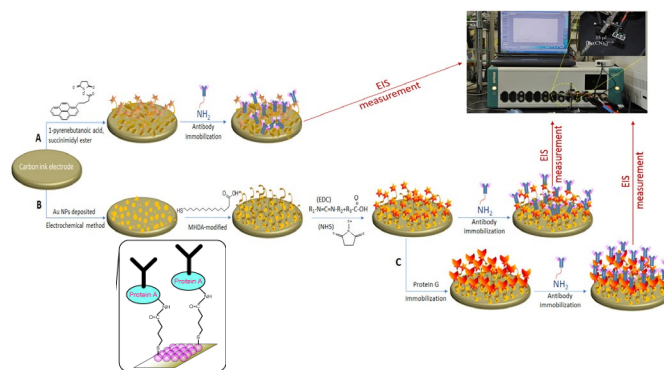
*Department of Food Science and Biotechnology, Kagoshima University,
Kagoshima City, Japan*

Abstract

Development and application of bio-based and bio-inspired technologies to (i) screen for, identify and quantify molecules of interest; (ii) profile and characterize molecular activities/events; and (iii) help elucidate pathophysiological mechanisms is major field _with applications in various fields including biomedical, environmental, energy, food and agriculture. In this talk, we aim to introduce development and exploitation of biosensor technology. Specifically, we will highlight the fundamental chemical principles intrinsic in biological interactions and their exploitation in development of this technology. The exploited molecular interactions are largely driven by natural affinities between biological molecules such as substrate-enzyme, antibody-antigen, receptor-ligand, and Watson-Crick base-pairing. The figure shows an example of a biosensor for detection of Alzheimer's disease biomarker (amyloid beta peptide) fabricated using antibody sensing platform in conjunction with electrochemical impedance spectroscopy. Advances in science and technology has allowed the inclusion of artificially synthesised molecules that mimic biomolecules of interests, such as peptide nucleic acid (PNA) and molecularly imprinted polymers (MIPs).

Sustainable development goals (SDGs) were adopted in 2015 at the UN General Assembly as the 2030 Development agenda. They are a set of 17 inter-related goals with overarching elements: peace, prosperity, health, planet and partnerships. In this talk, besides discussing biosensor technology and some applications, we will highlight the challenges that we face in this field and the prevailing gaps between different economies in the world. We will provide specific examples of areas that this technology could be useful in the less developed economies, and hopefully open a discussion point for future collaboration efforts.

Keywords: Bio-Inspired technologies, Nature, Sustainable development, Biosensor, Sustainable development goals (SDGs).



Invited Lecture 5

International, National and individual role in conservation



Reena Mathur

Previous affiliation and Contact:

Prof and Head Zoology, Univ of Raj., Jaipur

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Research Interest:

Wildlife, Animal Behaviour

Professional Career:

Professor (1997-2011)

Head (2010-2011)

Associate Professor (1993-1997)

Assistant Professor (1979-1993)

Post Doctoral work outside India :

Smithsonian Institution, Washington, DC, USA (1983-84).

University of Florida, Gainesville, USA (1983-84)

Aristotle University, Thessaloniki, Greece (Feb. to July 1997)

Countries Visited for wildlife studies: USA, UK, Ireland, Germany, France, Italy, Greece, Austria, Hungary, Belgium, Slovakia, Czech Republic, Malaysia, Bhutan, Nepal and China.

Major Research Projects :

1. Status survey of Primates in Jaipur with Special reference to *Presbytis entellus* and its interaction with *Macaca mulatta*. Work funded by University Grants Commission, New Delhi

2. Population and resource utilization of water fowl in Keoladeo National Park, Bharatpur. Work funded by Bombay Natural History Society, Mumbai
3. Eco-behavioural studies of *Presbytis entellus*: mother-infant relationship with special Reference to weaning, physical and Behavioral development of infant at Ambagarh Reserve Forest, Jaipur. Work funded by Council of Scientific and Industrial Research, New Delhi.
4. The ecology of three large symmetric Herbivores with special reference to management of Sariska Tiger Reserve. Work funded by Wildlife Institute of India, Dehradun.
5. Comparative study of behaviour of sambar and chital in captivity (Jaipur zoo) and wild (Sariska Tiger Reserve). Work funded by state DST.
6. A study of avifauna of the Rajasthan State. Work partly funded by Directorate of College Education, Rajasthan.
7. Aunt Behaviour in langurs of Rangbari, Kota. Work funded by Hadoti Nature conservation Society.
8. Behavioural and Neurotoxicity studies of Cyfluthrin in Swiss Albino Mice. Work funded by UGC.

Some Publications:

2008: Behavioural and Teratological effects of perinatal exposure to Cyfluthrin in Swiss albino mice. Proceedings of the International Conference on "Free radicals & Natural Products in Health" (FRNPH-2008), Feb 14-16, 2008, organized by Centre for Advanced Studies, Department of Zoology, University of Rajasthan, Jaipur

2007: Home range of radio-collared chital (*Axis axis*), sambar (*Cervus unicolor*) and nilgai (*Boselaphus tragocamelus*) in Sariska Tiger Reserve, Rajasthan, India" has been accepted as an oral presentation and 1st International Conference on Genus *Cervus*, Fiera di Primiero, Italy, 14-17 September

2007: Neurotoxicity of two Synthetic Pyrethroids (Cyfluthrin and Cypermethrin) in Swiss albino mice. Accepted for presentation at the International Congress of Toxicology, to be held at Montreal, Canada, July 15-19.

2007: Embryotoxic and teratogenic evaluation of cyfluthrin in Swiss albino mice. Proceedings of the 12th Biological Sciences Graduate Congress 2007, Kuala Lumpur, Malaysia.

2006 : Avifauna of Rajasthan: An Overview. Workshop on Floral and Faunal Diversity of Rajasthan: Importance and Conservation organised by SREE, M.S.J. College and Department of Forest at Bharatpur on 27th-28th Dec. 2006.

2006 :Food habits of three major ungulate species in a semi arid zone of Rajasthan, India..Cheetal Vol 44:18-38

2006 :Zoos in Rajasthan and their Management :Book entitled "Fauna and Flora of Rajasthan.

2005 :Enhancing bio-significance of Urban Lakes. Presentation in National Seminar on Hydrological Aspects of Rejuvenation of Urban Lakes - HARUL-2005) held on 20-21 October

2005 at Udaipur.(Organizers National Institute of Hydrology Roorkee (Uttaranchal) and Maharan Pratap University of Agricultural and Technology, Udaipur (Rajasthan)

2005: Biodiversity of Littoral Zone: Threats And Management with Special Reference to Avifauna of The Rajasthan State. National Conference on Environment and Natural Disaster Management. 28th -30th Nov. 2005. Organized by Department of Zoology, University of Rajasthan, Jaipur and Indian Academy of Environmental Sciences at Jaipur.

2005: Effect of Cypermethrin on learning in Swiss albino mice. Proceedings of the National Conference on Environment and Natural Disaster Management, Department.of Zoology, University of Rajasthan, Jaipur (Nov 28-30).

2005: Munias of Mount Abu with special emphasis on threatened green avadavat amandava Formosa, Rajasthan, India communicated to Indian Birds.

2004: Avifauna of Keoladeo National Park Vis s Vis avifauna of Rajasthan and Importance of KNP as bird habitat. Paper presented in first annual research seminar held at KNP Bharatpur 22-23 Dec

2004: Comparison of Social behaviour (especially aggressive) of Sambar in captivity and wild. Abstract (page 124), National Academy of Sciences of India 74th Annual session, 2-4 Dec., Jaipur

Books:

Wildlife conservation and management (2018) Rastogi Publications,Meerut,UP

Animal behaviour (2016- 5th enlarged edition) Rastogi Publication, Meerut, UP.

Evaluation, Statistics and ethology (2002) Reena Mathur et al. Rastogi Publications, Meerut, U.P. pp. 300.

Economic Zoology and Ethology (2003). Reena Mathur et al., Rastogi Publishing, Meerut, UP Pp. 275.

Abstract

International, National and individual role in conservation

Reena Mathur

Abstract

National organizations- National Parks, Sanctuaries, Conservation Reserves, Community Reserves, Tiger reserves, Elephant reserves, Marine reserve , Marine national parks, Marine protected areas, Chambal Floating Sanctuary , exclusive economic zone, Ecozones - Trans Himalaya- Ladakh mountains, Tibetan plateau, Himalaya -Northwest, West, Central and East Himalayas, Desert -Thar, Kutch, Semi-arid -Punjab plains, Gujarat Rajasthan, Western Ghats Malabar plains, Western Ghats, Deccan Peninsula - Central highlands, Chotta-Nagpur, Eastern highlands, Central Plateau, Deccan South. Gangetic plains -Upper and Lower Gangetic plains. Coast - West and East coast, Sundarbans, North-East- Brahmaputra valley, Northeast hills, Islands- Andaman Nicobar, Lakshadweep.

International organizations - World Natural Heritage sites, World biodiversity sites, Biospheres reserves, Ramsar sites, World hotspots , World Hope spots, TRAFFIC, CITES.

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Invited Lecture 6

Chromosome Structural Analysis Using Imaging Techniques



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Abstract

Chromosome Structural Analysis Using Imaging Techniques

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Abstract

Chromosome condensation is essential for the faithful transmission of genetic information to daughter cells during cell division. However, the chromosome condensation process has been still poorly understood. Here I introduce two factors, chromosome scaffold structure and divalent cations, are required for chromosome condensation. Chromosome scaffold was found in chromosome arms as an axial structure of chromosome and it has important role in chromosome construction. The scaffold structure has been observed as a single tick axis in a single chromatid. Using super-resolution microscopy and electron microscopy, I revealed that the scaffold structure mainly consists of two thin axes. It will generate stiffness and elasticity to

chromosome. Although chromosome structure was severely changed without chromosome scaffold structure, chromosome condensation itself can be achieved by another factor, divalent cations. One of divalent cations, Ca^{2+} depletion caused defects in proper mitotic progression and chromosome condensation after the breakdown of the nuclear envelope. Fluorescence lifetime imaging microscopy-Förster resonance energy transfer and electron microscopy demonstrated that chromosome condensation is influenced by Ca^{2+} . Ca^{2+} is also required for stabilization of kinetochore microtubules by loading CENP-F to kinetochore. Thus, combination of several imaging techniques is highly advantageous to understand chromosome structure.



Invited Lecture 7

Cancer Treatment by Ashwagandha- Potentials to Products



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Research Interest:

Molecular mechanism of stress, aging and cancer; gene silencing and imaging to understand the mechanism of action of Ayurvedic herb, Ashwagandha and others.

Education & Professional Career:

Dr. Sunil Kaul was born and brought up in Kalimpong (Darjeeling). He obtained his MPhil and PhD degrees from the University of Delhi, India. After his initial post-doctoral training, he was appointed as a researcher at the National Institute of Advanced Industrial Science & Technology (AIST) in Japan, and has been working there for last 30 years. He is now a Chief Senior Research Scientist. His major research interest is to understand the molecular mechanism of stress, aging and cancer. He has been merging the traditional knowledge with modern technologies like gene silencing and imaging to understand the mechanism of action of Ayurvedic herb, Ashwagandha and others. He is a coordinator of the DBT (India)-AIST (Japan) International Laboratory for Advanced Biomedicine at AIST, Japan. With more than 200 research publications in International peer revised journals and several invited talks Internationally, he has been in Editorial board of several scientific journals. He is a Fellow of Geriatrics Society of India (FGSI), Overseas Fellow of Biotech

Research Society of India (FBRSI), Fellow of Indian Academy of Neuroscience (FIAN), and Foreign Fellow of National Academy of Sciences, India (FNASc).

Abstract

Cancer treatment by Ashwagandha- Potentials to products

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Abstract

Cancer is a complex disorder, largely defined as abnormal growth of cells. In contrast to normal cells that divide limited number of times, cancer cells keep dividing autonomously and can develop into unwanted mass of cells anywhere in the body, or even acquire the capacity to invade to secondary distant tissues. Maintenance of telomere length is a most consistent attribute of cancer cells. Tightly connected to their capacity to overcome replicative mortality, it is achieved either by activation of telomerase or switching-on of an Alternative mechanism of Lengthening of Telomeres (ALT). Interruption of either of these mechanisms has been shown to activate DNA damage signaling leading to senescence or apoptosis in cancer cells. Telomerase inhibitors are deemed as potential anticancer drugs. However, these are ineffective for ALT cancers (~15% of all cancers). Withaferin A (Wi-A), a major Withanolide constituent of *Withania somnifera*, a herb commonly used in Indian traditional home medicine (Ayurveda), has been shown to exert anti-tumor activity. We used unique isogenic cells with or without telomerase and investigated anticancer potential of Wi-A. We found that Wi-A caused stronger cytotoxicity to ALT cells and was associated with inhibition of ALT-associated promyelocytic leukemia (PML) nuclear bodies (APBs) (an established marker of ALT). Comparative analyses of telomerase positive and ALT cells revealed that Wi-A caused stronger telomere dysfunction and upregulation of DNA damage response in ALT cells. Bioinformatics, molecular docking and molecular analyses revealed that treatment with Wi-A led to activation of DNA damage signaling through transcriptional MRN and NFkB signaling. The results suggest that Wi-A may be a candidate drug for cancer treatment, and warrant further studies on the pharmacokinetics, molecular mechanisms and clinical trials.

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Invited Lecture 8

Natural Interventions of Cancer: Anti-Mortalin Drugs



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Research Interest:

The molecular mechanism of aging and cancer using normal and cancer cells as model system.

Education & Professional Career:

Dr. Renu Wadhwa had her first PhD from the Guru Nanak Dev University, India and the second PhD from the University of Tsukuba, Japan. She had her post-doctoral trainings at the University of Newcastle Upon Tyne, England and RIKEN, Japan. She has been working in Japan for last 29 years and has been leading a research team working on the mechanisms of cell proliferation controls at the Biomedical Research Institute, AIST, Japan. Her major research interest is to understand the molecular mechanism of aging and cancer using normal and cancer cells as model system. She had first cloned a novel member of hsp70 family protein in 1993 and named it “mortalin”. Since then she has made several original findings describing the functional characteristics of this protein and its role in cancer and age-related disorders. She has more than 200 publications in International peer reviewed journals with many invited/plenary talks in international conferences. She has served as a member of AACR (1997-2000) and President of 86th Annual meeting of Japanese Tissue Culture Association at AIST Tsukuba, and is a leader of DBT-AIST International Laboratory for Advanced Biomedicine (DAILAB) at AIST, Japan. She has been in Editorial board of several scientific journals including Journal of Gerontology: Biological Sciences and Mechanism of Ageing and Development. As honorary academic positions, she has served as an Associate Professor at the University of Tokyo, Professor at the Yonsei University College of Medicine (Seoul). Presently,

she is an Honorary Scientist at the Children's Medical Research Institute (Sydney), Adjunct Professor at the Hanyang University (Seoul). She is a Fellow of Geriatric Society of India, Indian Academy of Neurosciences and Biotech Research Society, India.

Abstract

Natural Interventions of Cancer: Anti-Mortalin Drugs

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Abstract

Mortalin is a member of HSP70 family of proteins that was first discovered in 1993 in our laboratory. It is a multifunctional and essential protein, enriched in all cancer cells and has been shown to promote carcinogenesis, EMT and cancer cell stemness by multiple pathways including inactivation of tumor suppressor protein-p53, activation of telomerase, hnRNP-K, and factors involved in epithelial-mesenchymal transition (EMT). Consistently highly aggressive and metastatic cancers have been shown to possess high levels of mortalin, and its compromise caused growth arrest of cancer cells, reversal of EMT and cancer cell stemness signaling *in vitro*, and tumor regression *in vivo*. These data provided evidence that mortalin enrichment matters for carcinogenesis and hence is a strong candidate for cancer therapy.

We performed a screening for anti-mortalin natural compounds and found that herbs including *Withania somnifera*, *Helicteres angustifolia*, and propolis harbor anti-mortalin bioactives. These include Withanolides (Withaferin-A and Withanone), Cucurbitacin B and Caffeic Acid Phenethyl Ester (CAPE) and Artepillin. We present evidence that these compounds are capable of disrupting mortalin-p53 complexes resulting in reactivation of tumor suppressor activities of p53 in cancer cells. Furthermore, down regulation of mortalin and several other key regulators of cell migration accountable for their anti-metastasis activity were detected, and supported by *in vivo* tumor suppressor assays. In the light of these data and to promote the use of these herbs for cancer therapeutics and health benefits, we have generated Active Ingredient Enriched Ashwagandha extracts and PP-Propolis (Pleasant and Premium Propolis) that possess high stability and lack repulsive odor. We propose these as NEW (Natural Efficient and Welfare) anti-cancer drugs with anti-mortalin activities.

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Invited Lecture 9

Isoform Specific Role of Akt in Oral Cancer



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Research Interest :

Dr. Kunnumakkara's research interests include chemosensitization of cancer by natural products, the role of inflammatory pathways in cancer development and their inhibition by plant derived compounds especially, derived from fruits, vegetables and spices. He is also interested in the identification of novel biomarkers for cancer diagnosis and prognosis.

Education & Professional Career:

Dr. Ajaikumar B. Kunnumakkara, is currently working as a faculty member in the Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati, Assam, India (IIT Guwahati). He earned his doctorate in 2006 from Amala Cancer Research Center, Thrissur, affiliated with University of Calicut, Kerala, India. Dr. Kunnumakkara did his first postdoctoral work at the University of Texas MD Anderson Cancer Center, Houston, Texas, USA (2005–2008) and his second postdoctoral work at the National Cancer Institute of National Institutes of Health (NCI/NIH), Bethesda, Maryland, USA (2008-2010); where he was subsequently employed as a NIH Scientist from 2010 to 2012. He is credited with the publication of more than sixty research articles. He has more than 15,000 citations with an h-index of >40. Currently, his work is cited over 1,800 times in the literature annually. Dr. Kunnumakkara has also authored five books.

Abstract

Isoform Specific Role of Akt in Oral Cancer

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Abstract

Despite the therapeutic and diagnostic advances for oral cancer, it remains the prime global health concern. To overcome this situation novel and effective therapies need to be established. Akt, a serine-threonine kinase is known to be overexpressed in many cancers including oral cancer. However, Akt kinase exists in three isoforms (Akt1, Akt2 and Akt3) and strikingly they perform different function even opposing functions in promotion and progression of different cancers. The present study was aimed to elucidate the isoform-specific role of Akt isoforms in oral cancer progression. The immunohistochemistry analysis revealed that Akt1 and Akt2 isoforms were overexpressed in oral cancer tissues but not Akt3. Also, the data retrieved from the dataset of The Cancer Genome Atlas (TCGA) for head and neck cancer has revealed the presence of many genetic alterations in Akt1 followed by Akt2 and Akt3. Furthermore, the genetic alterations associated with Akt1 were found to be correlated with worse clinical outcome. The treatment of oral cancer cells with crude tobacco extract and tobacco components such as benzo(a)pyrene and nicotine showed that the expression of both Akt1 and Akt2 were upregulated and led to the increase in aggressiveness of oral cancer cells in terms of proliferation, survival and migration potential. The knockdown of Akt1 and Akt2 isoforms has shown that it decreased the cell survival of oral cancer cells and also led to cell cycle arrest in G2 phase. The silencing of Akt1 and Akt2 also caused a decrease in the expression of molecular mediators involved in different processes of cancer progression such as MMP9, COX-2, Bcl-2, cyclin D1, VEGF and survivin. Also, their knockdown significantly reduced the tobacco-induced aggressiveness by decreasing the clonogenic and migration potential. Overall we conclude that Akt1 and Akt2 play important role in the development of oral cancer.



Salt Stress Enhanced proline and Total Soluble Sugar Contents in *Suaedanudiflora* Callus Culture

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Abstract

Salinity is one of the major environmental constrictions that disrupt the homeostasis of water potential and ion distribution, at both the cellular as well as the whole-plant level. Salt-tolerant plants have evolved adaptive mechanism in order to maintain homeostasis through accumulations of ions as well as osmolytes such as proline, soluble sugar, and glycine betaine. Excitingly, in vitro culture techniques serve as a convenient tool to study the salt stress responses of undifferentiated cells under controlled and identical conditions. Therefore, *Suaedanudiflora* callus cultures were established for studying salt tolerance mechanism at the cellular level. To assess osmotic adaptation at the cellular level, fresh and viable calli cultured on solid MS medium consisting of 2, 4-D, Kinetin and various concentration of NaCl (50, 100, 150, 200, 500 mM). The cultures were incubated under controlled conditions and Calli were evaluated after 28 days of salt treatment for the accumulation of proline and total soluble sugar content.

Results

In our experiment *Suaedanudifloracalli* was least affected by the highest dose of NaCl stress. An increase was observed in both proline (up to 500 mM NaCl) and total soluble sugar content (up to 200 mM NaCl) in comparison to control (without NaCl treatment).

Conclusion

These results suggest that proline accumulation is a better index of salinity tolerance in this species. There is a need for a further investigation at the molecular level for the development of transgenic plants with genes involved in osmolytes biosynthesis for salt-tolerance.

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Optimization of Protocol to Enhance the Growth of Arbuscular Mycorrhizal Biofertilizer

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Abstract

Arbuscular mycorrhizal fungi (AM) are soil fungi which colonize and attain a symbiotic association with approximately 80% families of plant kingdom. This symbiotic association imparts reimbursement to the host plant in terms of enhanced nutrient uptake which results in increased growth and yield, tolerance to pH and resistance against disease and pest. Main aim of the present experiment is the optimization of media and physical conditions to enhance the root mass and spore production of AM. Main concern of the experiment was the manipulation of gel rite concentration; volume of MS media and surface area of AM growth. Sub culturing of the AM was done by inoculating one mother culture into six subcultures. These subcultures were stored at 25°C in dark for 12 weeks in the growth chamber racks. After harvesting it was observed that the growth of AM is at its peak in 90ml volume of media and followed by 80ml, 60ml. In 90ml media 7.552gm of root mass was obtained while in 100ml media 6.889gm of root mass was obtained. By using 80-90ml media per bottle we can get 26% more AM production. Gelrite being the major component in media preparation, it was concluded through the experiment that the highest growth of root mass was 11.165gm in 0.15%. The production company is using 0.25% gel rite in which lesser (5.541gm) root mass has been measured. So it is suggested that by using 0.15% gel rite instead of 0.25%, can get 66% more AM root mass. Because of using less gelrite concentration lesser cost and more benefits would be obtained.

Keywords: Bio fertilizer, symbiotic association and AM fungi.

Introduction

The symbiotic association between AM fungi and plant roots dates back millions of years, concurrent with the initial colonization of terrain by the plant kingdom. Arbuscular mycorrhizal fungi are soil fungi which colonize and attain a symbiotic association with approximately 80% families of plant kingdom [1]. This symbiotic association imparts reimbursement to the host plant such as enhanced nutrient uptake which results in increased growth and yield, tolerance to pH and resistance against disease and pest [2].

At present the most effective potential method of AM fungus inoculums is dual culture with a plant host or root organ culture. In this report; the physical conditions for the enhancement of root mass of

AM culture and the media considerations necessary for the production and harvesting will be described.

Result & Discussion

Gelrite Concentration: The gelrite concentration used was 0.25% but the observation clearly suggested that a concentration as less as 0.15% to 0.19% can be used. **Media Volume:** The optimum amount of media volume that can be used was 50-70ml. **Surface area of the bottles:** Minimum contamination was seen in small sized bottles but those most fragile ones hence, the large sized bottles are most appropriate for AM production. Maximum contamination was seen in medium sized bottles.

Gelrite conc.	0.05	0.08	0.1	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.2	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	
Gelrite (in grms)	1.25	2	2.5	2.75	3	3.2	3.5	3.75	4	4.25	4.5	4.75	5	5.25	5.5	5.75	6	6.25	6.5	6.75	7	7.25	7.5	0
Media (in ml)																								
40	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A24
50	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24
60	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24
70	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20	D21	D22	D23	D24
80	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E17	E18	E19	E20	E21	E22	E23	E24
90	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21	F22	F23	F24
100	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	G17	G18	G19	G20	G21	G22	G23	G24
110	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19	H20	H21	H22	H23	H24
120	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13	I14	I15	I16	I17	I18	I19	I20	I21	I22	I23	I24
130	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	J13	J14	J15	J16	J17	J18	J19	J20	J21	J22	J23	J24
140	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16	K17	K18	K19	K20	K21	K22	K23	K24
150	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17	L18	L19	L20	L21	L22	L23	L24

Conclusion

The use of medium sized bottles, with approximately 50 ml to 70 ml of M.S media and gelrite concentration of 0.15% to 0.19% is optimum for getting the most appropriate results for production of AM bio fertilizer. By using these parameters the cost value of gelrite and M.S medium used will be reduced which in turn add to the economy of the company and hence overall production of the bio fertilizer will be increased.

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Synthesis, Characterization & Biological Evaluation of Isoxazoline Derivatives

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Abstract

A series of N-(3, 4-dichlorobenzyl)-4,5-dihydro-3-mesityl-5-methylisoxazole-5-carboxamide were prepared. The structures of the isoxazoline derivatives were confirmed on the bases of elemental analysis and spectral data. The compounds were screened for their *in vitro* antibacterial activity using gram-positive bacteria and gram-negative bacteria.

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Existence and Uniqueness Solution of Second and Higher Order Legendre Differential Equation Using Banach Fixed Point Theorem

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Abstract

The fixed point theorem or contraction mapping theorem has taken an inspiring feature in mathematics. In this research work we will study the existence and uniqueness of second order Legendre Differential equation. The purpose of this research work is to find out fixed point theorem in second order Legendre differential equation and its solution by using Banach fixed point theorem. The value of this research work is that we will establish some generalized fixed point theorem and examples and application on fixed point property.

Keywords: Legendre differential equation, Complete Metric spaces, Banach Contraction mapping, existence and uniqueness

Introduction:

We commence by derive the second order ordinary differential equation satisfied by Legendre function. The solutions of Legendre differential equation include many of the most remarkable special functions of mathematical physics. Solutions to the Legendre differential equation there are in different method. Our main purpose is show the existence and uniqueness solution of Legendre Differential equation. The main technique used here is that the Banach Fixed point theorem.

Result and Discussion:

In this paper we have proof the uniqueness of second order Legendre differential equation with the help of Banach fixed point theorem by taking a particular integral equation in a particular continuous mapping.

Conclusion: In this research work we have proof the existence and uniqueness of second order Legendre Differential equation.

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Bio fuels and Sustainable Development-Prospects and Challenges

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Abstract

A biofuel is a fuel that is produced through contemporary biological processes and is derived from biomass—that is, plant or algae material or animal waste. Sustainable development has been defined in many ways, but the most frequently quoted definition is from our common future, also known as the Brundtland Report: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Sustainable development was pointed to as the way to solve contemporary problems. Biofuels on their own cannot deliver a sustainable transport system and must be developed as part of an integrated package of measures, which promotes other low carbon options and energy efficiency, as well as moderating the demand and need for transport. The development of biofuels has both direct and indirect social impacts, including job creation (quality and permanence), social responsibility and social equity, including issues such as wealth distribution to rural communities.

Keywords: Bio fuel, biological processes, biomass, sustainable development, energy efficiency, social impacts.



Synthesis and Characterization of Gold Nanoparticles

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Abstract

Gold nanoparticles (GNPs) were prepared using bacterial extract a simple biological approach. The bioreduction of chloroauric acid (HAuCl_4) for the synthesis of gold nanoparticles with the bacterial extract *Exiguobacterium aquaticum* strain BGCC-71. The bacterial extract is mixed with HAuCl_4 , the reduction of auric chloride led to the formation of AuNPs within 24 hr at

room temperature (28°C). The synthesis of gold nanoparticles was preliminary confirmed by the change in colour. The size, shape and elemental analysis were carried out using X-ray diffraction, SEM-EDAX, DLS, FT-IR and UV-spectroscopy. The results showed that the bacterial extract of *Exiguobacteriumaquaticum* strain BGCC-71 is very good bioreductant for the synthesis of gold nanoparticles. Synthesized gold nanoparticles in the range of 5-10 nm in diameter and spherical in shape. The synthesized gold nanoparticles have more activity against human pathogens and also have good anticancer property.

Keywords: Nanoparticles, Bacteria, Anticancer, Pathogen, Synthesis



Environmental Degradation: Causes, Impacts and Mitigation

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Abstract

Our environment is deteriorating for the last two centuries and almost every part of the planet has been touched by it in one way or the other. The primary cause of environmental degradation is human disturbance. The industrial revolution of 19th century mechanized the production and manufacturing of goods and introduced the use of machinery and other heavy equipments - which in turn, used fuels as source of energy, which deteriorate the environment.

Key words: Environment. Deteriorating, industrial revolution. Machinery.

Introduction:

Environmental degradation is an umbrella concept which covers a variety of issues including pollution, biodiversity loss & animal extinction, deforestation & desertification, global warming, and a lot more.

Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems and the extinction of wildlife. It is defined as any change or disturbance to the environment perceived to be deleterious or undesirable.

Environmental degradation is one of the ten threats officially cautioned by the High-level Panel on Threats, Challenges and Change of the United Nations. The United Nations International

Strategy for Disaster Reduction defines environmental degradation as "The reduction of the capacity of the environment to meet social and ecological objectives, and needs".

Causes of Environmental Degradation

Environmental changes are based on many factors including:

- Urbanization
- Population growth Economic growth
- Intensification of agriculture Increase in energy use
- Increase in transportation

1. Water and Air Pollution

Water and air pollution are unfortunately the common causes of environmental degradation. Pollution introduces contaminants into the environment that can maim or even kill plant and animal species. The two often go hand in hand.

2. Acid Rain

Acid rain occurs when sulphur dioxide from coal plant emissions combines with moisture present in the air. A chemical reaction creates this acid precipitation. Acid rain can acidify and pollute lakes and streams. It causes similar effects to the soil.

3. Agricultural Runoff

Farming creates agriculture runoff issues. Agricultural runoff is a deadly source of pollutants which can degrade environments, so much so that the EPA identifies agriculture as the primary source of water pollution. Surface water washes over the soil and into lakes and streams.

Results and Discussion

Impacts of Environmental Degradation

Environmental degradation is a result of socio-economical, technological and institutional activities. Degradation occurs when earth's natural resources are depleted. The resources which are affected include water, air and soil. The degradation also impacts our wildlife, plants, animals and micro-organisms.

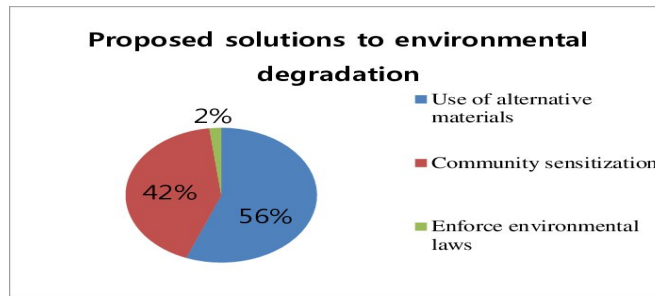


Fig 1 Solutions to environmental degradation:

Mitigation Measures

There are ways which can help to decrease degradation in our environment. Some of these include:

- Purchase recycled products.
- Conserve water
- Do not litter or throw waste into inappropriate places Conserve energy

Conclusion

Environmental degradation is one of most urgent of environmental issues. Depending upon the damage, some environments may never recover. The plants and animals that inhabited these places will be lost forever. In order to reduce any future impacts, city planners, industry, and resource managers must consider the long term effects of development on the environment. With sound planning, public awareness and community participation, future environmental degradation can be prevented.

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Biodiesel Production through Trans-Esterification and Esterification

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Abstract

Biodiesel is a diesel grade fuel made by trans-esterification reaction of vegetable oils and animal fats with alcohol. It is a suitable substitute for petroleum-derived diesel with additional advantages of being biodegradable, almost sulfurless and a renewable fuel.

Keywords Biodiesel, Esterification, trans-esterification

Introduction

The production of biodiesel from low-cost raw materials which generally contain high amounts of free fatty acids (FFAs) is a valuable alternative that would make their production costs more competitive than petroleum-derived fuel. Currently, the production of biodiesel from this kind of raw materials comprises a two-stage process, which requires an initial acid-catalyzed esterification of the FFA, followed by a base catalyzed trans-esterification of the triglycerides.

Experiment

Step 1: Acid-Catalyzed Esterification

The alcohol reacts with the fatty acids to form the mono-alkyl ester (biodiesel) and crude glycerol. The reaction between the biolipid (fat or oil) and the alcohol is a reversible reaction so excess alcohol must be added to ensure complete conversion.

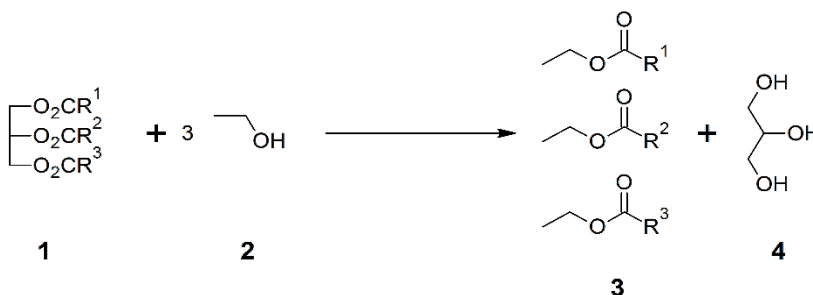


Fig.: Triglycerides (1) are reacted with an alcohol such as ethanol (2) to give ethyl esters of fatty acids (3) and glycerol (4)

Step 2: Base-Catalyzed Trans-Esterification

In the transesterification mechanism, the carbonyl carbon of the starting ester (RCOOR₁) undergoes nucleophilic attack by the incoming alkoxide (R²O⁻) to give a tetrahedral intermediate, which either reverts to the starting material, or proceeds to the transesterified product (RCOOR₂). The various species exist in equilibrium, and the product distribution depends on the relative energies of the reactant and product.

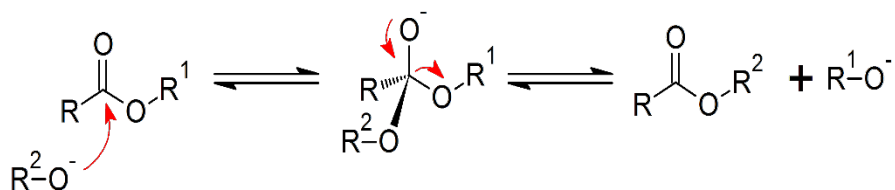


Fig: Base-Catalyzed Trans-Esterification Mechanism

Conclusion

All diesel engines and vehicles can use biodiesel or biodiesel blends. Biodiesel produces less toxic pollutants and greenhouse gases than petroleum diesel and so is greener and healthier for the environment. The cost relative to Diesel and Gasoline is the only thing holding up Biodiesel for now, but with advancing techniques for Biodiesel synthesis, cost might decrease making it a first-priority fuel in the future.

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Thermal Degradation of Copper Urea Complex Derived by Sesame Oil

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Abstract

Copper Soaps have a tendency of complexation with nitrogen and sulphur containing ligands. Synthesized Copper soap complexes may play a significant role in biological activities and have sufficient pharmaceutical, industrial and analytical applications. Thermogravimetric technique has been employed to study the kinetics by thermal decomposition of copper soap urea complex derived from sesame oil. The results of thermogravimetric analysis reveal that Copper (II) sesame urea complex undergo stepwise thermal degradation of saturated, unsaturated fatty acid components of edible oils. In the thermal decomposition of the Copper (II) sesame urea complex, the various steps involved have been analysed by Coats-Redfern equation, Broido equation, Horowitz-Metzger equation and Piloyan-novikova equation for evaluating kinetic parameters. It has been observed that for all the equations applied, the stepwise energy of activation follow the order – Step III > Step II > Step I. Thermodynamic parameters such as heat of dissociation ΔH , change in free energy ΔG and entropy ΔS were evaluated for the different steps of degradation using the integral method of Coats- Redfern and other equations. Thermal degradation of solid components will be good and significant method for the removal of the pollutant from the environment. The present study will play an important role for pollution controlling and in the field of green chemistry.

Keywords: Copper(II) sesame urea complex; TGA; Energy of activation; Kinetic parameters; Thermodynamic parameters.

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Ambient Air Quality Assessment Using Air Quality Index in Jaipur City, Rajasthan, India

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Abstract

An attempt has been made in this investigation to determine air quality of Jaipur city in the form of Air Quality Index (AQI).AQI is a tool developed by the United States environmental protection agency (USEPA) to characterize the air quality.In the present study, air pollutants data were collected for a year 2017 at 3 locations in Jaipur from Central Pollution Control Board. Monitoring stations were set up by RSPCB at three locations (Adrash Nagar Jaipur RSPCB, Police Commissionerate Jaipur RSPCB and Shashtri Nagar JaipurRSPCB) on roads of the study area.During study period from January 2017 to December, 2017, daily and monthly variations of the pollutants have been studied.Results are being compared with permissible standards as specified in Gazette of India Notification Extraordinary Part III, Section-4,Year 2009 and subsequently computed the air quality index. During the study, pollutants like PM10, PM2.5, Nitrogen dioxide,Sulphur dioxide, Ozone and Carbon monoxide were studied.The results reveal that gaseous pollutants such as SO₂ and NO_x are within the permissible limits and particulate matter is the predominant cause of air pollution in the study area. One location has heavy air pollution and others two have moderate air pollution.

Table-1 Air Pollution Index and corresponding health impacts

Air Pollution Index Values	Remark	Possible Health Impacts
0 to50	Good	Minimal Impact.
51 to 100	Satisfactory	Minor breathing discomfort to sensitive people.
101 to 200	Moderate	Breathing discomfort to the people with lungs, asthma and heart diseases.
201 to 300	Poor	Breathing discomfort to most people on prolonged exposure.
301 to 400	Very Poor	Respiratory illness on prolonged exposure.
401 to 500	Severe	Affects healthy people and seriously impacts those with existing diseases

Key words: Jaipur City, Ambient Air Quality, Air Quality index, RSPCB.



Effect of Heavy Metals on Vegetable Foodstuffs in Jaipur (India)

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Abstract

An atomic absorption spectroscopic method has been used for the determination of cadmium, chromium and lead in vegetable food stuffs irrigated with industrial waste water around Jaipur. Vegetable samples such as spinach (*Spinacia oleracea*), ladyfinger(*Abelmoschus esulentus*), pepper mint(*Menthe pipereta*), brinjal(*Solanum melongena*), chilies(*Capsicum annum*), coriander(*Coriandrum sativum*), cauliflower (*Brassicaoleracea*), lettuce(*Lectucasativa*), onion(*Alliumcepa*), radish(*Raphanus sativus*), pointedgourd (*Trichosanthes dioica*), bottle gourd(*Lagenaria siceraria*), peralmillet(*pennisetum*), sesame or gingelly (*Sesamum indicum*), ribbed gourd(*Luffa acutangula*), margosa(*Azadirachta indica*), pumpkin(*Curcubites pepo*) and sorghum (*Sorghum vulgare*) were analyzed. Analytical results indicated that vegetable samples values were well above the WHO critical toxic level.

□□□

Water Quality in relation to Primary Production in Lake Jal Mahal Jaipur, Rajasthan (India)

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Abstract

In Lake JalMahal, Fifteen days sampling was carried out during the four month *l.i.* November, December, January and February. Limnological parameters in the lake JalMahal were assessed. During the study, physico-chemical parameters undertaken were water and air temperature (25.2 °C to 32.5 °C), depth of visibility(56.2 cm to 70.2 cm), pH(8.5 to 10.2 cm), dissolved oxygen (3.2mg/l to 3.8 mg/l), CO₂ (1.2mg/l to 4.2mg/l), total alkalinity(245.2 mg/l to 390 mg/l), total hardness(800 mg/l to 845 mg/l), chlorides(107.37 mg/l to 140.28 mg/l), electrical

conductance(1130 to 1340), total dissolved solids(724mg/l to 856 mg/l), phosphates(3.12 mg/l to 4.160mg/l), nitrates(4.212 mg/l to 6.982 mg/l) and silicates. During the study pH, dissolved oxygen, total alkalinity, total hardness, chlorides, electrical conductance (EC), total dissolved solids (TDS) and phosphates were found to be in the critical ranges which were above the permissible limits as recommended by WHO, ICMR and CPCB. However nitrate, silicate and CO₂ were under the accepted limits of recommended agencies.

The parameters were studied along with assessment of primary production on the basis of monthly samplings. The Range of GPP was 489.30mgc/mr/hr to 514.52mgc/mr/hr. Respiration was varied from 250.77mgc/mr/hr to 263.89mgc/mr/hr. Gross primary production and Net Primary Production showed the negative relation with nitrate and phosphate which indicated that higher concentration of these nutrients limits the primary production of the lake JalMahal. GPP significantly (<0.001) correlated with NPP. The GPP and NPP were showed positive correlation with pH. On the basis of values of different parameters, water of Lake JalMahal was highly polluted and dangerous to aquatic fauna and flora as well as for other animals. Highest concentration of phosphate in this water bodies was responsible to algal bloom which makes water bodies' eutrophic. Although these water quality conditions are most appropriate for major carp and cat fish culture. This would be also helpful to improve water quality conditions as nutrients would be channelized in to productive food chains leading to high fish production.

□□□

A Brief History of Solar Energy

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Abstract

We as a nation have been progressing rapidly towards achieving our goal of production of solar energy and this has been the fastest growing segment of the industry for production of clean energy. This has been achieved by coupling of various factors and one of them is the rapid progress of technology which in turn has improved the efficiency of production of energy. This improvement of efficiency has helped make solar energy accessible to common masses. We in this paper briefly trace the history of the development of different technologies that were used to produce solar energy.

Keywords: Solar Energy, Efficiency.

Introduction

With the ever increasing requirement of energy to fuel the progress of a nation a caveat that invariably creeps in is the requirement of clean energy and solar energy fits that bill perfectly. Keeping this in mind many nations and India in particular are amongst the front runners in the area of production of solar energy. Solar energy has been accessible to the masses because of the rapid progress in manufacture of solar panels.

The Beginning

History [1] records the earliest use of solar energy during the early 7th century B.C when sunlight was used by humans to light fires with the use of magnifying glass material. Later, in the 3rd century B.C, the Greeks and Romans were known to harness solar power with mirrors generally referred to as “burning mirrors” to light torches for religious ceremonies. This same use by the Chinese has been documented in 20 A.D. Later on use of solar power has continued with the construction of south “sunrooms” wherein the sun rays were let into a room with large windows and then concentrated into a small region. Thus in brief we can safely say that harnessing of solar power to help us have a better livelihood has been in use for centuries.

Modern Era

The present outlook to harness the solar power has been through the development of solar panels. This had its beginning in 1876 when Willaim Grylls Adams along with his student Richard Day discovered that selenium when exposed to light produced electricity [2-4]. Charles Fritts actually produced the first solar cells made from selenium wafers [5,6]. Thus began the modern era of photovoltaic energy now rechristened solar energy. Selenium cells were not efficient.

In 1953, Calvin Fuller, Gerald Pearson and Daryl Chapin discovered the solar cells with enhanced efficiency [5,7]. Commercially solar cells were available in the year 1956 but then it was out of the reach of common citizens. In the period from 1970 low cost solar cells were manufactured and this paved the way to increase the outreach of solar energy. Edmond Becquerel is generally credited with the invention of solar panels [8,9].

Conclusion

Thus we see that science and technology has helped us reach the position that we are in today and the journey continues

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Quantitative Estimation of Metformin Content in Various Herbs through UPLC

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Abstract

Diabetes is a chronic disorder of carbohydrate, fat and protein metabolism characterized by increased fasting and post prandial blood sugar levels. The global prevalence of diabetes is estimated to increase, from 4% in 1995 to 5.4% by the year 2025. WHO has been predicted that the major burden will occur in developing countries. Metformin is active compound which is generally recommended by physician to control blood glucose level. In current investigation metformin was quantified in various 15 medicinal plants through UPLC. Active ingredients of various herbs were extracted in HPLC grade 90% methanol by cold extraction method and concentrated by rotary evaporator. Concentrated extract were filtered by 0.2 micro syringe filters prior to UPLC analysis. For UPLC analysis standard metformin was procured from Sigma and standard curve was plotted on Thermo UPLC system Ultimate 3000. To separate

metformin from mixture of compounds a gradient mobile phase containing methanol with buffer is used in C-18 column. Standard metformin gave peak on 2.35 Min Retention Time under 233 nm UV light. Similar peaks were found in all 15 test herbs and quantified by standard curve. All tested herbs shown presence of Metformin at various concentrations.

Keywords: Diabetes, Metformin, UPLC



Biopesticidal Sensitivity against Larvae of American Bollworm *Helicoverpa Armigera*

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Abstract

India is basically an agriculture based country and more than 80% of Indian population depends on it. Agricultural productivity influences the Indian economy. Insect pests are known to cause significant damage to crops. The problem of insect pest is intensified by a large number of insects of nuisance value to man and having a broad spectrum of their harmful effects. The most common example of this category is the Lepidoptera pests that are interfering in maintenance of a hygienic environment for healthy leaving. This group of pest is the single major pest for global plant agriculture. Its close relatives overcome chemical insecticide to attack over 100 crop plant species, at an annual cost of over US \$ five billion. The gram (*Cicer arietinum*) is an important vegetable crop grown in the country, unfortunately this vegetable crop suffers heavily from various insect pest and disease which reduces not only to its yield but also spoil the quality. Among the various pests the gram pod borer has been reported to cause maximum economic damage to the gram crops in India. In agricultural pest management botanical insecticides are best suited for us in organic food production in industrialized countries but can play a much greater role in the production and post-harvest protection of food in developing countries. The use of simple formulation of plants such as leaf, flower or seed powder extracts needs of to be popularized. There being safe to non-target organism like wild life and human being. The pesticide of plant origin is having nontoxic biodegradable and environmental friendly qualities. The frequent spraying of toxic chemicals can develop resistance to the pesticide. *Argemone maxicana* and *Calotropis procera* have the potential to kill the insect pest as the Leaf powder of these plants prepared to administered as biopesticide,

Different doses of these plant extracts is given to the fourth instar stages of *Helicoverpa armigera* through feeding methods, To find their efficacy the experimental findings are put under analysis using various parameters. The effect on midgut of the larva is also studied. The result shows that both these biopesticides have enough potentiality to suppress the dangerous pest *Helicoverpa armigera*, a better scope for agriculture and environment.

Keyword: Insect pest Gram pods, larvae of *Helicoverpa armigera*, plant extract, Bio-pesticide.

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Effects of Environmental Factors on Anatomy of Roots in Angiosperms

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Abstract

There are several environmental factors that affect the growth and development of plant and its parts. The anatomy of root is also affected by environmental factors. This paper presents the anatomy of root and their zones of differentiation in angiosperm. There are three Histogenic layers which are recognized as “Dermatogen”, Periblem and Plerome. These layers give rise to epidermis, cortex and central Cylinder. In root anatomy of angiosperms the Protophloem group differentiates followed by propxylem group. In angiosperms the root hypocotyls vasculature and epicotylar vasculature are separate and place at juxtaposition to each other. The radial vasculature becomes collateral through the shift of pole of Xylem differentiation. The cotyledonary node is unilacunar three trace type and it is Considered to be primitive in angiosperms.

Introduction

A plant has 2 organ systems 1) Root 2) Shoot. The root system includes those parts of plant which are below the ground. Anatomy is important in plant evolutionary trends and although in molecular genetics classical structural information. A root is highly differentiated multicellular axis found in vascular plants that has root cap, endodermis axis found in vascular plants that has a root cap endodermis pericycle and lateral roots. It is the main organ in plants that anchors the plant body to its substrate and absorbs water and dissolved minerals to support growth and development.

Result & Discussion

Angiosperms exhibit highly varied structural patterns in RAM organization, cortex, epidermis and root cap origins and stele patterns. In angiosperm plants the root showed a closed type of organization with separate tiers of initials for the stele cortex and columella. The root showed an opening out process during seedling stage and formation of secondary collumella take place. Various theories have been put forward during the last century for organization of apical meristem. The Schuepp (1917) and Korper-Kappe was found to be most suitable for this.

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Sustainable Manufacturing Practices and Its Indicators

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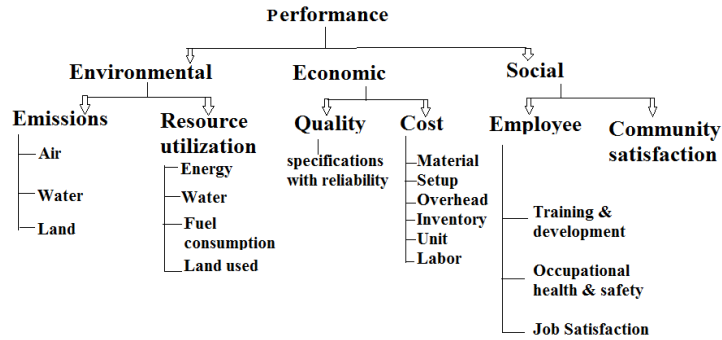
Abstract

Sustainable manufacturing involves the design and manufacturing of products using processes that are safe for employees, minimize negative environmental impacts, conserve energy and natural resources, communities and consumers and are economically sound. Organizations have to introduce 6R methodology (Reduce, Reuse and Recycle, Recover, Redesign and Remanufacture) which forms a sound basis of sustainable manufacturing.

Keywords: 6R Methodology, Sustainable, Manufacturing, Organizations

Introduction

“Sustainability is about better business and about being more in touch with the environment and the community,” It is a Triple Bottom Line (TBL) approach- a focus not just on the bottom line profits, but also on the planet or environmental issues and people [1]. Manufacturing organizations have to move beyond the debates and have to take action; they have to see business opportunities in addressing these environmental challenges. An approach to the organizations may be implementation of *Lean to Green to sustainable* manufacturing best practice programme in their organizations to lead excellence within their operations. Smart companies use environmental strategy to innovate, create value, and build competitive advantage [2].



Solid waste strategies: In Japan, it's "Minimize at source"; In Europe, it's "Producer responsibility"; In the U.S., it's "There's always more space [3].

Conclusion

Sustainable development can be achieved through optimizing gains from several variables of the manufacturing organization. Company Focus should be to involve everyone in the organization it causes easy innovation throughout the company and give the early stages of the sustainability movement. Everyone's contributions are needed almost everywhere. Everyone has something to add to make sustainability a reality.

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Environment Effect on Plant Life and Seed Germination/Dormancy

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Abstract

Plants have to deal with various type of interaction involving numerous environmental factors. There are two types of environmental factors which effect the plant growth and development. These are Biotic and Abiotic factors. Both biotic and abiotic factors are help in plant germination. All environmental factors like Water, Gases, Temperature, and Light are essential for germination. In plant generally a period of temporary arrest of active growth of a particular stage in the life span of plant is called "Dormancy". Dormancy is one of the main determinants of timing in the plant life cycle. Dormancy is regulated by genetic and environmental factors. There are much type of dormancy in plant like Seed Dormancy and Bud Dormancy. Seeds are important dispersal structural units of seed plant, which help the embryo to bear the favourable and unfavourable condition after vegetative phase. Dormancy in seeds is a type of ecological adaptation which helps the embryo to grow and emerge out under suitable conditions.

In most of the plants seeds are germinate on getting favourable conditions such a suitable humidity, light, air and temperature and form seedlings. The condition in which seeds can not germinate inspite of the availability of all the environmental factors need for germination is known as Seed Dormancy. A dormant seed does not have the capacity to germinate in a specified period of time under normal physical environmental factors that are otherwise favourable for its germination. There are two type of seed dormancy Embryo Dormancy and Coat Imposed Dormancy. The embryo dormancy is due to the presence of growth inhibitors especially at Absciscic acid (ABA), as well as the absence of growth promoters, such as Gibberellic Acid. The ratio of ABA and GA is important instead of the absolute concentrations. Probably the proportion of GA increase by stratification or external supply of GA and germination is induced. Gibberellin, Kiretin, Ethylene induced seed germination and the opposite effect of Absciscic Acid which is considered to be inhibitor of germination. Generally dormant seeds have high Absciscic Acid (ABA) concentration as compared to non dormant or germinating seeds. Dormancy imposed on the embryo by the seed coat is known as Coat Imposed Dormancy. Dormancy occurs due to internal factor or conditions of the seed. It is called Innate Dormancy also known as Primary Dormancy. According to 'Acer' dormancy is temporary suspension of growth regulated by internal factors and imposed by environmental factors in which metabolic reaction or process are minimised.

Primary or Innate Dormancy can be due to the following reason:-

1. Requirement of sufficient temperature
2. Specific light requirements
3. Seed coat or fruit pericarp (Due to the deposition and accumulation of Lignin, Wax, Fatty substances and other polysaccharides).
4. Combine effect of light and temperature
5. Due to the presence of germination inhibitors
6. Poorly developed embryo.
7. Impermeability to Water
8. Impermeability to Gases

Keywords : Environmental factors, Germination, Dormancy etc.

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Effect of Atmospheric Temperature Extremes on Protein Cells

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Abstract

The present study was conducted to determine the atmospheric temperature extremes and its impact on protein cells. For this purpose, daily average maximum and minimum temperature data of Jaipur for 30 years was collected from Indian Meteorological Department, Delhi. The temperature data were analyzed to determine the percentile values. Values less than the 10th and greater than the 90th percentile were extracted and counted for each day per year and repeated for each year over the three-decade period. Extreme temperature trend (in percentage) for occurrence of warm days indicates the maximum temperature is above 90th percentile value i.e. 40° C is increasing over the years at a steady rate while the percentage occurrence of cold days in which the maximum temperature is below 24°C i.e. 10th percentile value is decreasing during the three decades. The decadal occurrence of cold incantations significantly decreased while the annual occurrence of warm spells significantly increased. The increase in the warm days may be attributed to increase in greenhouse gases, radiations due to anthropogenic activities.

An intensive simultaneous increase in greenhouse gases leads to increase in temperature and hence affect the half life of the functional proteins in vivo. A similar effect has already been cited in rice

leaves' where levels of soluble protein decreased. This were the reason of poor appearance and processing of worsen quality of rice (Liu, 2017). Additionally, another case indicated the effect on rate of polypeptide elongation rate with shift in temperature from 28 to 42°C or from 37 to 42°C in vivo system (Farewell, 1998). With these results in hand, it becomes a concern in general the effect of global warming on the production and sustainability of agricultural crops.

Keywords: Maximum Temperature, Minimum Temperature, Percentile, Protein.

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Endemic Biodiversity and Strategies of Conservation in Rajasthan

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Abstract

Endemic biodiversity of a region is an important natural heritage of that region. India is among one of the megabiodiversity country in the world. The country also has enormous endemic biotic elements. Most of the Indian states have their own rarer ties specialities and endemics. Rajasthan is geographically the largest state with its uniqueness in having extensive desert, long chain of hills & mountains, perennial stream, dense forest, deep gorges, vast plateau and wet lands which make the state biologically rich. Despite of absence of strong physical and ecological barriers, Rajasthan has a number of floral and faunal endemism of species, sub –species and varietal level. Rajasthan has five important endemic species centres namely Mt. Abu , Aravallis (other than Mt. Abu), Thar desert , Hadoti region and Sambhar lake .There may be other possible endemic species centre .e.g. ,Jaisamand lake, one of the largest artificial fresh water lake in the Asia with many islands which are in isolation since a long periods. Deep and long gorges of Vindhya in the east of Aravallis also need proper attention and exploration.

Endemic species are facing serious threats by anthropogenic activities such as mining, road, dam and anicut construction, expansion of human habitation and agriculture, problem of invasive weeds, pollution, lack of awareness etc. Some endemic species have very restricted distribution e.g. *Selaginella rajasthanensis*, *Asplenium pumilus hymenophylloides*, *Riccia* species and endemic elements confined to upper reaches of Mt. Abu are sensitive to extinction. Approximately 50 plant species, sub-species and varieties, 40 animal species are exclusively endemic to Rajasthan. These species need attention of conservationists, forest official's biologists, naturalists, political and common people. Some suggestions are:

- Microclimate of "narrow distribution range species" should make undisturbed. These areas should be declared as "endemic species eco-sensitive zone".
- Intensive and extensive surveys, research documentation are needed to prepare a state data base of the species followed by periodic monitoring.
- University curriculum and research activities should emphasize conservation practices.
- Forest officials should make aware in making working and management plan. Construction work should be planned by taking proper safe guard of the species.

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Distribution Range of Various Species of Genus *Anogeissus* in Rajasthan

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Abstract:

The present paper is an attempt to explore and identify the distribution range of various species of genus-*Anogeissus* found in Rajasthan. Five species viz. *A. acuminata*, *A. latifolia*, *A. pendula*, *A. sericea* var. *sericea* and *A. sericea* var. *nummularia* have been found during extensive and intensive field visits. Results were summarized and concluded. Distribution range of *A. latifolia* and *A. sericea* var. *nummularia* were found to be almost same with 17 and 15 districts respectively. *A. acuminata* was found to occur in only 10 districts. *A. pendula* the most abundant one was more or less commonly seen in 27 districts of the state whereas *A. sericea* var. *sericea* the rarest one occurs only in 2 districts viz Sirohi and Udaipur.

Keywords: *Anogeissus*, Rajasthan, survey, distribution range

Introduction:

Rajasthan state is endowed with diverse physiographic feature. Amidst the floral diversity of Rajasthan, an important tree *Anogeissus* belonging to family Combretaceae is a highly valuable biomass producer of the stressed ecosystems of Aravalli range and the Indian desert [1]. *Anogeissus pendula* is main constituent of group 5/E1 forest i.e. Tropical Dry Deciduous forests and covers more than half of the total forest area in the state. These forests occur on a variety of rock formations. It is a dominant genus in various parts of Aravallis and Vindhyan hills. *Anogeissus* forests of the State are abode to various wild animals like Tiger, Panther, Spotted Deer, Sambhar, Fourhorned Antelope, etc., hence, deserves protection and conservation. Also, *Anogeissus* spp. has astonishing capacity to remain green even during very low rainfall. *Anogeissus* is ecologically, economically, ethnomedicinally and pharmacologically important. It yields high calorific value charcoal. Its tough wood is suitable for making handles of agricultural equipment. Tribals and rural people use the tree for timber, fuel, fodder, food and medicines.

Previous studies have revealed that scanty information is available regarding documentation distribution pattern of *Anogeissus* species in Rajasthan. Also, it has been observed that most of the previous field-based botanical explorations were restricted only to certain selected areas in the state since collections were carried out only in the vicinity of the major botanical institutes/universities. Scanning of various available literature [2,3,4,5,6] reveals that not much emphasis has been given to *Anogeissus* genus. Due to lack of worthy literature the present research work was carried out to explore the distribution pattern of five species of the genus in Rajasthan.

Experimental:

To achieve the objectives of the present work, intensive and extensive botanical exploration tours were conducted in the area for better understanding of flora with special reference to different species of *Anogeissus*. Exploration trips were done periodically and data were recorded. Field trips were arranged in such a way that it covers different localities distantly. Surveys were conducted in all the three seasons (summer, winter & monsoon). In addition to the quantification, listing of plant species as part of inventorization of each selected grids was also done. Herbarium sheets were prepared at camp sites and were later identified by plant taxonomists. Plant identification was also done with the help of the local and state floras and books. To study distribution pattern of different species of *Anogeissus* criss-cross trekking were

done. Both vertical and horizontal trekkings were carried out to reveal growth patterns of the species at different elevations.

Result and Discussion:

Figure-1 reveals that *A. pendula* shows highest range with maximum distribution as it is found in 27 districts of Rajasthan. Distribution range of *A. latifolia* and *A. sericea* var. *nummularia* are almost same found in 17 and 15 districts respectively. *A. acuminata* and *A. sericea* var. *sericea* are found only in 10 and 2 districts respectively. *A. sericea* var. *sericea* was found limited only to two districts i.e. Sirohi and Udaipur. Results may be defined in the following sequence of their occupancy in different districts of Rajasthan $AP > AL > ASN > AA > ASS$. Survey results of the present study suggested that *A. acuminata* was found on the plains of Thar desert (Western edge) and foothills of the Aravallis and east of Aravallis, while *A. pendula* was found as a slow growing species which thriving on hot, dry slopes and rocky soil area of Aravalli. *A. sericea* var. *sericea* was found as a rare species in southern area of Rajasthan. Another variety of *A. sericea* known as *A. sericea* var. *nummularia* was also found as rare and endemic plant for Rajasthan has more wider range than variety *sericea*.

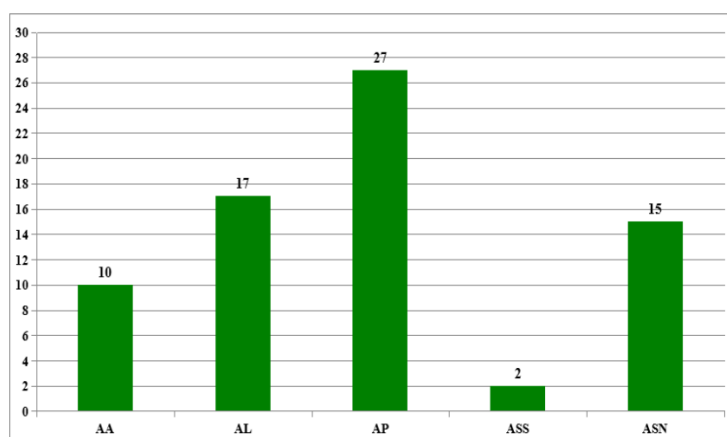


Figure-1: Number of districts of Rajasthan where different species of *Anogeissus* found in present study

(AA: *Anogeissus acuminata*; AL: *Anogeissus latifolia*; AP: *Anogeissus pendula*; ASS: *Anogeissus sericea* var. *sericea*; ASN: *Anogeissus sericea* var. *nummularia*)

Conclusion:

A. sericea var. *sericea* having smallest distribution range in Rajasthan so utmost care should be taken to protect growing trees of this species in the state. Though *A. sericea* var. *nummularia* was

found in 15 districts but its number is very less. So being a rare and endemic plant of Rajasthan, it also deserves attention. Moreover, Forest Department should raise seeding of these species in departmental nurseries and they should be planted in forest areas to ensure a good population in the state.

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Silicosis Causing New Threat to Human Health and Living Organism (Plants and Animals) of Surrounding Area of Industries

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Abstract

Silicosis is an emerging disease that is caused by the fine dust particles in stone industries. Looking at the life threatening par of Silicosis, it has been termed as "King of Death" by scholars. Several studies have been conducted at national and international level to highlights various facet of this disease. However, there are some area which are unnoticed by the researchers. The area of the present study has also been unable in drawing the proper attention of government towards the vulnerable of Silicosis. There are more than hundred stone crafting industries on N.H.11 based on this red stone, between Mehandipur Balaji and Dausa District (in the span of almost 50 K.M.), where hundreds of workers are engaged in cutting and shaping of that stone for various purpose like construction of houses and statues. Stone based items of this area are supplied to every part of the nation. The workers in these industries are basically from

nearby villages and fall in to semi skilled and unskilled category. The workers associated with these industries are severely suffered from various lung diseases and respiratory tract infection. Silicosis is a fibrotic lung disease caused by inhalation of free crystalline silicon dioxide or silica. Occupational exposure to repairable crystalline silica dust particles occurs in many industries the most important factor in the development of silicosis.

Keywords: silicosis, deaths, health impact.



Health and Environmental Hygiene in India: Issues for Prioritizing Control Strategies

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Abstract

Environmental sanitation is a major public health issue in India. Recent interventional studies on environmental sanitation in India highlighted the importance of prioritizing control strategies. Research related to the appropriate cost-effective intervention strategies and their implementation in Indian context is a big challenge. This paper discusses various intervention strategies related to environmental sanitation in India and emphasizes to prioritize it according to the need of country. It depends on various factors that include hygiene status of the people, types of resources available, innovative and appropriate technologies according to the requirement of the community, socioeconomic development of the country, cultural factors related to environmental sanitation, political commitment, capacity building of the concerned sectors, social factors including behavioral pattern of the community, legislative measures adopted, and others. India is still lagging far behind many countries in the field of environmental sanitation. It has been highlighted to include better household water quality management to complement the continuing expansion of coverage and upgrading of services would appear to be a cost-effective health intervention in many developing countries.

Providing private excreta disposal would be expected to reduce diarrhea by 42%, while eliminating excreta around the house would lead to a 30% reduction in diarrhea. The findings suggest that improvements in both water supply and sanitation are necessary if infant health in developing countries is to be improved. They also imply that it is not epidemiologic but behavioral, institutional, and economic factors that should correctly determine the priority of

interventions. Implementation of low-cost sanitation system with lower subsidies, greater household involvement, range of technology choices, options for sanitary complexes for women, rural drainage systems, IEC and awareness building, involvement of NGOs and local groups, availability of finance, human resource development, and emphasis on school sanitation are the important areas to be considered. Also appropriate forms of private participation and public private partnerships, evolution of a sound sector policy in Indian context, and emphasis on sustainability with political commitment are prerequisites to bring the change.

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Quantitative assessment of genomic DNA isolated from different populations of *Commiphorawightii* (Arnott.) Bhandari, in Rajasthan

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Abstract

Commiphorawightii commonly known as “Guggal” is found in arid and semi-arid regions including the deserts of India, Africa and Pakistan. The present study was aimed to investigate the quantity as well of quality of genomic DNA extracted from the different wild populations present in the state of Rajasthan. Samples were collected from different eco climatic region in the state. An optimized protocol was used for the extraction of genomic DNA of the species, owing to the high content of polysaccharides and phenols present in it. The use of 3M NaCl proved to be especially beneficial during the extraction process and helped yield pure and high quality DNA samples that were verifies through the ISSR profiles generated and were deemed fit for research downstream. The study also revealed that diverse edaphic and climatic conditions have had no major effect on the quantity and quality of genomic DNA of *C.wightii*.

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Immunotherapy for the Treatment of Cancer: A Step Ahead

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Abstract

In the recent era of scientific advancements, high-pace research is going on to find complete treatment against disease like cancer. Evolution in the treatment protocols has been great till now. Now comes the era of cancer immunotherapy which is turning as a potential treatment against cancer. In this review, we will discuss about some recent immunotherapeutic approaches that are being used, like Sipuleucel-T, T-cell-Immunoglobulin and Mucin 3 (TIM-3), and many more. Also, a closer look at the side effects of other forms of treatments.

Keywords: Cancer, Immunotherapy, Sipuleucel-T, TIM-3

Cancer Immunotherapy

Over the past few decades, there has been extensive research to find out the relationship between cancer and immunity. ^[1] And recently, there are reports which suggest the emergence of immunotherapy as a potential treatment against cancer. ^[2] In simple words, cancer immunotherapy utilizes the power and mechanism of action of immune system to act against the cancer cells. ^[3] Despite the fact, that pathogens are more immunogenic than cancer cells, immune system is still capable of recognizing and eliminating them from the body to a great extent. ^[3] Although, cancer cells somewhat manages to escape immune recognition and hence successfully develops multiple resistance mechanism with immune evasion, induction of tolerance, and systemic disruption of T cell signalling. ^[4] In spite of clinical failures and disappointing attempts, during last few years, cancer immunotherapy has received a significant uplift in order to change the scenario. Early attempts were made to focus on cancer immunosurveillance to make immune system capable of recognizing transformed cells to inhibit the growth of neoplastic cells. ^[5] Immunoediting, being the first step in immunosurveillance, is based on three major phases. First, elimination phase: activation of innate and adaptive immune response that eliminates tumor cells, second, equilibrium phase: survival of sporadic tumor cells that trigger immunoediting, and third, escape phase: establishment of low-immunogenic tumors, and an immunosuppressive microenvironment. ^[6] For existing cancers, immunotherapeutic approaches ranges from stimulating the host's immune system to counteracting all the inhibitory and suppressive mechanisms, for example, omitting the task of breaking tolerance to tumor antigens in case of Adoptive Cellular Therapy.

^[5]Until now, the most successful immunotherapeutic approach according to clinical perspective is the blockage of immune checkpoint pathways such that to reactivate an antitumor response. ^[7]Sipuleucel-T for the treatment of prostate cancer gained FDA approval in 2010 ^[8] and the anti-cytotoxic T-lymphocyte associated protein -4 (anti-CTLA-4) antibody (ipilimumab) and of anti-programmed cell death protein 1 (anti-PD-1) antibodies for the treatment of melanoma, gained FDA approval in 2011 and 2014, respectively. ^[9] However, evidence suggests that some patients do not respond to immune checkpoints therapy very well. Various latest attempts include molecules associated with either inhibition or exhaustion of T cell activity, such as Lymphocyte-Activation gene 3 (LAG-3) or T-cell-Immunoglobulin and Mucin 3 (TIM-3), or effector functions of T cells and other immune cells, such as members of the Tumor Necrosis Receptor (TNFR) Superfamily. ^[7] Blocking antibodies that directly targets LAG-3 or TIM-3 as single agents or given in combination with other immunotherapies have shown favourable results in preclinical models of cancer. ^[10] Cancer Immunotherapies, as a matter of fact has already entered the armamentarium and this review is description of all the recent advancements, technologies and strategies need to be developed that effectively augment anti-tumor response.

GIST

GIST is biologically uncommon tumour of gastrointestinal tract. ^[11] They start in the special cells of gastrointestinal tract, called Interstitial Cells of Cajal, related to Autonomous Nervous System. Most of the times, they develop in stomach and relatively lesser times in small intestine. GISTs are different from other tumours of Gastrointestinal Tract. ^[12] Age is considered as a major risk factor in the cases of GIST. Apart from this, certain genetic changes are sporadic (non-inherited) with no apparent reason. KIT gene and PGDFRA gene abnormality tends to develop GIST. PGDFRA abnormality is present in 5% to 10% of all the cases. ^[12] Surgical resection remains primary treatment procedure in cases of small as well as large tumours. ^[13] It works well in nine out of 10 cases and keeps disease under controlled condition for about 2 years. ^[13] Recent advancements suggest effective results out of target therapies like Imatinib, Sunitinib, Regorafenib, given as first line, second line and third line target therapies respectively. ^[11] There side effects include diarrhoea, muscle pain, rashes, change in skin and hair colour, hair loss, and hand-foot syndrome. Target therapies work by shrinking the tumour and slow down the growth rate of tumour, and hence, giving a good survival rate. ^[14, 15]

Ovarian Carcinoma

Ovarian cancer, the most lethal malignancy of the female reproductive system, results in 114,000 worldwide deaths, annually. ^[16] Ovarian cancer begins in the ovaries, the reproductive glands found in females. Mostly, such tumours are benign and never spread beyond ovaries. ^[17]

Greater than 90% of ovarian cancers arise from the surface epithelium.^[18] They are also associated with inherited genetic mutations in the BRCA1^[19] and BRCA2^[20] genes. Surgical resection in advanced disease involves cytoreduction rather than complete surgical resection.^[21] Poly(adenosine diphosphate [ADP]–ribose) Polymerase (PARP) inhibitors are targeted therapies given to patients with or without BRCA1 and BRCA2 mutations.^[22] Olaparib is a potent oral PARP inhibitor that shows anti-tumour activity in Ovarian Cancers.^[23] Other PARP inhibiting drugs are Rucaparib and Niraparib.

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Promising Nanomedicine against Human Pathogenic Bacteria

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Abstract

Biosynthesis of silver nanoparticles (AgNPs) using plant extract is a cheap, easy and natural process in which the phyto-constituents of the plants act as capping, reducing and stabilizing agent. In present study, AgNPs were synthesized using aqueous leaf extract of *Tinospora cordifolia* and characterized by using various techniques such as FTIR, SEM, TEM, EDX and XRD. TEM confirmed the size (25-50 nm) and spherical morphology of synthesized AgNPs. Further, Antimicrobial activity of AgNPs was evaluated against various human pathogenic bacteria. Results of these tests confirmed that AgNPs, were highly toxic against test strains.

Keywords: *Tinospora cordifolia*, Antimicrobial, Pathogenic bacteria



Amyloid Formation Monitoring In Peptides Using Fluorescamine

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Abstract

Various neuro-generative disorders such as Alzheimer's Disease, Parkinson's Disease etc. have one common feature: formation of aggregates such as amyloid plaques, neurofibrillary tangles or lewy bodies. All these structures are β -sheet rich conformations. Various dyes are used such as Th-T, Congo red and ANS dye etc. to study fibril formation. Here, we have used fluorescamine dye to detect the same.

Keywords: Amyloids, fibrils, Alzheimer disease, Fluorescamine

Introduction

Aggregation of various proteins and peptides such as tau and $A\beta_{42}$ in AD and α -Synuclein in PD is strongly associated correlated with disease progression. Recently, cryo-EM structure of tau and α -Synuclein has been found and which gives new hope to study amyloid fibril structure at a molecular

level. It is indeed to study amyloid fibril formation mechanism such as primary nucleation, secondary nucleation, fragmentation mechanism etc. using various biophysical techniques. Several amyloidogenic peptides such as VQIVYK and NAC Peptide (71-82 region) of α -Synuclein have been used as a model peptide to study overall disease progression. These peptides are used in very low concentration and hence very difficult to measure their working concentrations using conventional methods such as BCA, Lowry assay or using absorbance. Here, we have used fluorescamine to determine concentration of peptide and also to monitor aggregation kinetics of peptides. Fluorescamine itself is non-fluorescent but when it reacts with primary amino groups of peptides, it gives fluorescent product which is recorded by a fluorimeter or micro plate-reader. A comparison with ThT assay reveals that fluorescamine dye gives us a different perspective of mechanism of amyloid fibril formation.

Result and Discussion

The characterization of synthesized peptides was done by Mass spectrometry. Concentrations of above peptide was monitored using different concentrations of fluorescamine and from these experiments, 250 μ M and 500 μ M were found to be the optimum concentration. These concentrations have been further used to monitor aggregation kinetics of Ac-VQIVYK. Initially, high fluorescence of fluorescamine was observed as all amino residue sites were available for binding. As aggregation progresses, amino residues of lysines were not available for binding which resulted in a decrease in fluorescence.

Experimental

Various peptides have been synthesized by Fmoc based solid phase peptide synthesis chemistry. Amyloid fibril kinetics has been monitored by Thioflavin-T assay and Fluorescamine Assay.

Conclusion

Lysine residue was found to be buried inside the amyloid fibril and shows decrease in fluorescence as it was not available for binding.

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Basics of Artificial Neural Network

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Abstract

An Artificial Neural Network (ANN) is an information processing paradigm that is inspired by the biological nervous systems, such as the brain, which process information. The key element of this paradigm is the novel structure of the information processing system. It is composed of a large number of highly interconnected processing elements (neurons) working together to solve specific problems. Artificial Neural Network was used in following Application Areas:- **Handwriting Recognition**, Image Compression, Stock Exchange Predictions etc.

Keywords : ANN(Artificial Neural Network), Neurons, pattern recognition.

Introduction:

The study of the human brain is thousands of years old. With the advent of modern electronics, it was only natural to try to discover this thinking process. The first step toward artificial neural networks came in 1943 when Warren McCulloch and Walter Pitts, wrote a paper on how neurons might work. They modeled a simple neural network with electrical circuits. Neural networks, with their remarkable ability to get meaning from complicated or imprecise data, can be used to extract patterns and detect trends that are too complex to be noticed by either humans or other computer techniques. A trained neural network can be thought of as an "expert" in the category of information it has been given to analyse.

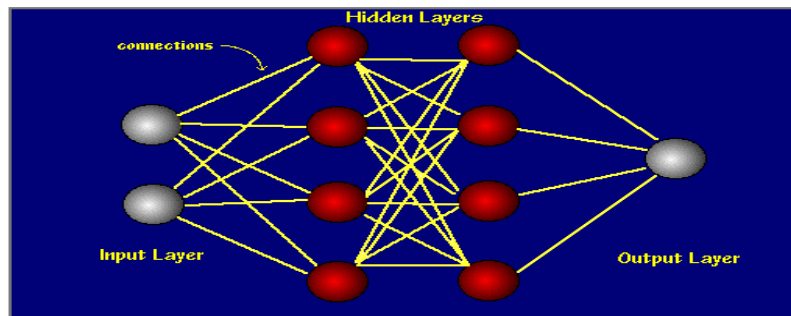
Neural networks take a different approach to problem solving than that of conventional computers. Conventional computers use an algorithmic approach i.e. the computer follows a set of instructions in order to solve a problem. Unless the specific steps that the computer needs to follow are known the computer cannot solve the problem. Neural networks process information in a similar way the human brain does. The network is composed of a large number of highly interconnected processing elements (neurons) working in parallel to solve a specific problem. Neural networks learn by example. They cannot be programmed to perform a specific task. The examples must be selected carefully otherwise useful time is wasted or even worse the network might be functioning incorrectly. The disadvantage is that because the network finds out how to solve the problem by itself, its operation can be unpredictable.

Other advantages of Artificial Neural Network include:

1. Adaptive learning: An ability to learn how to do tasks based on the data given for training or initial experience.
2. Self-Organization: An ANN can create its own organization or representation of the information it receives during learning time.
3. Real Time Operation: ANN computations may be carried out in parallel, and special hardware devices are being designed and manufactured which take advantages of this capability.

Working of Artificial Neural Network.

- ✓ Neural networks are typically organized in layers.
- ✓ Layers are made up of a number of interconnected 'nodes' which contain an 'activation function'.
- ✓ Patterns are presented to the network via the 'input layer', which communicates to one or more 'hidden layers' where the actual processing is done via a system of weighted 'connections'.
- ✓ The hidden layers then link to an 'output layer' where the answer is output as shown in the graphic.



Result and Discussion:

ANN is implemented with self-edited program using the Neural-Network-Toolbox in MATLAB 7.0. The artificial neural network is a multi-layered multi level forward feed network for the weight training of non-linear differentiable functions. Artificial neural network describe shape level and texture level descriptors. Shape level descriptors contain 6 inputs and 2 outputs forming a combination of [6, 2] layer with no hidden layers in it. Texture level contain 128

features as input neurons, and 2 outputs neurons and 2 hidden layers with [40, 10] neurons. Shape and texture features are very much important in classifying a TB-patient or a NON-TB Patient. Hence a dominant priority or weight age has to be placed on shape and texture analysis. In the proposed case, reserving a weightage value of 0.6 is acceptable. On the other way round sputum (smear negative pulmonary tuberculosis) weightage is also prolonged simultaneously along with the shape and texture analysis weightage which results in five zones of TB levels to classify ranging from 1 to 5 which are shown in below table.

Level no	TB Severity	Range
1	high	≥ 0.75
2	middle	0.5-0.75
3 and 4	low	0.25-0.5
5	none	< 0.25

For the severity check in medical terms a table has been given. That table is related with the Table technically. Sputum smear microscopy as a test for TB Figure 1.

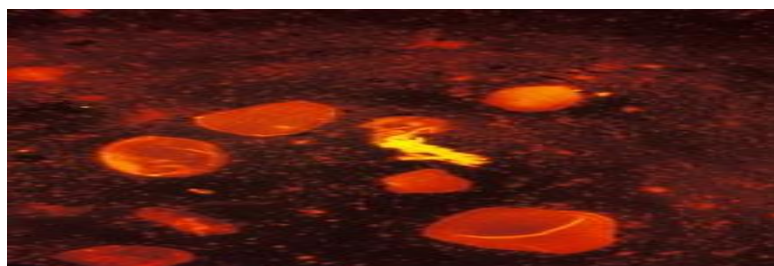


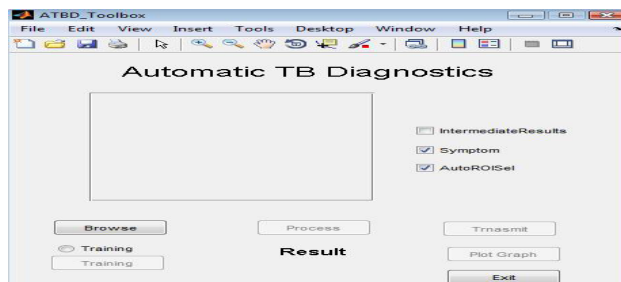
Figure1- A sputum smear stained using fluorescent acid fast stain.

Smear microscopy of sputum is often the first TB test to be used in countries with a high rate of TB infection. Sputum is a thick fluid that is produced in the lungs and the airways leading to the lungs, and a sample of sputum is usually collected by the person coughing. For the diagnosis of TB several samples of sputum will normally be collected. Historically it has been recommended that three sputum specimens are collected on two consecutive days, but in 2007 the World Health Organisation (WHO) recommended that just two specimens could be examined from consecutive days. Now it has been suggested that two specimens can be collected on the same day without any loss of accuracy.

Experimental:

The testing process involves in all the methods that co-relates the training model. However there are aspects which vary i.e., testing always involves in comparison of the images with trained images. Initially in the process, the image is read which are followed by all the prior operations that are involved in the training. Then the features are stored which will be used for the comparison of the images in the dataset. The selected features are used for classification which is part of the testing process. For classification of samples, the ANN, a MATLAB based Machine Learning package is employed.

Design of Graphical user interface (GUI) A GUI has been designed for the user sake i.e., for the display of the result. Figure given below shows the designed GUI where the information about result such as severity, intermediate results, graphs etc are available. A GUI program is a graphical based approach to execute the program in a more user friendly way. It contains components such as push buttons, text boxes, radio buttons, pop-up menus, slider etc. with proper labels for easy understanding to a less experienced user. These components help the user to easily understand how to execute or what to do to execute the program.



In the present work, the GUI which has been designed has a radiobutton, six push buttons, 3 check boxes and a space for the result and images. Initially the radio button is enabled to start the training. When the training button is pressed, training of the neural network starts with PTB and Non TB images. Once the training is over, then browse push button becomes active by pressing which selects the unknown X-ray image. Always the check boxes ROI and sputum will be kept marked (active). Another check box for intermediate results is given which is an optional button. The results of the enhancement, segmentation, compression stages are displayed if the check box intermediate results are kept active.

Conclusion:

In this paper we discussed about the Artificial neural network, working of ANN. Also training phases of an ANN. There are various advantages of ANN over conventional approaches. Depending on the nature of the application and the strength of the internal data patterns you can generally expect a network to train quite well. This applies to problems where the relationships may be quite

dynamic or non-linear. ANNs provide an analytical alternative to conventional techniques which are often limited by strict assumptions of normality, linearity, variable independence etc. Because an ANN can capture many kinds of relationships it allows the user to quickly and relatively easily model phenomena which otherwise.

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Exhaust Gases: A Cause of Environmental Damage

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Abstract

Exhaust gases are emitted by combustion of fuels by motor vehicles. The causes and impacts of exhaust gases on environment and human health are discussed in this article. It is necessary to solve the problem of the impact of exhaust emission from road transport on public health.

Keywords: Exhaust, Combustion, Emission

Introduction

The combustion of fuels such as gasoline, diesel etc. are responsible for emission of exhaust gases. Exhaust gases are ranked as the main cause of death and cardiac arrest [1,2]. The exhaust gases are composed of nitrogen, carbon dioxide, hydrocarbons. As the combustion process is accomplished, power is produced to move the vehicle while the heat of combustion is transferred to the cooling system. So the cooling system is an important factor in the reduction of particulate matter, the cooling system must be maintained in the same manner as the engine oiling system.

Impact on Environment:

Exhaust gases directly affect the respiratory, nervous and cardiovascular systems in humans. Exhaust gases are also responsible for long-term diseases such as asthma, allergies, cancer. Exhaust from all combustion engines combine to produce local adverse effects on the health. Body organ and system

Conclusions:

To reduce the effects from exhaust emissions and control the Toxicity of exhaust gases. Green alternatives and modern gas analysers required it is necessary for public health.

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PM_{2.5} and Lung Cancer

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Abstract

The need of fresh air is very much essential for a good and healthy life. Ongoing research is indicating that exposure to polluted air is imposing many adverse side effects on health all over world. In the air, a heterogeneous blend of liquid droplets and solid particles is particulate matter (PM_{2.5} and PM₁₀) that is one of the most common factors in air pollution. PM_{2.5} (particle size lesser than 2.5 μm) constitutes different ions like SO_4^{2-} , O_3^- , Cl^- , and NH_4^+ , metals, organic and elemental forms of carbons that are formed by various chemical reactions occurring in the environment. Exposure to PM_{2.5} is associated not only with various respiratory diseases but it is also the reason behind the high mortality caused by cardiovascular problems. Additionally, PM_{2.5} is categorized as group I carcinogen by International Agency for Research on Cancer (IARC) because its long-term exposure was found to be associated with the incidences of lung cancer. Lung cancer is the primary cause of death related to cancer, and also the most commonly occurring cancer in both males and females (GLOBOCON 2018). PM can affect lungs through different possible

mechanisms like free radical generation, oxidative stress, DNA damage, proinflammatory factor induction and oxidative stress.

Keywords: PM_{2.5}, Air Pollution, Lung Cancer.

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Green approach for synthesis of indole derivatives and antibacterial activity against drug resistant bacteria

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Abstract :

Antibiotic resistance appears as a critical worldwide problem. Specifically, methicillin resistant *S. aureus* (MRSA) is a major community-acquired gram positive bacteria cause's skin and soft tissue infection and respiratory disease like pneumonia and endocarditis. Specifically, methicillin resistant *S. aureus* (MRSA) is a major community-acquired gram positive bacteria cause's skin and soft tissue infection and respiratory disease like pneumonia and endocarditis. During the progression of our efforts to develop novel antimicrobial agents, we have discovered a new class of 5-(5-methyl-2-phenyl-4-((2-phenyl-1H-indol-3-yl)methylene)-2,4-dihydro-3H-pyrazol-3-ylidene)-2-thioxodihydropyrimidine-4,6(1H,5H)-diones, the newly synthesized compounds were screened for their in vitro antimicrobial activities against Gram-positive bacteria and Gram-negative bacteria. Some of them have shown promising antibacterial activity against multidrug resistance gram positive ATCC Cultures *S. aureus* MRSA (ATCC 4330), which exhibited potent anti-MRSA activities.

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Environmental Hygiene: Concept and Latest Advancements

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Abstract

‘Environmental Hygiene’ is the subject which is needed to be concerned deeply specifically while thinking of today’s depleted environment. Environmental hygiene is related to improving the environmental conditions which affect human health. This research work is an attempt to provide a basic intuition about the term ‘Environmental Hygiene’ and then going through the scope of the term, so to realize its importance. Maintaining hygiene is very essential to achieve the goal of sustainable development. Air is the most important part of the environment as we inhale air while each breathe that’s why quality tracking of the air in our locality has been done to have an idea of the level of the hazards. Further, the research also discovers the recent advancements those should be in the common conscience. As a student, or a researcher, or a homely person we should be aware of these. One of such recent advancements is the invention of a thin film by Massachusetts Institute of Technology’s engineers which can reject incoming solar heat up to 70 percent and it is also highly transparent below 32° Celsius, so the film can be used to coat windows and save on air-conditioning costs which may be really helpful in maintaining a good level of environmental hygiene. There are more many interesting and useful researches those have been confronted recently. The research work also motivates the readers and listeners to be highly aware of the latest advancements in the field for general aim of sustainable development.

Novelty of the Research: Though there are plenty of researches being continued and have been completed on the topic ‘Environmental Hygiene’ but the unique case study of the locality as well as covering the most recent discoveries and inventions combatively aimed for general awareness make it one of its own kind.

Keywords: Environmental Hygiene, Sustainable Development, Latest Advancements.



A Sustainable Approach in Biocontrol of Plant Pathogenic Fungi Using Environment Friendly Plant Extracts: a Study *In-Vitro*

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Abstract

India is the second richest country in terms of genetic diversity of ‘Baans’ covering a good percent of forest area of the country. It is an important Agro-forestry species in India. But due to infections by bacteria and fungi, these plantations are suffering a major threat and prone to different diseases resulting in distortions and even death in some cases if left untreated. The current study was intended to isolate and identify the fungal pathogens causing diseases in Baans. Four fungal pathogens were isolated and tested for antifungal potential using plant based botanicals. The study reveals potential of these environmentally friendly phytochemicals for effective management of fungal diseases in ‘Baans’ in a sustainable manner, without harming the environment.

Key words: Baans, Fungal diseases, Botanicals and Sustainable Management

Introduction

‘Baans’ are a group of giant grasses with extensive application in food, fodder, fuel, furniture, handicrafts, paper, constructions, bioremediation and medical fields. India ranks second in genetic varieties of it globally making it a vital Agro-forestry species in India. But it is prone to infections by pests and Fungi [1, 2] which may lead to its death and huge economic loss. Moreover indiscriminate use of chemical pesticides and fungicides has resulted in degradation of environment and human as well as animal and plant health too. Even the soil fertility and soil microbes have also been disturbed severely. Keeping in view the reducing potential of ‘Baans’ due to influence of threatening fungal diseases and pests, there is an urgent need to develop a sustainable environmentally friendly approach for disease control.

Fungal diseases leaf spot, leaf rust, leaf rots and leaf blight abate the rate of growth and the quality of Baans shoots as the shoots development depends on the health status of mother clump-rhizome and leaf canopy. To achieve the optimal production these pathogenic fungi limiting its cultivation must be identified and initiatives for its control should be made. Many Biocontrol agents have been developed using microbes as plant based formulations to serve the

purpose [3]. Plant extracts have already been in use in folklore medicines to treat human diseases but fewer studies have been conducted to test their effect against plants diseases caused by Fungi. Thus the current study was done to isolate and identify pathogenic fungi that infect ‘Baans’ leaves and stem (based on morphological approaches) and investigate the antifungal efficacy of plant extracts as an alternative to synthetic fungicides in controlling mycelium growth of the isolated pathogenic fungi.

Result and Discussion

Four fungal pathogens (*Fusarium* spp., *Puccinia* spp., *Alternaria* spp. and *Penicillium* spp.) causing many diseases have been isolated and identified from the infected field samples (Figure 1). Further antifungal efficacy of some plant extracts was also determined using poisoned food technique [4]. Most of these fungal isolates were found susceptible to ethanolic leaf extracts of *Aak* and *Saptarni*. The preliminary phytochemical analysis reveals the presence of Alkaloids, Phenolics and Tannins in all the plant extracts while Flavonoids, Steroids, Terpenoids and Saponins in *Aak* plant extracts.

The results suggest that these plants possess certain phytochemicals toxic to the microbial pathogens thus serving as a protective barrier against invasion by different microbial pathogens. The present study thus suggests the use of natural phytochemicals as potent antimicrobial agents against phytopathogenic fungi. Direct spray applications of various extracts of biologically effective plant products like leaves and stem specially for the control of leaf-borne fungi on the field. It is recommended that field trial should be performed to ascertain the effects of environmental factors on the efficacy of botanical extracts before they are recommended to the farmers. Further studies are needed to determine the chemical identity of the bioactive compounds responsible for the observed antifungal activity.

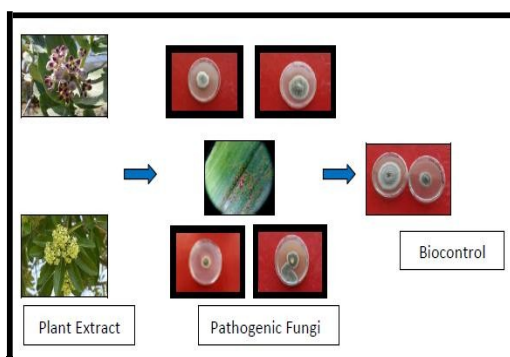


Figure 1: Evaluation of plant extracts for Biocontrol of plant pathogenic fungi

Experimental

Diseased samples of blight, spots, rust and rot were collected from field plantations, brought to the laboratory in separate polythene bags and stored in a refrigerator till isolation of the causal organism. It was followed by isolation and identification of causal organisms from the disease specimens. Further the aqueous and alcoholic plant part extracts were prepared for evaluation of antifungal efficacy of plant extracts by poisoned food technique [4]. The preliminary phytochemical analysis was done for Alkaloids, Glycosides, Flavonoids, phenolics, Steroids, Saponins and tannins.

Conclusion

The present study thus justifies the use of Botanicals to develop as sustainable environmental friendly Biocontrol agents for fungal disease control and management strategy to prevent invasion into new areas.

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A Birds Eye View on Ethnobotanical Studies of Important Edible Plants of Rajasthan

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Abstract

The science of Ethnobotany came into existence when the ancient man observed the animals mostly the apes and monkeys eating certain plants often to satisfy their greed and at times to heal their wounds to get rid from pain and sufferings. On the basis of uses of plants first by animals and later by human beings the concept of ethnozoology and ethnobotany emerged to give birth to ethnobiology. Food has various roles depending on the ailment products. The food through several activities, conscious or unconconscious, produces a major significance, there is an inculturation and socialization through their components. The study of such wild edible plants is important not only to identify the potent sources which could be utilized as alternative food or in times of scarcity but to select promising types for domestication.

Recently the role of Ethnobotanical studies in trapping the old traditional knowledge as well as in searching new plant sources of food is playing a major role in the current scenario. The indigenous tribals inhabiting the forests are consuming a great number of wild plants which are unknown and inaccessible to urban elite class. Numerous food and non food crops have been adopted by the tribals in their agriculture, however many of them depend on the rain crops like kharif for their survival, there being a lesser dependence on the winter crop like Rabi.

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Vascular Differentiation and Transition in the Seedling of *Nyctanthus arbortristis*

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Abstract

Primary tissue differentiation in two days old seedling of *N. arbortristis* of Oleaceae family studied here. In the root of *N. arbortristis* protophloem and protoxylem elements are differentiating. The Root is tetrarch with four xylem alternating with four phloem groups. Endodermis and pericycle are well established. Hypocotyl region indicates end of the the root region. It is represented by four collateral vascular bundles each with a phloem arch. In hypocotyl region the node is unilacunar double trace type.

Keywords: seedling, hypocotyls, node, root

Material and Method

For the study of seedling anatomy seeds were germinated in petriplates with moist blotters. Two days old seedling were collected from the seeds and preserved in 70% alcohol and dehydrated through TBA serie sand embedded in paraffin wax .Serial transverse sections cut at 8-12 micron and affixed to the slides with haupts adhesive.

Introduction

Seedling morphology is the busiest phase in a plant's lifetime. The nature of the transition region played an important part in morphological interpretation of angiosperm structure. In the transition region of the seedling allows for the Continuity of conductive tissues between root and shoot While the pattern of transition are of anatomical interest because they usually involve a gradual change from protostele to eustele. According to Mauseth (1988) the interface between the root and shoot in the seedling has been a problem because the primary tissues of the two organs are arranged differently. The area where this happens is called the transition region and is usually encompasses all or parts of the hypocotyls. Pillai and Sharma (1984) observed 2 days old seedling of *Acacia* species which showed tetrarch root and phloem differentiated at lower level than Xylem. The root hypocotyls vasculature diverges entirely to the Cotyledons.

Result and Discussion

Primary tissue differentiation in two days old seedling showed appearance of protophloem followed by protoxylem elements at alternate position. Pericycle is single layered and parenchymatous type. Grassley (1932) in *Raphanus* and Winter (1940) also made the similar observations. Marsden and Bailey (1955) described the unilacunar double trace to be most primitive in cotyledonary nodes.



Antibacterial studies of mixed ligand complexes of Mn (III) with 2-hydroxyacetophenone

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Abstract

Mixed ligand complexes have taken a wide place in coordination chemistry and have important role in development of inorganic chemistry, biochemistry and environment chemistry. Here, mixed ligand complexes of Mn(III) of the type $[Mn(L)_2(L')]$, (where L=2-hydroxyacetophenone and L'=5-nitrosalicylaldehyde or salicylaldehyde) have been synthesized in 1:2:1 molar ratios by maintaining the pH of the reaction mixture. The mode of bonding and geometry were determined through physicochemical and spectroscopic methods (IR, FAB mass spectra). Electronic spectra of the complexes show intra-ligand, charge transfer and d-d transition respectively. The electrical conductance studies of the complexes in DMF at 10^{-3} M concentration indicate their non-electrolytic nature. Antibacterial activity of ligands and metal complexes was performed against gram positive bacterial strain *Staphylococcus aureus* and gram negative bacteria *Escherichia coli*. Octahedral geometry has been proposed for the prepared mixed ligand complexes.

Keywords: mixed ligand complexes, 2-hydroxyacetophenone, FAB mass spectra, antibacterial activity



Graphene Nanomaterials: Opening path to a sustainable future

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Abstract

Graphene-based materials are gaining heightened attention as novel materials for environmental applications. The unique physicochemical properties of graphene, notably its exceptionally high surface area, electron mobility, thermal conductivity, and mechanical strength, can lead to novel or improved technologies to address the pressing global environmental challenges. The most

promising areas of research utilize the exceptional properties of graphene in environmental, biomedical, catalytic applications for the sustainable development and growth of our future in terms of technology..

Keywords: Graphene, technology, nano-materials, catalytic, sustainability

Introduction

Now a days, climate change is mainly exacerbated by inefficient energy and environmental technologies and thus affecting our security, health and quality of life. Despite nanotechnology is not tied exclusively to sustainable technologies of energy and environment, it could help us to develop techniques (such as nanocoatings, nanostructured catalysts, nanomembranes and so on) to access and use energy sources much more efficiently, effectively and environment-friendly. Carbon is one vital element as important for nanotechnology as silicon is for electronics. And certainly graphene can be engineered with a wide range of properties and in a variety of forms that make them important materials for current and emerging energy and environmental technologies. Practical strategies used for a sustainable energy and environment can be described as - gradually reduce the consumption of fossil fuels and to effectively improve the efficiency, efficiently control the negative environmental impacts caused by the consumption of fossil fuels energetically develop renewable energy sources and technologies. For all the cases, catalysis will play a vital role because there are many potential advantages by using grapheme as catalyst supports or catalysts in comparison to other materials (e.g., metal oxides), shown as better pore structure, more uniform characteristics, better electron and heat transport, better mobility of surface species and electronic coupling between active sites etc. Although some of these aspects maybe need to be further investigated, there are many motivations for the utilization of graphene for advanced catalysis. These properties do not certainly cover all the application fields of carbon materials to develop novel or advanced catalysts for a sustainable development, but they give us the outlook on the broad range of possible applications. Especially, it should be emphasized that graphene are increasingly investigated and deployed in advanced technologies and devices for sustainable energy conversion and storage such as solar cells, supercapacitors, water splitting, lithium ion batteries, biomass conversion, and fuel cells [1-4].

Conclusion

In the past decades, research on graphene had been largely focused on the synthesis procedures [4], and it is important and necessary for a further effort in this direction. But a more rational analysis of the characteristics will be conducive to developing next-generation advanced catalysts based on the ability of a better control at the nano-scale and at the macro-shape levels the composition, active centers, over structure and architecture [1].

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***In Silico* Comparative Characterization and Analysis of Bacterial and Fungal Alkaline Protease- Enhance Its Stability for Industrial Use**

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Abstract

Enzymes use in industries provides a cleaner and greener environment leading to sustainable development of world economy. Here industrially important enzyme is studied *in silico* to enhance its activity. Structure is modelled and residues are identified which can be mutated to enhance the stability of the enzyme using computational methods.

Keywords: Alkaline protease, modelling, mutation, computational study.

Introduction

Presently the use of enzyme in industries to replace the use of chemicals has taken a centre stage. This has acquired the limelight as use of enzymes is both “green” and clean technology which is environmentally friendly. Enzymes are used in various industries some which include food, agricultural, cosmetic, paper, and pharmaceutical industries which not just controls and speeds up reactions but also helps in obtaining valuable final products with lesser amount of waste. Among various enzymes, Alkaline proteases (EC.3.4.21-24, 99), an industrially important enzyme which is commercially produced at large scale. This enzyme is mainly isolated from Bacterial and fungal sources. This study on alkaline protease includes sequence based characterization, sequence

analysis, phylogenetic analysis to calculate evolutionary distances and pattern, gamma distances as prove for positive mutation. Here we have identified most and least significant sites of amino acids at sequence level. The structure studies include structure prediction by Homology modeling, structure validation and comparison using 10 bacterial and 9 fungal isolated alkaline proteases. Site directed mutagenesis is studied at sequence and structure level to enhance its stability using computational method. Our finding shows favourable mutation sites in bacterial and fungal sources which results in stable structure of alkaline protease.

Result and Discussion

The bacterial and fungal alkaline proteases were studied involving 10 and 9 from each. The structure modelled proved to be of good quality upto 96% accuracy. The bacterial enzyme had a molecular weight and pH ranging from 27 to 64 KDa with acidic pH stability , showing more variation in the activity. The fungal enzyme ranged from 39-42 kDa and pH range for activity near neutral and alkaline pH. The sequence analysis showed the closely relatedness of fungal alkaline protease more conserved, as compared to bacterial enzyme which showed more evolution. Mutational studies via gamma factor revealed bacterial enzyme to be more prone to mutation. The highly conserved active residues were found to be Aspartic acid, Histidine and Serine , the catalytic triad. Thus replacement of least significant residues except the triad, mainly involving surface residues as Glutamic acid, Alanine and Valine were mutated using I-Mutant analysis providing the best replacement. Further the energy minimization of the various mutants finally provided the most stable mutant with enhanced structural stability. Among the various mutants developed bacterial alkaline protease mutant showed most promising stability as compared to fungal enzyme.

Conclusion

Designed enzymes need to be improved by many rounds of directed evolution. There is a renewed interest in proteases as targets for developing therapeutic agents against relentlessly spreading fatal. Advances in genetic manipulation of microorganisms by SDM opens new possibilities for the introduction of predesigned changes, resulting in the production of tailor-made proteases with novel and desirable properties.

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Role of Biotechnology in Environment Protection

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Abstract

Biotechnology has been a subject of great public interest since the late 1980s. By 1992, through Agenda 21 of the United Nations Conference on Environment and Development (UNCED), the international community recognized the important role that biotechnology would play in agriculture, health industry and environment. Biotechnology is proving its worth as a technology that can contribute to sustainable industrial development. In 2007, the U. S. Environmental Protection Agency (EPA) report, “Bioengineering for Pollution Prevention,” noted that industrial biotechnology and bio based manufacturing are more efficient, cleaner and make better use of sustainable renewable resources. And a 2017 report by the Biotechnology Innovation Organization (BIO), noted, “Since 2007, companies have commercialized products that demonstrate industrial biotechnology’s unique ability to reduce pollution, achieving measurable improvements in biomass sustainability, energy efficiency and carbon re-utilization.”

Biotechnology is defined as an environment that helps to develop, efficiently use and regulate the biological systems and prevent the environment from pollution or from contamination of land, air and water have work efficiently to sustain an environment friendly Society. Advancement in the fermentor designs, use of adapted or genetically modified/ engineered cultures make this technology successful in pollution abatement. Bio-treatment technologies like bioremediation and phyto-remediation are effective in the removal of many xenobiotic compounds from the solid, gases and aqueous wastes. Biosorption of heavy metal by live or dead organisms proved to be more efficient than physical and chemical methods. Use of biofertilizers and biopesticides has now well accepted which replaces the chemical fertilizers and pesticide and hence reduced the environmental hazards of these chemicals. The full potential of biotechnology is yet to be realized because in certain cases, the laboratory and field successes are still to be commercialized. So, biotechnology can give new dimension to the efforts of environment protection.

Keywords- Biotechnology, Environment protection, Phyto-remediation, Biofertilizers



A Review: Impacts of Environmental Sensitivity on Reproductive Life

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Abstract

Environmental exposures adversely impact human reproductive function. Chemical exposures in the workplace, home and ambient environment have demonstrated effects on women's reproductive health. Physical factors such as the increased global temperature and radiation exposure as well as the biologic factors such as the contamination in the environment could detrimentally affect male reproductive function. These effects can result in, not only a reduction in sperm concentration, but also alterations in sexual behavior, mood disorders and the presence of genital cancers. This paper contributes to current knowledge of environmental sensitivity impacts on reproductive life.

Keywords: Environmental sensitivity, Reproductive health, Genital cancers, Radiation

Introduction

Environmental health is broadly defined as the aspects of human health determined by physical, chemical, biological and social factors in the environment and encompasses the assessment and control of those factors[1]. As most humans develop in a predictable fashion growing from fertilized egg to fetus, newborn toddler, child, adolescent and adult, there is little doubt that environment is a powerful modifier of the human reproduction and development[2]. Exposures to environmental contaminants result in permanent damage to a fetus and may have lifelong impacts in health. However disorder related to female reproductive health may develop during sensitive windows throughout fetal development childhood adolescence or adulthood. Reproductive health exquisitely sensitive to characteristics of an individual's environment including physical, biological, behavioral, cultural and socioeconomic factors. The relative effects of these features may vary in different parts of the world or even within a country[3]. Reproduction and development can be affected by exposures to a wide variety of agents, including dioxins, poly-chlorinated biphenyls (PCBs), phytoestrogens such as isoflavones, heavy metals, chlorination disinfection by products in water, organic solvents, poly-aromatic hydrocarbons, particulate air pollution, substances emitted from landfill sites and caffeine[4].

Infertility in Females

Environmental contaminants may act as endocrine-disrupting chemicals (EDCs), interfering with normal hormone production and signaling. EDCs can block endogenous hormones, interfering with normal hormone-receptor binding and impairing the expression of target genes for estrogens and androgen hormone. A study in young girls found that higher exposure to bisphenol A (BPA) was associated with hypomethylation of particular genes involved in immune function and inflammation[5].

Infertility in Males

The effect of environmental factors on male fertility has been a special focus, stimulated in part by the dramatic damage inflicted by the pesticide DBCP on testicular function. Radiation and other toxic substance found in war environments negatively affect sperm quality compared to other body organ the testes are very sensitive to radiation[6]. Men who are regularly exposed to some chemical substances are more likely to be infertile than men who are not.

Conclusion

A thorough exploration of environmental effects on fertility will require the expertise of demographers, epidemiologists, clinicians, biologists, wildlife researchers, geneticists, molecular biologists, exposure assessment specialists, toxicologists, and others. The challenges are enormous but a cutting-edge tailored approach may help to set priorities for future reproductive health research, monitoring, and surveillance activities and for potential risk assessment or risk management follow-up efforts.

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Impact of Spiritual Environment in Development of Forgiveness

Nisha Soni

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Abstract

Forgiveness is the intentional and voluntary process by which a victim undergoes a change in feelings and attitude regarding an offense, lets go of negative emotions such as vengefulness, with an increased ability to wish the offender well.

Methodology

Total 120 girl students were selected from different institutes of Ladnun, Didwana and Borunda. First of all the researcher herself went to all the Institutes and contacted with the students and pleased them to take part in this study. 40 students randomly selected for this from each Institute. All the essential Instructions were told to them and then the questionnaire was given to them. The fully filled questionnaire was collected from them and then scoring was done according to standard method provided in manual.

Result

The level of forgiveness was significantly high in the students studying in Jain Vishva Bharati Institute in comparison to that of Chotti Devi collage. The level of forgiveness was also significantly high in the students studying in Jain Vishva Bharati Institute in comparison to that of Sabal collage.

Conclusion

In light of obtained results at above discussion it may be concluded that spiritual environment and practice of Yoga - Preksha meditation helps in increasing level of forgiveness. We can conclude that the spiritual environment helps in reducing the level of anger and passion and increase forgiveness in students which may lead in harmony in Institution as well as in family. So it may be inferred that when a student study an institution which having spiritual environment, his emotional balance will be more and he can easily adjust according to situation, which will help him in development of his personality.

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Arsenic Tolerance in Contaminated Soil Isolates

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Abstract

Arsenic is one of the most poisonous metalloid which is present toxic doses in drinking water and poses numerous harmful effects on the exposed organisms and also promote development of tolerance in microorganisms. The survival of such tolerant bacteria in native polluted soil system can contribute in recovery of polluted land by rapid mineralization of organic and inorganic pollutants. In the present study arsenite tolerant bacteria was isolated from contaminated soil and its Minimum Inhibitory Concentration (MIC) was estimated followed their characterization.

Key words: arsenic, tolerance, bacteria, minimum inhibitory concentration

Introduction

Arsenic is a potent toxic metalloid for public health problems worldwide. The increasing concentration of arsenic in the environment results from natural and anthropogenic sources. Arsenic toxicity is highly dependent on its oxidation state: trivalent arsenicals are at least 100 times more toxic than pentavalent derivatives (1). Environmental pollution concern has stimulated scientific studies on chemical and biological effects of arsenic contamination on hydrosphere and lithosphere. The high metal stress in the environment also influences the bacterial density and diversity. The natural biogeochemical cycling of arsenic also depends on microbial transformation which in turn affects the mobility and distribution of arsenic species in environment (2). Thus, arsenic stress tolerant bacteria can be an agent of environmental *in situ* bioremediation. The present study was aimed to analyze the industrially polluted soil for presence of arsenite tolerant bacteria.

Results and Discussions

The exposure to arsenic in the culture media resulted in the growth of two arsenite tolerant bacteria SI -1 and SI-2. The growth of the isolated gradually declined with increasing dose of sodium arsenite which ceased completely at MIC as 5.5 gm/L (42.3mM) and 8 gm/L(61.5mM) for SI -1 and SI-2 respectively. On the basis of morphological and biochemical properties (Table -1) the strain RA-1 shows similarity to bacteria of genus *Acetobacter* and strain RA-2 shows similarity to genus *Frateruia* (4-8). The bioremediation property of genus *Acetobacter*

has been reported earlier by Rezaee et al 2008 with potential for in arsenic removal by the process of adsorption(7). The polluted sites or sites with industrial waste disposal have been known to harbour arsenic tolerant bacteria(9,10,11) with comparable MIC levels of 40 mM(10) and 120 mM(11). The mechanisms of tolerance mainly involve the metal efflux, sequestration and complex-formation of the metal ions inside the cell and transformation like oxidation-reduction of the heavy metal ions to a less toxic state (12,13).

Table-1 : Morphological and biochemical characteristics of the Strains RA-1 and RA-2

Morphological and biochemical Tests		Bacterial Isolates	
		Strain RA-1	Strain RA-2
Morphological and colony characteristics	Gram Staining	-ve	-ve
	Shape	rod	rod
	Colony characteristics	Cream round colony	Cream round colony
	Length	1.0µm	0.85µm
	Width	0.64µm	0.54µm
	Motility	Non- motile	motile
	Arrangement	chains	chains
Carbohydrate fermentation	Dextrose fermentation	+ve	+ve
	Lactose fermentation	-ve	-ve
	Sucrose fermentation	-ve	+ve
IMVIC test	Indole test	-ve	-ve
	Methyl Red test	+ve	-ve
	Voges-Proskauer test	-ve	+ve
	Citrate test	-ve	-ve
Other Biochemical Tests	Catalase activity test	+ve	-ve
	H ₂ S production	-ve	+ve
	Oxidase test	-ve	-ve
	Starch hydrolysis	-ve	-ve
	Nitrate reduction	+ve	-ve
	Urease activity	+ve	+ve
	Gelatin Liquifaction	-ve	-ve

Experimental

Isolation and characterization of arsenite resistant bacteria: Serial dilution of soil collected from sanganer area, Jaipur was inoculated on nutrient agar plates containing 1gm/L of sodium arsenite(himedia) and incubated at 25°C for 48 hours. The colonies observed on agar plates were isolated as pure colonies by repeated streaking and spreading. These bacteria were characterized for their biochemical according to Bergey's manual of determinative bacteriology, 2009(4) using standard protocols as per Cappuccino and Sherman, 2002(5).

Estimation of minimum inhibitory concentration (MIC): The concentration at which the growth ceases is considered as minimum inhibitory concentration (3) this was estimated by subjecting the bacterial isolates to gradual increasing doses of sodium arsenite(1-8 gm/l) in nutrient broth at 25°C and shaking at 120 rpm for 24-72 followed by measurement of optical density at 600nm (UV-Vis Spectrophotometer).

Conclusion

The microbiota of polluted site shows environmental stress response to arsenic in terms of reduced density but few might also develop mechanisms to tolerate such stress. This tolerance can support its survival and preponderance in polluted site and thus can contribute in bioremediation of such sites.

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Impact of Yoga, Preksha Meditation and Naturopathy on Anthropometric variables of obese adults

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Abstract

Good health and freedom from disease is the best achievement of life. For thousands of years, yoga an ancient holistic relaxation practice has been used as an effective therapeutic tool that counteracts the adverse clinical conditions of human beings. Yoga has been reported to be beneficial in treating stress related disorders, improving autonomic functions, lower blood pressure, obesity, anxiety, insomnia, psychosomatic disorders, increase strength and flexibility of muscles, improve the sense of well being, slowed ageing process, control breathing, reducing signs of oxidative stress & improving spiritual growth .

Objective

The aim of present study was to investigate whether regular practice of Yoga, Preksha Meditation and Naturopathy for 4 month can change Anthropometric variables of obese adults.

Material and Method

The study group comprised 60 obese adults aged between 30 to 45 years. They were trained for 4 month of Yoga, Preksha Meditation and Naturopathy. Assessments of various parameters were done before and after Yoga, Preksha Meditation and Naturopathy practices were significantly modulated, statistically by using student's test.

Result

Regular practice of Yoga, Preksha Meditation and Naturopathy for 4 month significantly improved the BMI, BW, HC and WC.

Conclusion

We concluded that regular practice of yoga, Preksha Meditation and Naturopathy for promotion of Anthropometric variables of human being and may be use as noninvasive and cost effective therapeutic tool for obesity disorders. The pathway of mechanism will be discussed in detail.

Keywords: Yoga, BMI, BW, HC, WC, Naturopathy, Preksha Meditation, Obesity.



Functional characterization of RpoS from *Vibrio cholerae* to study its role in stress tolerance mechanism

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Abstract

The RpoS plays an essential role in stress managing mechanisms of most enteric bacteria like *V. cholerae*, *P. aeruginosa* and *S. typhii*. The absence of RpoS in human and its role in regulating pathogenicity makes it a potential drug target. The present study reports cloning over-expression, purification, biochemical and biophysical characterization and provides a novel insight into the promotor binding aspect of RpoS. The *V. cholerae* RpoS is a thermostable protein with T_m value beyond 85°C. The protein interacts with all 18 promoter sequences considered for this study with high affinity with promoter 1, 7, 11 and 14, and low

affinity with promoter 4, 5, 6, 15, 16 and 13. The binding of promoters also affect the native secondary and tertiary structure and enhances the helicity of the protein. The computational rationalization through homology modelling and docking shows that protein is comprised of helices consistent with the biophysical studies. The protein-DNA interaction takes place at three regions with one of them probably responsible for specificity. The study provides the first evidence of independent interaction of a σ -factor to the promoter region. Though the interaction is not specific and the holoenzyme formation might regulate the specificity. This aspect of the study is ongoing in our lab with the complete RNA polymerase complex having RpoS instead of $\sigma 70$.

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Fragrance Free Workplace Policy: A Fight with Environmental Intolerance

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Abstract

Environmental intolerance is describes as a chronic condition of human when exposed with chemicals and other environmental pollutants at low level. Exposure of fragrance even in the smallest amount cause chemical sensitivity and can also trigger allergy in asthmatic and migraine patients.

Keywords: Environmental intolerance; sensitivity.

Introduction

Many people are sensitive to fragranced productslike perfume, air fresheners, candles, and cleaning products. Humans with chemical sensitivity may experience headaches, dizziness, nausea, fatigue, respiratory allergies, skin irritation, anxiety, depression and concentration difficulties.Many studies suggest that fragrance in any form is not appropriate for a workplace because it affects the capabilities of workers. Some products claim to be “fragrance free” may have only masked the fragrance by use of an additional chemical.

Perfume is a romantic hazardous waste because it is not made from flowers but from toxic chemicals. More than 4,000 chemicals are used in fragrances and 95% of these are made from

petroleum and phthalates. A recent study concluded that a person consumes 5.8 mg of phthalates daily that is much higher than acceptable daily dose by the US Environmental Protection Agency. It could result in premature babies in pregnant women, damaging sperm in men and reproductive system disabilities in children.

According to Yatan Ahluwalia (corporate grooming and trainer expert) suggests Perfume should only be applied on wrist and behind the ears, never on clothes. US and Canada already banned fragrance products at workplace through making formal fragrance policies because fragrance can trigger on the allergies on workplace. Many corporates in India especially hotels, banks and airlines have fragrance policies which guide the usage of fragrance of products.

Conclusion and Future Aspects

Persons with disabilities to chemicals used in a variety of products, including fragrance and personal care products like cleaners, deodorizers and pesticides. Future goal is elimination of contaminantes from the air through fragrance free policies. This policy will provide a more natural comfortable and stress free environment for all and help to promote awareness about environmental intolerance as well. It also increases the better work productivity.

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Degrading Environmental situation

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Abstract :

This presentation provides an overview about the importance & implementations of environment awareness as well as education which of course is termed 'sensitization' & how this helps in sustainable development globally as well as on Country level .This article also provides brief insights about Prioritization of sensitivity towards environment including its scenario, initiatives as well as in education. Environment education gives insight to the various challenges & future prospects of growth & progress. Sustainable development is a balanced approach evolved from social, economic and environment dimension. This article discuss & assists in better stratification of and for environment sensitivity & achieving common goal of sustainability.

Due to the dramatic increase in global population, there has been a build-up of burden over the limited resources available. Modernization as well as urbanization along with industrialization has no doubt brought about a cosmic change in the lifestyle of humans but as no rose comes without a thorn, this has brought with it ever increasing pollution as well as paucity of natural resources. This has been one of the primary concerns of global leaders & environmental education & sustainable development has become the primary agendas of countries.

The concept of sustainable development was first coined by BRUNDIL in the report – 'our common future' in 1987, which defined sustainable development as "Development that meets the needs of the present without compromising the ability of future generation to meet their own needs. " (WCED)(1). It has been the first step towards importance & usefulness of sustainability (2)

Environment protection is one of the three pillars for sustainable development, the other two being economic development & social development. The above 3 points were key areas of focus at the world summit on sustainable development held in JOHANNESBURG, 2002. It also emphasized on the special role of our education system in facilitating, envisioning & working towards the role of sustainable development. Environment concerns begin to emerge in its present form due to the enormous technological & industrial growth, which has resulted into a radical shift to the degrading environmental situation & furthermore emphasizing the even more need for environmental sensibility.

So an effective environmental sensitivity once attained would naturally lead towards the achievement of agendas of sustainable development. Some of the environment sensitivity agendas has been seen as earlier on 1969 & the impact received from International organization such as UNESCO, UNICEF & UNEP has emerged these initiatives. On 5th June, 1974 UN observed WORLD ENVIRONMENT DAY for the first time & in India we have seen initiative of tree plantation in schools & by youth each year. Indians have always been very sensitive towards environment since Ancient times. We have seen the records of having some plants species as special & even find religious attachment to them with sentimental values. We have seen environment sensitivity in Contemporary times after independence with social drives & CHIPKO movement, Van-Mahotsav, Vraksharopan Abiyan. Hence we Indian have been caution enough towards environment since long.

Some of the suggestions to increase & improve environmental sensitivity have already been on global agendas on nature. We have seen today & in this article the need of environment sensitivity which leads to attaining goals of sustainable development.

To conclude with, I would like to & in my humble suggestion to An increased environmental sensitivity by detailed inclusion of awareness material in school curriculum & increased awareness events like these in coming times.

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Multi Stage Aggregation Mechanism of Bovine Serum Albumin under Reduced Environment

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Abstract

In this work we investigated the possible mechanism of bovine serum albumin (BSA) aggregation using dithiothreitol (DTT) protein disulfide reducing agent. BSA aggregation carried at pH 4.0 and

7.2 with different concentration of BSA and DTT. Proposed multi stage BSA aggregation mechanism model will help to understand aggregation pattern of amyloidogenic proteins.

Keywords: BSA, DTT, aggregation, disulfide-bonds

Introduction

BSA is a globular protein consisting of 585 amino acid residues with a molecular weight of ~66 kDa. BSA has 35 cysteine residues containing 17 disulfide bridges and one free cysteine residue which is predominantly α -helical with three homologous domains (I, II, and III) help in providing different binding sites on the protein. DTT is a protein disulfide reducing agent to understand the mechanism of disulfide bond cleavage and protein aggregation. In this study BSA aggregation was carried out at pH 4.0 and 7.2 with a different concentration of BSA (2mg/ml, 1mg/ml and 0.5mg/ml) and DTT (40mM, 20mM, 10mM and 5mM) at 37°C. Here using several direct and indirect biophysical techniques we studied BSA aggregates under reduced and non-reduced environment.

Result and Discussion

In vitro aggregation of BSA under reduced environment monitored by ThT fluorescence (interacts with BSA via hydrophobic patches), turbidity assay and circular dichroism spectroscopy showed that there is BSA unfolding at the initial stage of aggregation further it was followed by secondary aggregation.

Experimental

In vitro aggregation assay, intrinsic tryptophan fluorescence, circular dichroism spectroscopy, turbidimetric analysis, fluorescence and phase contrast microscopy

Conclusion

We have studied the aggregation of BSA under a reduced environment at pH 4 and pH 7.2. We have found that BSA under non reducing condition did not aggregate but with the reducing condition it aggregates rapidly. We used ThT, turbidity and intrinsic fluorescence data to find out the multi stage aggregation mechanism of BSA.

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In vitro determination of antioxidant properties of Vitamin C

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Abstract:

Vitamin C is a biomolecules that participates in many biochemical processes. It is an essential nutrient for humans. Fruits are outstanding source of natural antioxidant and vitamins, especially vitamin C and fruits having very rich vitamin C are known to have very physically powerful antioxidant properties. Vitamin C was investigated for their antioxidant properties using DPPH and Reducing power assay. The present work is a short-lived screening of these vitamins to explore their major values as nutrition for mankind.

Keywords: Vitamin C, DPPH, Reducing power assay.

Introduction:

A propos 8% or extra of the inhaled oxygen (O_2) is transformed to reactive oxygen species (ROS) by univalent reduction of O_2 (Maxwell, 1995). Antioxidant can perform by scavenging reactive oxygen species (SOD removing O_2), by inhibiting their structure (e.g. by blocking activation of phagocytes), by binding transition metal ions and preventing structure of OH and or decomposition of lipid hydro peroxides, by repairing damage (e.g. α -tocopherol repairing peroxyl radicals and so terminating the sequence response of lipid peroxidation) (Niwa et al., 2001). In recent times, Reactive oxygen species have attracted a great deal of concentration for the duration of metabolic processes of aerobic organisms, molecular oxygen accept electron to generate Reactive oxygen species such as superoxide, H_2O_2 and hydroxyl radical. Reactive oxygen species (ROS) play significant valuable roles in living species, such as assassination of bacteria and apoptosis of defective cells. Alternatively, ROS have been mixed up in aging and a number of diseases, such as neurodegenerative disorder, arteriosclerosis, cancer, because they can alter DNA, protein, lipids (Ritaro et al., 2008). Many living species have more than a few antioxidative protection systems against oxidative stress induce by ROS. These systems include antioxidative enzymes such as glutathion peroxidase (GPX), superoxide dismutase (SOD), catalase (CAT) etc. superoxide dismutase (SOD) has been identified to take part in a significant role in life span determination (Tolmasoff et al., 1998).

Vitamins are prime regulators of metabolic functions which take part in a critical role in exercise performance (William MH, 1989). Vitamin C or ascorbic acid is also one of the vital phytonutrients for the metabolism of living cells that occur in different concentrations in especially fruits, natural foods and their products. Vitamin C is the well-liked antioxidants, which play a important role in prevent peroxidation damage in the biological systems (Fogliano et al., 1999, Mantene et al., 2003).

Ascorbic acid (vitamin C) is the most important vitamin supplied by fruits in the diet. With reference to 90% of a person's dietary vitamin C requirement is obtained from vegetables and fruits (Salunkhe et al., 1991). An adult human being on standard requires about 50mg of vitamin C per day, and many fruits contain this quantity of ascorbic acid in less than 100g of tissues (Salunkhe et al., 1991). Ascorbic acid performs numerous important functions in the body, like building resistance to infection, helps in the absorption of calcium and ensures the health of bones, building and maintaining strong tissues especially connective tissues (bones, cartilage, dentin, collagen, etc), wound healing, infections and fever to help recovery, forming strong capillary walls for blood vessel tissue and hemoglobin synthesis by aiding adsorption of iron. In nature it is required in growth stages of life and is significant partner of protein for tissue synthesis. Being a strong reducing agent, it helps to tie up free radicals and thus protect the body from their deleterious effects (Sumati et al., 2003). This show that fruits having excellent resource of vitamin C are a strong antioxidant. The aim of this study was to evaluate the antioxidant activity of Vitamin C.

Material and Method:

Chemical:

All chemicals used were purchased from Himedia. All absorbance measurements for determination of antioxidant activity were conducted using a UV spectrophotometer.

Determination of antioxidant activity

DPPH radical scavenging activity assay:

The antioxidant activity was measured on the basis of the scavenging activity of the stable 1, 1-diphenyl 2-picrylhyorazyl (DPPH) free radical according to the method described by Brand-Williams et al. 1995) with slight modifications. 1ml of 0.1M DPPH solution in methanol was prepared immediately before the experiment and mixed with 1ml vitamin C of solution of varying concentrations (50, 100, 150, 200 and 250 µg/ml). Corresponding blank sample were prepared and Gallic acid (1-100 µg/ml) was used as reference standard. Mixer of 1ml methanol and 1ml DPPH solution was used as control. The reaction was carried out in triplicate and the decrease in absorbance was measured at 515 nm after 30 minutes in dark using UV-Vis spectrophotometer.

The inhibition % was calculated using the following formula.

$$\text{Inhibition \%} = \frac{A_c - A_s}{A_c} \times 100$$

Where, A_c is the absorbance of the control, A_s is the absorbance of the sample.

Reducing power assay:

1ml of different concentration of vitamin C (10, 20, 40, 60, 80 µg/ml) diluted in distilled water was mixed with 2.5 ml of phosphate buffer (0.2 mol/L, pH 6.6) and 2.5 ml of 1% potassium ferrocyanide. The mixture was incubated at 50 °C for 20 min. Aliquot (2.5 ml) of 10%

trichloroacetic acid was added into the mixture and centrifuged at 3000 rpm for 10 min. The upper layer of the solution (2.5 ml) was mixed with 2.5 ml of distilled water and 0.5 ml of FeCl₃ (0.1%). The increased absorbance measured at 700 nm against the blank indicates the increasing of the reducing power

Result and Discussion:

The results of antioxidant activity of Vitamin C are summarized that Radical scavenging activity is one of the most widely used methods for screening the antioxidant activity of Vitamin.

The reducing power activity of the extract increased with the concentration of the Vitamin C. At the concentration, a significant variation of the reducing power property of the Vitamin C was noted compared to the standard. The Vitamin C tested exhibited the lower power reducing activity compared to Gallic acid.

In view of the value of ascorbic acid in human health, those are recognized in treatment of hypertension and diabetes mellitus (Vaishali et al., 2003) and in various treatments of deleterious effects in human body due to economical and wealthy resource of mineral, antioxidant and vitamins like vitamin C, the result obtained may have the potential sources. DPPH method is the most frequently used one for in vitro antioxidant activity evaluation. It is demonstrated that phenolic compounds usually display important scavenging effects against the DPPH free radical. There was a good quality association between antioxidant activity (DPPH and reducing power assay), behind the design of phenols as contributor of the antioxidant power of vitamin. However, wide-ranging investigation desires to be done either to isolate the antioxidant compounds or to verify the in vitro or in vivo biological activity of these vitamins.

Conclusion:

This study reported the antioxidant activity of Vitamin C. We create a positive correlation between the reducing power assay and antioxidant activity of Vitamin. Use of vitamin have been positive and promoted in recent years, but in order to realize their health benefits it is important to measure antioxidant activity. Therefore, it can be used as an important component of natural sources of antioxidants in Vitamin.

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Green Chemistry: A tool for Sustainable Development

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Abstract

The basic principle of green chemistry includes sustainable development which provide us required products through safe synthesis. The impact of green chemistry is multidimensional. In Green Chemistry, processes and products are safe for natural ecosystem because the technique used is innovative and improvement of resources is checked.

Keywords : Sustainable development, Multidimensional impact, innovative

Introduction

Green chemistry is the utilization of set of principles that reduces the use of hazardous substances in the design, manufacture and application of chemical products. Sustainable development is meeting the needs of economic growth of country. Green chemistry covers many areas such as utilization of raw material, synthesis, products and efficient processes. (1)

Greener Catalysis

Catalysis play an important role in synthesis because most chemical processes require catalyst to enhance reaction rate. The design and use of green catalyst is important for economic growth and sustainability of chemical industry. (2)

Green Engineering and Products

Green chemistry covers the aspect of engineering field. For achieving the goal of maximum efficiency and minimum waste clean, energy-efficient and mass-efficient processes are essential tools to be produced by industrial chemical processes.(3) Many pharmaceutical products, polymers are harmful to human health so, the need to design beneficial product is there. (4)

Conclusion

Green chemistry is a new philosophical thought that extends the principles which can contribute to sustainable development. Investment on green chemistry and how they affect directly from start of pharmaceutical analyzes, patient health until to environmental sustainability are important for the process of future improvements.

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Role of Biotechnology in the Sustainable Development of Foods and Crops

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Abstract

Biotechnology plays a major role in the sustainability of foods and vegetables. By using different techniques it increases shelf life of the foods and vegetables. Biotechnology play a vital role in current scenario to boost production of agricultural and food crops. Genomics provide new opportunities in the selection of plants which can be used for the development of sustainable and high yielding varieties. Biotechnology can give assistance to sustainable agriculture. Genetic engineering is the major tool to modify the food quality and improve plants, animals and micro-organisms for human benefit. Biotechnology contributes a significant role to fulfill the desired nutritional requirements of blasting population of the world. Biotechnology helps in different areas firstly, for crops where fertilizer application is very low; bio-fertilizers can fix atmospheric nitrogen and provide micro-nutrients useful to plant growth. The techniques of bio-fertilizer and bio-pesticides production needs a small investment to install fomenters with accessories for packing and storage. Organic farming is also a growing business which is based on synergism with nature and it opens the door to immense possibilities for improving the soil health and overall environment and provides sustainable livelihoods. Biotechnological approach is used to achieve the goal of promoting organic practices and ultimately creating markets for organic produce both regionally and globally.

Keywords: Biotechnology, fertilizers, organic farming, Genomics



Eps: Emerging Biomolecules in Microbial Biosorption

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Abstract

Extracellular polymeric substances obtained from various sources are the organic macromolecules which are highly competent in heavy metal biosorption which can be attributed to the presence of a variety of functional groups. The examples of various biopolymers are lipopeptides,

ramnolipids, trehalolipids and sophorolipids, these are disaccharides which are acylated with long chain fatty acids or hydroxy fatty acids produced by a variety of microorganisms including *Pseudomonas* sp., *Bacillus* sp., *Serratia*, *Saccharophagus*, *Sphingomonas*. Complexation ability and anionic nature of biopolymers facilitate them to sequester heavy metal ions from soil and aqueous solution.

Current study emphasizes on metal biosorption potential of EPS in bioremediation.

Keywords: Extracellular Polymeric Substances, Metal removal



Certain Aspects of Teratological Effects of Retinoids

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Abstract

Teratology is a branch of Embryology that deals with abnormal development. The development of an organism is a complex process of embryogenesis involved cell proliferation, differentiation, migration and organogenesis. Many agents interfering the development process can cause malformations in the embryo. The study of these congenital abnormalities is called teratology and agents which are responsible for causing these malformations are called teratogens. Susceptibility to teratogens depends on the genotype of the organism, including species as well as strain differences. A teratological experiment was started from 1820s with the studies of Etienne Geoffrey Saint Hilaire and his son on chick embryo by disturbing its environment in different ways at different embryonic stages. They found some anomalies like Trioncephally, atrophy of eyes and spina bifida in his Experiments (Tuli, 1968). Vitamins are organic compounds which are divided into 2 categories (i) Fat soluble (A,D,E,K) and (ii) water soluble (B and C).



Environmental Hygiene in India

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Abstract

Environmental sanitation is a major public health issue in India. Increasing evidence suggests that water, sanitation and hygiene (WASH) practices affect linear growth in early childhood. We determined the association between household access to water, sanitation and personal hygiene practices with stunting among children aged 0–3 years in rural India. There is scarce research and programmatic evidence on the effect of poor water, sanitation, and hygiene (WASH) conditions of the physical environment on early child cognitive, sensorimotor, and socioemotional development. . Recent interventional studies on environmental sanitation in India highlighted the importance of prioritizing control strategies. Research related to the appropriate cost-effective intervention strategies and their implementation in Indian context is a big challenge. This paper discusses various intervention strategies related to environmental sanitation in India and emphasizes to prioritize it according to the need of country.

Keywords: Environmental sanitation, India, prioritization

Introduction

Environmental sanitation envisages promotion of health of the community by providing clean environment and breaking the cycle of disease. It depends on various factors that include hygiene status of the people, types of resources available, innovative and appropriate technologies according to the requirement of the community, socioeconomic development of the country, cultural factors related to environmental sanitation, political commitment, capacity building of the concerned sectors, social factors including behavioral pattern of the community, legislative measures adopted, and others. India is still lagging far behind many countries in the field of environmental sanitation.[1-3].

Hygiene generally refers to the set of practices associated with the preservation of health and healthy living. The focus is mainly on personal hygiene that looks at cleanliness of the hair, body, hands, fingers, feet and clothing, and menstrual hygiene.

Sanitation means the prevention of human contact with wastes, for hygienic purposes. It also means promoting health through the prevention of human contact with the hazards associated with the lack of healthy food, clean water and healthful housing, the control of **vectors** (living organisms that transmit diseases), and a clean environment. It focuses on management of waste produced by human activities[3].

There are different types of sanitation relating to particular situations, such as:

- **Basic sanitation:** refers to the management of human faeces at the household level. It means access to a toilet or latrine.
- **Onsite sanitation:** the collection and treatment of waste at the place where it is deposited.
- **Food sanitation:** refers to the hygienic measures for ensuring food safety. Food hygiene is similar to food sanitation.
- **Housing sanitation:** refers to safeguarding the home environment (the dwelling and its immediate environment).
- **Environmental sanitation:** the control of environmental factors that form links in disease transmission. This category includes solid waste management, water and wastewater treatment, industrial waste treatment and noise and pollution control.
- **Ecological sanitation:** the concept of recycling the nutrients from human and animal wastes to the environment.

Challenges:

1. Prevention of contamination of water in distribution systems,
2. Growing water scarcity and the potential for water reuse and conservation,
3. Implementing innovative low-cost sanitation system
4. Providing sustainable water supplies and sanitation for urban and semiurban areas
5. Reducing disparities within the regions in the country
6. Sustainability of water and sanitation services.

Conclusion: Implementation of low-cost sanitation system with lower subsidies, greater household involvement, range of technology choices, options for sanitary complexes for women, rural drainage systems, IEC and awareness building, involvement of NGOs and local groups, availability of finance, human resource development, and emphasis on school sanitation are the important areas to be considered. Also appropriate forms of private participation and public private partnerships, evolution of a sound sector policy in Indian context, and emphasis on sustainability with political commitment are prerequisites to bring the change.

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Adsorption of Cr (III) and Cu(II) on Hydrothermally Synthesized Graphene Oxide–Calcium–Zinc Nanocomposite

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Abstract:

This work deals with the synthesis and application of graphene oxide–calcium–zinc (GO@CZ) nanocomposite for the adsorption of Cr(III) and Cu(II) from aqueous solutions. The adsorption was studied using various parameters such as initial metal ion concentrations, contact time, effects of pH, and adsorbent dose. The batch experiments were conducted to demonstrate maximum adsorption capacity at pH 7, and it was found to be 285.71 mg g⁻¹, and 270.27 mg g⁻¹ for Cr(III) and Cu(II), respectively. The pseudo-second-order kinetic model was best fitted to kinetic data of adsorption having the regression values (R^2) > 0.9989 and > 0.9979 for Cr(III) and Cu(II), respectively. The Langmuir isotherm model was best fitted with the adsorption data having R^2 values for Cr(III) and Cu(II) as > 0.9990 and > 0.9971, respectively. The chemisorption primarily through surface complexation of GO sheets on Ca–Zn(OH)₂CO₃ nanograins as well as adsorption of metal ions onto the GO@CZ nanocomposite was further confirmed using XPS studies. The adsorption was found to be spontaneous, endothermic, and feasible as indicated by the study of various thermodynamic parameters, such as, ΔG° , ΔH° , and ΔS° . The results showed that GO@CZ nanocomposite can be used as a potential sorbent for the effective, regenerative, and selective adsorption of Cr(III) and Cu(II) from aqueous solutions.

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Sustainable Approach in Supramolecular Chemistry

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Abstract

Triple meeting point of chemistry with biology and physics lead to the development of supramolecular chemistry. Non-covalent interactions between host and guest species play an important role for supramolecular species rearrange their molecular components. Coplanarity of donor sites is an important criteria for good complexation between both species. Complexation ability of podand reduces if bulky groups located close to the cavity of a host which may provide steric hindrance to the approach of a guest. Free energy change during complexation decides the positive or negative cooperativity. Supramolecular chemistry provides the framework for the design of molecules with interactive properties. Such systems have found applications in sensors, luminescent materials, materials chemistry, light-emitting devices, cell imaging probes *etc.*

Keywords: Host-Guest, Coplanarity, Podand, Complexation.

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Devbani – A religious way to conserve sustainable livelihood in Rajasthan

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Abstract:

Devbani or orans are patches of forest area protected by communities on a name of local deity to promote their conservation. Orans motivates cultural norms instead of rule book. People do not exploit the resources of Devbani because of supernatural punishment. Van Samitis supervise the management of orans.

Keywords: Orans; Devbani.

Introduction:

Oran is derived from the sanskrit word aranya, meaning forest. Threatened area marked and declared to be an Oran by Doodh Jal or Kesar Chaanta ceremony. Oran provides fuel, fodder, food, shade and livelihood for humans and animals in Rajasthan, where temperatures exceeds upto 50°C in summers. Van samitis controlled over the oran management and help to survive in harsh conditions like droughts. There are about 25,000 Orans in Rajasthan covering an area of about 600,000 hectares. The orans at Khejarli near Jodhpur are famous for the protection to the Khejari (*Prosopis cineraria*) tree, where Amrita Devi and 370 bishnois sacrificed their lives while protecting khejari trees.

The Devbani preserve the endangered and threatened plant species. Jiyapota is one of best example of this protection, which is only found in Bera village, Alwar also known as Japan ki Devbani. Karni mata Temple is also a famous oran for protection of white rats. More than 25,000 orans present in Rajasthan covering an area of about 600,000 hectares and protects many rare specie like Guggal (*Commiphora wightii*), Dhak (*Butea monosperma*) and Kadamb Vraksh (*Anthocaphalus indicus*) etc.

Today, the government is spending a huge amount on preserving wildlife sanctuaries, but still s not able to maintain Government spreading a huge amount to maintain the wild life sancturies but still not focus on old sancturies like oran. But it is such a wonderful way to conserving sustainable livelihood without any rulebook.

Conclusion and future aspects:

The orans serve as gene pool conservation and venues of aesthetic traditions and religiosity. Orans or sacred grooves are a new frontier for multidisciplinary research on environmental sensitivity regarding conservation of resources naturally. This reflects the vital role of sprituality and religion on environmentalism. Systematic research is needed on the structure and roles of Orans. Many places are already known but many are in line for recognition. Sometimes supernatural power is more useful than a technical knowledge.

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Maxillary Sinus – An Anatomical Study for Surgical Purposes

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Abstract

In this anatomical study of existing transmaxillary surgical approaches to Sphenoid sinus, Pterygopalatine Fossa & Orbit and the dissectional exploration of the maxillary area to find new ones, the existing and new possible approaches were compared. It was found that there is a scope for improvement in areas like cosmetic damage, work space, risk to important vessels & nerves in many cases.

Keywords: Maxillary Sinus; Transmaxillary; Surgery; Otorhinolaryngology.

Introduction

This is an anatomical study of existing and possible new transmaxillary approaches to Sphenoid sinus, Pterygopalatine Fossa and Orbit. The objective of this study is to explore the maxillary area to try to find new approaches that might be useful and applicable in some cases, if not all. The existing surgical approaches and new possibilities have been compared in order to achieve that.

Result and Discussion

A few of the existing surgical approaches to the following areas were studied and evaluated – Sphenoid Sinus, Pterygopalatine Fossa (PPF), Orbit, Infratemporal Fossa (ITF), Meckel's cave and Clivus.

It was found that to reach the Sphenoid sinus, currently used trans-nasal approach is more efficient than trans-maxillary which requires going through the PPF. This poses a great risk of injuring important vessels and nerves during surgery and also has cosmetic disadvantage.

PPF is usually operated when Maxillary Artery or its branch needs to be ligated. It was found that trans-maxillary approach is the most efficient for this purpose as the maxillary artery lies immediately behind the posterior wall of maxillary sinus.

To treat lesions or tumors in the orbit, both trans-maxillary and trans-conjunctival approaches were found to be efficient, depending on the case, both having their own pros and cons. Thus, there is a scope for improvement in areas like cosmetic damage, work space, risk to important vessels & nerves in many cases.

Experimental

10 adult head specimens were studied; one bilaterally and the rest unilaterally (n=11). Basic dissection tools like scalpel, forceps, chisel and hammer were used. Specimens cut medio-sagittally, para-sagittally, frontally and transversely were used. Maxillary sinus was opened from anterior and medial sides, PPF was opened from top and orbit from lower and medial sides to examine all possible trans-maxillary routes, the structures in the way and anatomy of surrounding structures.

Conclusion

This study will help us further delve in the area of re-evaluating current surgical approaches to keep evolving and improving our techniques and to make necessary changes if required.

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Ecofriendly Synthetic Routes for Synthesis of Novel Organic Compounds

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Abstract

Modern chemistry plays a fundamental role in the improvement of quality of life around the ecosphere. But, these advance technologies are derived with an increase in contamination of the environment by toxic substances. At the present time steps are being taken, mainly due to increasing economic, social, legal, and environmental pressures, to avoid further degradation so, the use of the so-called ecofriendly synthetic routes, where the Green technologies can be used in industrial processes is encouraged. In this context electrochemistry and microbial catalyzed reactions are the emerging areas of interest as these reactions are economical viable, ecofriendly in nature, easier in handling and synthesized products have a variety of pharmacological applications.

Keywords: Ecofriendly synthesis, Green technology, electrochemistry, Microbial catalyzed reactions

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Green Chemistry and its various aspects

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Abstract:

Green chemistry is the new and rapid emerging branch of chemistry. Green chemistry is also known as sustainable chemistry. The beginning of green chemistry is considered as a response to the need to reduce the damage of the environment by man-made materials and the processes used to produce them. Green chemistry applies diagonally the life cycle of a chemical product, including its manufacture, use, design, and ultimately disposal. Green chemistry is very helpful in prevention of pollution at the molecular level, it gives innovative scientific solutions, it reduces the negative impacts of chemical products on human and the environment health. All chemical wastes should be disposed of in the best possible manner without causing any damage to the environment and living beings. This article presents selected examples of implementation of green chemistry principles in everyday life. This paper seeks to reveal basic information related to green chemistry.

Keywords: Green chemistry, hazardous chemicals, Pollution, Sustainable chemistry.

Introduction: A unique program was initiated by (EPA) the Environmental Protection Agency of US in 1991 to execute sustainable development in chemical technology and chemistry by industry, government and academia. Presently, several complex products can be manufactured easily. Nonetheless, chemical process not only yields the required product but also the undesired and harmful substance in large quantities in the form of liquid, gases, and solid. This has become the massive threat for the chemistry. So for the synthetic chemists the reduction of the chemical pollution has become the serious urgency. The concept of Green chemistry is a new approach towards the sustainability. Its concepts inspire the designing of innovative processes and raw materials that minimizes the utilization of harmful substance and their production. [1]

Green chemistry's concepts stands for two most important components:-

1. First, Green chemistry depicts the predicament of efficient usage of starting materials for synthesis and the associated reduction of waste due to their use.
2. Second, it accords with the safety, environmental issues and health which are correlated with the manufacturing, usage of chemicals and their disposals.

Principles of Green Chemistry:

Green Chemistry objective is to reduce threats at the design stage. It is beneficial for our health and the environment to eliminate hazardous practices from the chemical design process starting. It will be then helpful all the way through the design, production, use or reuse and dumping processes [2]. Following Twelve Principles of Green Chemistry are shown with suitable examples.

1. The utilization of techniques which makes the less solvent use
2. Use of catalyst for the hydrogenation of carboxylic acid to aldehyde
3. Oxidation of cyclohexane oxidation by the application of hydrogen peroxide adipic acid is synthesized.
4. Less dangerous pesticides use
5. Supercritical fluid extraction
6. Alternative for PWC,
7. Manufacturing of surfactants.
8. In the preparation of sample, the on-fibre derivatization against derivatization in solution is done
9. Synthesis of β -enaminones from 1,3-dicarbonyl compounds and amines in presence of Efficient Au [III] as a catalyst - Catalysis.
10. Manufacturing of biodegradable polymers
11. For wastewater monitoring in-line analysers used - Real-time analysis for Pollution Prevention:
12. Di-Me carbonate [DMC], an environmentally affable alternative for Di-Me sulphate and Me halides in methylation reactions - Inherently Safer Chemistry for Accident Prevention [3].

Future trends in Green Chemistry: Chemists are using their innovative and creative skills from all over the world to build up new processes, reaction conditions, synthetic methods, catalysts etc. Profitable applications of green chemistry have led to intellectual research to find out different alternatives to the active artificial methods and some environmental laws. These laws are in general have become "command and control" laws. Risk occurring with toxic chemical is a function of Hazard and Exposure. With the passage of time, these laws have completed a great deal in improving pollution prevention in coming years. [4]

Conclusion: Chemistry has invented many useful compounds but also yields the other harmful compounds and undesirable waste. This became a great problem and requires more effective technologies to get rid off these problems. Green chemistry include synthesis of environment

friendly chemical compounds by more efficient chemical process, maximize yields and minimize the unwanted and hazardous waste.

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Cubical-Shaped Rods of Pectin–Hydroxyapatite Composite for Adsorption Studies of Fluoride by Statistical Method and Adsorption Experiment

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Abstract:

This research details the synthesis and application of a novel pectin–hydroxyapatite (PHAp) composite for fluoride (F[−]) adsorption from aqueous solutions. To determine the efficiency of the adsorption process parameters, i.e., adsorbent dose (0.1–0.4 g), initial fluoride concentration (10–30 mg/L), and temperature (298–313 K), the Box–Behnken design with three levels and three factors have been utilized. The quadratic model was established on 27 batch runs by regression analysis of the experimental data of these runs. The efficacy of adsorption was observed using the Langmuir and Freundlich models. The adsorption rate was found at 3.17 mg g^{−1} min^{−1}, and adsorption kinetics followed pseudo-second order (PSO) for PHAp. The significant novelty of this work is the synthesis of unique cubical-shaped rods biopolymer composite from hydroxyapatite. Additionally, this composite showed high adsorption capacity

for F^- compared to other hydroxyapatite adsorbents, and the improved adsorption capacity is attributed to its unique shape which provides a larger surface area. It can be reused for up to six cycles, which makes this method environment-friendly. The economic viability of the synthesized PHAp composite, in comparison to other adsorbents, is evident from the cost–benefit analysis.

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Adsorption Equilibrium, Kinetics, and Thermodynamic Studies of Fluoride by Using Tetrametallic Oxide Adsorbent

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Abstract:

This study investigated the performance of fluoride adsorption onto a specific tetrametallic oxide adsorbent Fe-Al-Ce-Ni (FACN) and the effect of temperature on adsorption performance. The adsorption performance was determined by adsorption equilibrium, kinetics, and thermodynamic parameters. The adsorption, kinetic, and thermodynamic parameters were compared alternatively. The fluoride adsorption capacity was obtained from four different adsorption isotherm models viz. Langmuir, Freundlich, Temkin, and Dubinin–Radushkevich (D–R), and Freundlich was found to best fit model. Fluoride removal rate using adsorption (0.27 min^{-1}) was obtained faster than reactive adsorption (0.04 min^{-1}). Several thermodynamic parameters such as enthalpy, Gibbs free energy, entropy ($\Delta S > 0$), and adsorption activation energy were calculated which demonstrated the feasibility and spontaneity ($\Delta G < 0$) and exothermic nature of ($\Delta H < 0$) the fluoride adsorption process. The adsorption process was controlled by physical mechanism, and the maximum adsorption capacity was found to be 250 mg/g. To our knowledge, this is the first report on the synthesis of tetrametallic oxide adsorbent for fluoride adsorption and the feasibility of adsorption process was ratified by three van't Hoff plots.

Keywords: Langmuir, adsorption, aqueous system, FACN

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Importance and applications of Clay based solid acid catalysts in organic synthesis

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Abstract

Green chemistry also called sustainable chemistry is an area which focuses on technological approaches to prevent pollution and reduce consumption of non- renewable resources. It includes the utilization of methodologies and techniques that reduces or eliminates the use of hazardous substances in design, synthesis and application of chemical products. The development in this area may involve clean synthesis, ecofriendly methods, solvent free synthesis, green catalysts and avoiding the use of hazardous reagents in chemical methods.

Clays modified with Heteropoly acids (HPAs) have attracted much interest as solid acid green catalysts for organic synthesis. In the present study heteropoly acid (HPA) modified montmorillonite clay has been synthesized. Modified clays possess qualities such as good thermal stability, high acidity and high oxidising ability. The efficiency of these catalysts, heteropoly acid (HPA) modified clays can be compared with the Montmorillonite by using them in reactions such as Deoxygenation of oximes of aldehydes and ketones, synthesis of acetal derivatives of aldehydes and ketones, synthesis of coumarin derivatives etc.

It has been found to be an efficient and reusable catalyst for the synthesis of coumarin derivatives in excellent yields.

Keywords: Green chemistry, sustainable chemistry, Clay, Heteropoly acid, Coumarin derivatives.

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Insect biotechnology for bio-economy

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Abstract

Insects are very successful and population rich organisms from the perspective of biodiversity. In the course of their evolution, they have sustained their existence due to development of active compounds and enzymes to developed defense mechanism and protection from diseases. Development of new and innovative biotechnological methods will enable insects as suppliers of active and useful ingredients for the bioeconomy. Insect biotechnology is an application of biotechnological methods for the purposes of exploiting insects to produce beneficial products in the fields of medicine, food, waste management, agriculture and many more for human purposes. Among insects larvae of green bottle fly *Lucilia sericata* are being used as maggot therapy in chronic or non-healing wounds, due to the secretion of active substances into wounds and also capable in digestion of necrotic tissues. Over 50 genes for antimicrobial peptides have been traced out in ladybird *Harmonia axyridis*. Black soldier fly, *Hermetia illucens* larvae convert slurry, old and greasy material into fats and protein and could be used in the future as a food source for fish farming. An enzyme, harmonin produced in the harlequin ladybird acts against tuberculosis and malaria pathogens. *Nicrophorus vespilloide*, sexton beetle secretes enzymes that could be utilized in the bioconversion of slaughterhouse waste. Some of the insect enzymes have potentially used in the bioconversion of biological waste and useful to bioeconomy. Insect species belonging to the orders Diptera (flies), Hymenoptera (wasps, bees, and ants) and Coleoptera (beetles) are saprophagous, detritivorous, plant tissue eaters, saproxylics or carrion scavengers and they live on and lay eggs in the pile of waste, can be used in waste treatment. The field of insect biotechnology therefore provides useful products and involves in removal of the waste and has considerable economic potential for the utilization of biodiversity of insects for the bioeconomy.

Keywords- Insect biotechnology, bioeconomy, beneficial products, waste management

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GC/MS Study of Methanol Extract of the Seeds of *Pongamia Pinnata* (L.)

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Abstract:

Natural products have been a source of drugs for centuries. In the last few years gas-chromatography mass-spectrometry has become firmly established as a key technological platform for metabolite profiling in plant. The aim of the study was to investigate the presence of phytochemical compounds from the methanolic seed extract of *Pongamia pinnata* by GC-MS method. *Pongamia pinnata* is a species of family Leguminasae, a drought resistant, semi-deciduous, nitrogen fixing leguminous tree. Cropping of pods and single almond sized seeds can occur by 4-6 years and yields 9-90 kg's of seed. The yield potential per hectare is 900 to 9000 Kg/Hectare. 26 bioactive phytochemical compounds were identified in the seeds methanolic extract of *Pongamia pinnata*. The identification of phytochemical compounds is based on the peak area, retention time molecular weight and molecular formula. A large variety of compounds have been detected in *Pongamia pinnata* including Flavonoid, phytosterols, Diterpene, alkane hydrocarbon, n-alkanoic acid, vitamin-E and Tri-terpene, Terpene alcohol.

Keywords: *Pongamia pinnata* (L.), GC-MS method, phytochemical compound



Biotransformation and Electrochemical Reduction of Some A, B-Unsaturated Carbonyl Compounds

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Abstract

The main purpose of this work is to study the characteristics of asymmetric reduction of some alpha, beta-unsaturated carbonyl compounds (alpha-ionone, beta-ionone, 4-methoxy chalcone and 4'-methoxy chalcone) catalysed by baker yeast, the biogenesis of some natural odorants and their analogs, the method to improve yield and stereoselectivity of the reaction, the tolerance of yeast to organic solvent and the performance of IMBY in polyacrylamide gel. Electrochemical reduction of

the above compounds was also employed in the present work. Cyclic voltammograms of alpha-ionone, beta-ionone, 4-methoxy chalcone and 4'-methoxy chalcone were recorded at different pH (5.0, 7.0, and 9.0) to establish the optimum conditions of the reduction. The electrochemical reduction of alpha-ionone, beta-ionone, 4-methoxy chalcone and 4'-methoxy chalcone was thereafter carried out galvanostatically at pH = 9.0 using stainless steel (SS-316) as a working electrode.

In both of the above reduction methods applied, selective reduction of C=O moiety was achieved. Optically active products, thus obtained in good yields (75-90%) were then isolated, purified and characterised by combined application of chromatographic and spectroscopic techniques. These products find extensive applications in perfume formulations as well as in perfumed articles and colognes, depending upon many factors including the other ingredients, their concentration, etc. alpha-Ionol is used in cosmetic fragrances and also has pheromonal activity. beta-ionol is used as nuclear hormone receptor compound for the treatment of cancer and skin disorders. beta-ionol is also used as an antioxidant against the toxic effects of thiophenol. It is also used as a bactericidal agent for oral cavity against *Porphyromonas gingivalis* and hence it is used in the formulations of toothpastes, liquid dentifrices, mouthwashes, etc.

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Radiation Hygienization of Fish Waste

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Abstract:

Fishery processing industries generate large amounts of by products .The disposal of these wastes represents an increasing environmental and health problem.To avoid wasting of these by products application of gamma radiation for hygienization of Fish waste was studied.Fish waste was subjected to various doses of gamma radiation i.e. 5kGy,10kGy,20kGy and incubated at 4 °C and 27 °C .Radiation processed samples were examined for microbial counts as well as biochemical parameters Total volatile basic nitrogen,TCA soluble peptides,lipid peroxidation and protease activity.A dose of 20kGy was found to sterilize the waste and remained so at both ambient and 4 °C for 20 days.Post irradiation at 5 kGy and 10 kGy samples stored at ambient temperature showed 3-4 fold increase in TVBN and constant value at 4°C C.TBA values were found to be higher in irradiated sample and increased as a function of dose.No significant

increase in TCA soluble peptides was could be observed during post irradiation storage. Effect of irradiation on activity of proteolytic enzyme Cathepsin D and Cathepsin L showed reduction in the activity during post irradiation storage by 50% and 40% respectively. Fish waste is a valuable underutilized by product of fish processing industry, radiation hygienization of fish waste can thus provide a sustainable source of proteolytic enzymes.

Key words: fish waste, radiation, proteolytic enzymes, Total volatile basic nitrogen.



Assembling and Estimation of Herbal Congeal of *Boswellia Serrata* for the Executive of Appetite and Pharmacological Activity

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Abstract:

The herbal therapeutic has become an item of worldwide in both medicinal and economical in modern drug transportation. Herbal remedies are getting increasing patient consent as they are lacking of any typical side effect of allopathic medicines. In present study of our research deals with composed of *Boswellia Serrata* extract which are having anti inflammatory activity in the form of herbal gel for executive of congeal were formulated. The drug has evaluated on the basis of solvability, UV spectroscopy, IR spectroscopy, HPLC, DSC study. Assembling was prepared by dispersion method. The preparation of herbal gel was subjected for preliminary evaluation such as P^H, viscosity, spread ability, skin irritation study, in artificial insemination drug release.

Boswellia Serrata is recommended for osteoarthritis, juvenile rheumatoid arthritis, soft tissue fibrosis and spondylitis without any side effect. Present review focuses on pharmacological activities of *Boswellia Serrata*.

Key words: *Boswellia serrata*, Dispersion method, Congeal, Pharmacological activity

Material and Method:

- *Boswellia Serrata* extract, methyl salicylate, ethanol, sesame oil, was obtained as gift sample from Hamdard laboratories Bhopal (M.P.)

- Aerosil, BHT, BHA was obtained from standard chemicals, Bhopal India.
- All chemicals and reagents used were of analytical grade.

Identification tests:

Identification test such as Solubility Ultraviolet (UV) spectroscopy, Fourier Transform Infrared spectroscopy and Differential scanning Colorimetry were conducted.

Solubility:

Solubility of boswellia serrata was checked by using different solvent like water, ethanol, heptanes, dichloromethane and propanitrile.

UV spectroscopy Method:

Preparation of standard plot of boswellia serrata exudates in 6.6 phosphate buffer solution

For making the standard curve of boswellia serrata extract serial dilution were made. Initially a solution of the concentration of 1000 mcg/ml was made by weighing 15 mg of drug using digital balance (Shimadzu, AU X 240) and dissolving in 15 ml of 6.6 phosphate buffer solution. For this stock solution different concentration ranging from 30-110 mcg/ml were made in using 6.6 phosphate buffer solution as blank at 270 nm for detection of boswellic acid.

Infrared (IR) Spectroscopy:

The infra red spectrum of drug boswellia serrata extract was recorded in the range of 335-445 cm^{-1} using potassium bromide pellet method and was compared for any interaction present FT-IR was obtained using shimadzu FT-IR spectrophotometer.

High performance liquid chromatography:

The drug sample was analyzed by using shimadzu HPLC with an attached UV detector on a reverse phase column C18 (20cm x 3.5 mm 4 μ m).

The instrument was adjusted the following parameters:

- Mobile Phase: Acetonitrile: water (80:20)
- Flow rate: 2.4 mL/min
- Detection UV, 260 nm
- Injection: 25 μ L

Differential Scanning Calorimetry (DSC):

DSC of the pure drug taken by using differential scanning calorimeter calibrated with indium. All samples were run triplicate. The instrument was adjusted to the following parameters:

- Atmosphere: Nitrogen inert
- Heating rate: 15°C/min
- Gas flow rate: 15mL/min
- Temperature range: 50-250°C
- Sample size: .2mg

Evaluation of Boswellia Extract:

Physical Evaluation

The color, appearance and the feel on applications of the prepared herbal extract formulation were noted and the result are shown in table

P^H measurement

The P^H of the extract was determined by using a digital P^H meter. 6 gm extract dissolved in 60 mL water and P^H was determined by dipping the glass electrode completely into gel solution system so as to cover the electrode. Then instrument reading in terms of P^H was recorded.

Viscosity

Viscosity was measured by Brookfield viscometer which measures the shearing stress on a spindle rotating at definite, constant speed while immersed in the sample.

Skin Irritation Test

The irritancy of the optimized formulation was determined in the albino Wistar rats. About 1g cream was applied to the left ear of the Albino Wistar rat and the right was considered as control. The development of erythema and oedema were monitored for 5 days using the reported method

Skin Irritation Scores of formulation (A = Erythema Formulation Score; B = Oedema formation score)

	Intact Skin				Abraded Skin			
Rat	24 Hours		72 Hours		24 Hours		72 Hours	
	A	B	A	B	A	B	A	B
1	0	1	0	0	0	2	2	1
2	1	0	0	1	0	2	1	0
3	1	1	1	0	1	0	2	0

Final Skin irritation scores of formulation (= Total of A and B From part A; = Average of all skin reading of 24 and 72 hours)

Rats	Intact Skin		Abraded Skin		Total Average (i) + (ii)
	24 hours 72 hours		24 hours 72 hours		
	(i)		(ii)		
1	2	2	2	1	1
2	0	1	1	2	1
3	1	2	2	2	1.5
					Combined avg= 1.16

Pharmacological Activities

Anti-inflammatory activity:

The boswellic acid from *B. serrata* when tested on new model i.e. Papaya Latex model, showed significant activity of mean 35% inhibition of inflammation. Since the new model is reported to be sensitive to slowly acting, remission inducing drugs. Its effectiveness on boswellic acid throws some light on its mechanism of action which seems to be unlike aspirin and steroidal drugs.

Leukotriene inhibition:

Ethanol extract of the gum resin in the formation of Leukotriene B₄ in rat peritoneal neutrophils. Leukotriene such as LTB₄ is recognized as one of the important mediators of inflammatory reactions. Leukotriene are synthesized by stimulated phagocytes cells, Particularly the neutrophils. The production of chemostatic factors by these cells attracts more phagocytes to sites of inflammation.

Analgesic And Psychopharmacological effects

Menon et al, revealed that the gum resin of *B. Serrata* possess marked analgesic activity in experimental animals in addition to its sedative effect. They have found that it produces reduction in the spontaneous motor activity and cause plosos imrats.

Anti inflammatory and anti- arthritic activity

Extract of salaki caused inhibition of the carrageenan induced rat hind paw oedema by 40.7% and 68-77%, administered orally in dose ranges of 60-210 mg per Kg 1 and interaperitoneal in dose range of 60-110 mg per Kg-1 respectively compared to 48% inhibition seen with

phenylbutazone (60mg/Kg). In the anti-arthritis study on the mycobacterium adjuvant-induced poly-arthritis in rats, salaki guggal showed 35% and 50% inhibition of paw swelling with 60 and 110 mg per Kg-1 doses respectively as compared to controls.

Effect on leucocytes migration:

Ammon et al carried out studies on leukocytes migration into the inflammatory exudates caused by Carrageenan. It was found to exert marked inhibitory effect on both the volume and leukocytes population of pleural exudates. In acute test model of Carrageenan induced pleurisy in rats. Extract of salaki in dose of 150 mg per kg orally showed significant reduction of pleural exudates volume 48.26:P,0.001 and leukocytes population. The effect on these parameters were more pronounced when animals were treated with extract of salaki in dose of 110 mg per kg for 12 days before the test performance.

Antimicrobial Activity:

Essential oil from the root of *B. serrata* was tested against Gram positive and Gram negative bacteria. The essential oil exhibited significant inhibitory activity against *S. aureus* OGSUTH 108, *E. coli* LASUTH 54 and *Proteus mirabilis*.

Clinical Evaluation:

Kimmatkar, N., et al, A randomized double blind placebo controlled crossover study was conducted to assess the efficacy, safety and tolerability of *Boswellia serrata* Extract (BSE) in 36 patients of osteoarthritis of Knee, 18 each receiving active drug or placebo for eight weeks.

After the first intervention, washout was given and then the groups were crossed over to receive the opposite intervention of eight weeks. All patients receiving drug treatment reported decrease in knee pain, increased Knee flexion and increased walking distance.

Anti-asthmatic activity:

In a double blind placebo control clinical study with 350 mg thrice daily dose for 8 weeks, Gupta et al (1998) established anti-asthmatic potential of alcohol extract of salaki (AESG) where 70% of the patients with prolonged history of asthma showed improvement in physical symptoms and signs of dyspnoea, bronchi, number of attacks, increase in stimulation of mitogen-activated protein kinase MAPK and mobilization of intracellular Ca^{2+} .

Conclusion:

The present study revealed that the optimized herbal formulation consisting of *Boswellia serrata* extract shows comparatively better results than other formulations. FT-IR study revealed that

there is no possible drug interaction with other components present in extract and DSC study depicts the presence of boswellic acid in the extract. When the concentration of aerosol decreased. Release mechanism follows first order kinetics where drug is being released through diffusion process. The skin irritancy study shows the optimized formulation F2 in non irritant abd can be applied easily. Thus, boswellic acid based anti-gout gel has great potential for management grout.

Discussion

Our findings show that there is statistically significant improvement in the efficacy variables in the patient treated with Boswellia Serrata Extract. Bosellia Serrata Extract is recommended in the patient may have the therapeutic utility in the treatment of other diseases.

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A study on Nanotechnology & Jeopardize

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Abstract:

Nanotechnology has achieved tremendous progress in the past several decades. It's expected that nanotechnology will change the world. It promises to transfer every aspect of our lives. The action of incoming administration will be critical in determining whether we can reap the huge potential benefits of nanotechnology and at the same time prevents its potential serious dangers. Nano scale device is quantum method of operating system and certain advantages over them. But nanotechnology is likely to be menacing also for many reasons including potential risks (environment health and safety issues). Material which by themselves are not very harmful could be virulent by causing lung inflammation and heart problems if they are inhaled in the form of asbestos particles. Transitional effects such as ouster of traditional farming and manufacturing industries as the product of nanotechnology become dominant which is possible loss of jobs. There are some economical adverse effects such as nanotechnology is very expensive and developing it can cause lots of money. Further, some ethical issues can also be observed in real practice of nanotechnology. However nanotechnology provides us with a promising lead for developing strategies to prevent damage caused by Nano particles but safety concerns have recently attract great attention and with the technology evolving rapidly, we need to start finding way to cushion workers and consumers from any toxic that might come with it. The purpose of this article is to something of being a technology that was developed before the science and its limitations behind it were fully understood. So as like Nano scale problem will also get dwarf.

Keywords: Nanotechnology, Potential Risks, Transitional Risks.



Assessment of genetic diversity between different populations of *Commiphora wightii* (Arnott.) Bhandari, in Indian Thar Desert, using ISSR markers

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Abstract :

Effective conservation and management of plant genetic resources is imperative and can only be brought about by a thorough understanding of the species in concern, both at physiological and molecular level. In particular, an adequate knowledge of the existing levels of genetic diversity within and between populations is a fundamental requirement for both basic and applied science research. *Commiphora wightii* has been as a deemed critically endangered species owing to its heedless exploitation for gum resin and fuel wood. The study was conducted to assess the genetic diversity among the different populations of this endangered medicinal plant, in Rajasthan, using ISSR markers. UPGMA dendrograms constructed using the ISSR profiles give an indication that polymorphism can be attributed to variables like edaphic factors.

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Deforestation in Western Ghats Affecting Rainfall in Tamilnadu

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Abstract

Western Ghats considered one of the global biodiversity hotspots that run through Kerala, Tamilnadu, Karnataka, Goa, Maharashtra and Gujarat has cover the 35.53% of the total forest over the last nine decades that represents a vulnerable ecosystem. The dense vegetation in the Western Ghats determines the amount of rainfall that Tamilnadu gets during the summer monsoon. Deforestation in Western Ghats leads to a decrease rainfall during the Southwest

monsoon season in the water scarce state of Tamilnadu. The reasons for deforestation include decrease in plantations and construction of dams for irrigation. A study has also been found that deforestation in the Ghats has led to 0.25 degrees Celsius increase in surface temp across the state. Tamilnadu is at present under severe crisis due to interstate water sharing and related controversies. IIT Bombay has found that vegetation in the Western Ghats influences 25-40% rainfall during June to September kharif cropping season in Tamilnadu which at present is under severe water crisis owing to an interstate water sharing dispute with Karnataka and touches 50% during a dry spell or below normal monsoon season. We emphasize the urgent need of enforcing strict laws to stop the deforestation of Western Ghats not only to retain biodiversity but also to maintain the water cycle over these semi arid parts of peninsular India.

Keywords: Western Ghats, Deforestation, Rainfall, Water crisis in Tamilnadu.



Piscicidal Activity of Ethanol Crude extract of *Sphaeranthus indicus* against *Gambusia affinis*

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Abstract:

Piscicidal activity of ethanol extract of leaves of *Sphaeranthus indicus* against aquatic fish *Gambusia affinis* and the behavioral change were investigated. *S. indicus* leaves extract show remarkable piscicidal activity. From the plant, 50gm dried powder is extracted with 200ml of ethanol in soxhlet for a period of 72h each and filtered. The extract were concentrated at reduced temperature on a rotary vacuum evaporator and stored at temperature of 4°C. It have the invate capacity to cause damage to the biological system. The LC₅₀ value of ethanol extract of *S. indicus* were found to 80micro per litters In sub-lethal concentration of the ethanol extract of *S. indicus* the behavioral change like erratic swimming, hypo-pigmentation ,gathering at one corner, hyper secretion of mucous, downward and vertical swimming patterns etc were easily observed. The amount of DNA and RNA present in gills of *Gambusia affinis* also reduced according to increased concentration of ethanol extract of *S. indicus*.



Agrobiodiversity conservation and community forestry as a tool for ecological sustainability - A case study in Kotra block, Udaipur, Rajasthan, India.

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Abstract:

Rajasthan has a semi arid to arid landscape where agriculture is practiced in myriad ways. Agroforestry practices amongst the forest dwellers are bound by a history of laws like National Forest Policy of 1988, the Biological Diversity Act of 2002, Scheduled Tribes and Other Traditional Forest Dwellers Act of 2006. These laws recognize tribal communities right to property ownership, traditional knowledge, and use/management of resources, and the consistency of actual rights granted varies greatly across the nation. Present study was carried out in tribal block Kotra of Rajasthan in India that exhibits varying degrees of controls over the forest land by the Forest Department, and Community Forest Rights (CFR) Committees. This research study examines the role of Bhil and Garasia women and their level of engagement in community forest management and the use of specific forest produce in their daily lives. Livelihoods are generated by the forest department and local committees for the tribals by providing land and informal market linkages for the non wood forest produce. Sustainability is generated by the community engagement in protecting tree cover, growing more forest trees, planting medicinal plants, etc. Multi-purpose and fast growing woody plants are grown and used as fuel wood, food, fodder, for improving soil fertility and as shade for planting crops. These highly saline, drought ridden soils in marginalized lands are also reclaimed by sustained agroforestry practices which can be an example to engage communities for sustained development of forest lands.

Keywords : Rajasthan, tribal, forest policy, biodiversity act, NWFP.

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Adiposity: A Serious Health Concern to Present World

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Abstract :

Obesity, the excessive fat condition, is an alarming concern to the present world. It has established in almost all nations now, hence the term coined 'globesity'. Epidemiology in Europe, United States and Mexico is very high. It develops by the long time positive energy balance between energy intake and energy expenditure. It is the result of complex interaction between intrinsic (genetic, metabolic, psychological and developmental) and external factors (lifestyle, dietary habits, environmental and physiological). Consumption of calorie rich foods and sedentary lifestyle are the major causes of the development of obesity. It is the direct cause of several health problems, viz. diabetes mellitus, insulin resistance, impaired glucose tolerance, hypertension, cardiac dysfunctions (stroke, angina, chest pain), pulmonary complications (sleep apnea, hypoventilation, asthma), neurological disorders (depression, alzheimer's disease), osteoarthritis, back pain and some forms of cancer. So a permanent cure of this problem is seriously warranted. Treatment of adiposity includes medications, surgeries and dietary & lifestyle modifications. Orlistat is the only antiobesity drug recommended by food and drug administration (US FDA) and European agency for the evaluation of medicinal products (EMA). Phentermine is also approved but for the short term use only. Orlistat was approved in 1998 and reduce dietary fat absorption by 30% when used 1 year. It is a gastrointestinal lipase inhibitor and not well tolerated. Its use is associated with gastric irritations, fecal incontinence, flatulence, diarrhea and reduced vitamin absorption. Due to these adverse effects patients are more interested in herbal remedies and supplements. Weight loss supplements cover billions of dollars market of in US. None of the methods give permanent cure to obese patients as surgery procedures are added with serious side effects and available chemotherapy don't produce permanent weight loss and also added with intolerable side effects. Patients regain the weight and easily frustrated by awful side effects and demand side effects lacking procedures to fulfill their goal.

Keywords: Obesity, Epidemiology, Orlistat, Side Effects.



A Review of Air Pollutions and its Measurement Criteria

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Abstract:

Air pollution is becoming a major health problem that affects millions of people worldwide. In support of this observation, the World Health Organization estimates that every year, 2.4 million people die because of the effects of air pollution on health. Mitigation strategies such as changes in diesel engine technology could result in fewer premature mortalities, as suggested by the Indian Environmental Protection Agency. This review: (i) discusses the impact of air pollution on respiratory disease; (ii) provides evidence that reducing air pollution may have a positive impact on the prevention of disease; and (iii) demonstrates the impact concerted polices may have on population health when governments take actions to reduce air pollution.

Key words: Air pollution, health impact, prevention, respiratory disease.

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Micropropagation strategies for *ex situ* conservation of a miracle medicinal tree; *Moringa oleifera* Lam.

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Abstract:

Moringa oleifera Lam. is one such mineral packed, nutrient rich and medicinally important tree species of family Moringaceae. The multidimensional utilities of *M. oleifera* may cause overexploitation of this tree, posing danger to the existing natural variability in the near future. Therefore, there is a need for conservation of the species, for ethnobotanical, pharmacological, nutraceutical and biodiversity purposes. In this study, different micropropagation strategies were developed for *ex situ* conservation of *M. oleifera* using different types of explants. Nodal explants from field grown plants when inoculated on MS media supplemented with different

concentrations of BAP (0.5-5mg/l) showed direct morphogenesis/shoot induction on all the hormone concentrations whereas nodal explants derived from *in vitro* germinated seedlings exhibited both direct and indirect shoot morphogenesis on MS medium supplemented with BAP (0.5-3mg/l) and BAP 5mg/l, respectively. Adventitious shoot induction from leaf explants derived from *in vitro* regenerated shoots was also observed on the similar media composition. MS medium supplemented with BAP (0.5-5mg/l) led to induction of somatic embryogenesis in the immature seeds whereas multiple shoot regeneration/morphogenesis was induced with mature seeds. Therefore, these methods will not only aid in generation of plantlets free from endophytic contamination but will also enable in enhanced biosynthesis of novel bioactive compounds.

Keywords: *Moringa oleifera*, micropropagation, *ex-situ* conservation



Facile and Stereoselective Synthesis of Novel Heterocycles

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Abstract:

Heterocyclic compounds have been a special interest to researchers only in the last 15-20 years. The increased interest in heterocyclic compounds is primarily due to high biological activity of some natural compounds of this group. Active methylene heterocycles incorporating toxophores have been reported to possess a wide spectrum of therapeutic activities. Therefore, coupling of these two biologically active moieties would be expected to afford interesting series of compounds having enhanced biological properties.

So, a good deal of current activity in the sphere of organic chemistry is concerned with the isolation and synthesis of heterocyclic compounds. Over the past hundred years, an increasing volume of research in heterocyclic chemistry has helped to a mass, a vast body of information of interest to organic chemist.

Keywords: Toxophores, Active Methylene

Introduction:

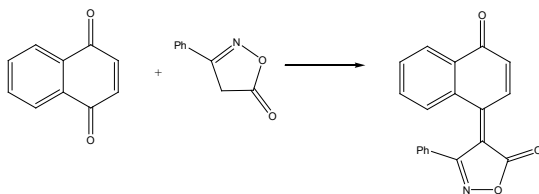
Heterocyclic compounds represent an important class of versatile organic compounds, which are well recognized for their multifaceted biological properties and medicinal relevance¹⁻². Heterocycles are integral constituents of living organism. Heterocyclic compounds have acquired more importance in recent years due to their pharmacological activities³⁻⁴. The nitrogen, sulphur and oxygen containing five/six membered heterocyclic compound have achieved enormous significance in field of medicinal⁵⁻⁶ chemistry.

Work Performed

The reaction of α -diones is carried out with various active methylene heterocycles via knoevenagel type condensation reactions which are associated with antimicrobial activities.

Experimental

The reaction of Naphthaquinone (1) with the active methylene heterocycle (3-phenyl 5-isoxazolone) (2) has to be carried out in the equimolar ratio 1:1 in refluxing absolute ethanol for 6-7 hours afforded naphthaquinone products (3)



Thus it is evident that condensation strategy occupies a central role in the synthesis of novel heterocycles. The synthesized products will be characterized from their analytical, physical & spectral (UV, IR, ¹HNMR, ¹³CNMR, MASS). Microanalysis is to be performed by C, H, N analyzer.

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Effect of Yoga, Preksha Meditation and Naturopathy on Improvement of Range of Motion and Disability in Rheumatoid Arthritis Patients

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Abstract:

Present study was aimed to find out the effect of yoga (Yogic kriya of whole body) Preksha Meditation and naturopathy in improvement of joint movement and disability by measuring Range of Motion (ROM), Health Assessment Questionnaire (HAQ) and Rheumatoid Factor (RF) in patients with Rheumatoid Arthritis. The goal of treatment was regression of symptom like Joint pain, swelling, muscle weakness.

Method and Martial- Total 60 rheumatoid patients were enrolled and divided into two groups Group 1 included 30 patients taking medicine. Group 2 included 30 taking Yoga, Preksha Meditation and Naturopathy. Range of Motion in finger and wrist was assessed bilaterally in terms of degree. Disability was assessed by using HAQ, a self-reporting method and an observational method. They were trained for 4 months of Yoga, Naturopathy and Preksha Meditation. All the data was collected before onset of study and after 1 month and analyzed statistically with student 't' test.

Results- Finger joint movability, wrist joint up movability, wrist joint down movability were significantly increased, and Health Assessment Questionnaire and RA Factor were significantly decreased in subjects after undergoing four months of Yoga, Preksha Meditation and Naturopathy treatment.

Conclusion- Yoga, Preksha Meditation and Naturopathy may be used as a non-pharmaco therapeutic and safe modality as an effective lifestyle adjunct to medical treatment to improve quality of life of patients. It is to be emphasized that it is very effective for prevention as well as management of all-pervading stress and stress related disorders.

Keywords- Range of Motion, Health Assessment Questionnaire, Rheumatoid Factor, Naturopathy, Preksha Meditation



New Unified Integral Involving Srivastava Polynomial and Aleph Function

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Abstract

The aim of the present paper is to study new unified integral involving Aleph function and Srivastava polynomial. During the course of study, the main result can be reduced to the corresponding integral formulas involving the classical orthogonal polynomials including Laguerre Polynomial and Bateman Polynomial.

Keywords: Aleph function, Srivastava polynomial, Laguerre Polynomial, Laguerre Polynomial

Introduction:

The Srivastava polynomial will be defined and represented as follows

$$S_n^m[x] = \sum_{k=0}^{[n/m]} \frac{(-n)_{mk}}{k!} A_{n,k} x^k, (n = 0, 1, 2, \dots)$$

where m is an arbitrary positive integers and the coefficients $A_{n,k}$ ($n, k \geq 0$) are arbitrary constants, real or complex. On suitably specializing the coefficients $A_{n,k}$,

The Aleph functions, introduced by Sudland et al., however the notation and complete definition is presented here in the following manner in terms of Mellin-Barnes type integrals:

$$\begin{aligned} \chi[z] &= \chi_{x_i, y_i, \tau_i; r}^{M, N}[z] = \chi_{x_i, y_i, \tau_i; r}^{M, N} \left[z \left| \begin{matrix} (a_j, A_j)_{1, N} [\tau_i(a_{ji}, A_{ji})_{N+1, x_i, r}] \\ (b_j, B_j)_{1, M} [\tau_i(b_{ji}, B_{ji})_{M+1, y_i, r}] \end{matrix} \right. \right] \\ &= \frac{1}{2\pi\omega} \int_L \Omega_{x_i, y_i, \tau_i; r}^{M, N} (-\xi) z^\xi d\xi \end{aligned}$$

$$\Omega_{x_i, y_i, \tau_i; r}^{M, N}(\xi) = \frac{\prod_{j=1}^M \Gamma(b_j + B_j \xi) \prod_{j=1}^N \Gamma(1 - a_j - A_j \xi)}{\sum_{i=1}^r \tau_i \prod_{j=M+1}^{x_i} \Gamma(1 - b_{ji} - B_{ji} \xi) \prod_{j=N+1}^{y_i} (a_{ji} + A_{ji} \xi)}$$

Result

In this paper, we derive new unified integral involving Aleph function and Srivastava polynomial.

Conclusion:

The result derived in this paper is quite general in nature and can be reduced to the corresponding integral formulas involving the classical orthogonal polynomials including Laguerre Polynomial and Bateman Polynomial.

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Photocatalytic Degradation of Copper Mustard Urea Complex

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Abstract

The photocatalytic degradation of copper(II) mustard urea complex CMU have been studied spectrophotometrically in non- aqueous and non polar solvent benzene. This article recalls and demonstrates the photocatalytic degradation of Copper Mustard Urea complex by heterogeneous photocatalytic process using ZnO as semiconductor. Present study suggests that variation in rate constant may be due to increase in amount of semiconductor in solution which decreases the probability and the rate of degradation including various steps of metal ligand breaking , unsaturated segment and saturated segment bond breaking of complex respectively. Photocatalytic techniques may prove to be faster and more economical than the traditional techniques of treating pollutant.

Keywords: Copper (II) Mustard Urea complex, Zinc oxide as semiconductor, Photocatalytic degradation

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Environment and Sustainable Development in India

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Abstract

Environment is a broad concept encompassing the whole range of diverse surroundings in which one perceives experience and react to events and changes. It includes the land, water, vegetation, air and the whole gamut of the social order. It also includes the physical and ecological environment. It concerns people's ability to adapt both physically and mentally to the continuing changes in environment.

Keywords: Environment, Sustainable Development

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POSTER PRESENTATION

**Magnetic Nanoparticles Stabilized *Bacillus thermoamylovorans*
BHK67 Lipase for Benzocaine Synthesis**

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Abstract

The *Bacillus thermoamylovorans* BHK67 lipase (BTL) was efficiently immobilized onto modified Fe₃O₄ and MgFe₂O₄ nanoparticles (NPs). The free, Fe₃O₄ and MgFe₂O₄ NPs-lipase showed maximum activity towards *p*-NPP (75.2; 92.7 and 88.5 U/mg, respectively) after 10 min of incubation. Fe₃O₄NPs-bound lipase possessed *t*_{1/2} of 17.4, 5.5 and 2.4 h as compared to free lipase that possessed *t*_{1/2} of 10.4, 3.7 and 1.8 h at 55, 65 and 75°C, respectively. On the other hand MgFe₂O₄ NPs-lipase showed *t*_{1/2} of 13.6, 4.1 and 2.1 h at 55, 65 and 75°C, respectively. Both Fe₃O₄ and MgFe₂O₄ NPs-lipase retained 50 % activity after 20th and 18th cycle of hydrolysis, respectively. The *K_m* and *V_{max}* for free lipase (7.5 mM, 76.9 U/mg/min), Fe₃O₄ NPs-lipase (6.3 mM, 100.0 U/mg/min) and for MgFe₂O₄ NPs-lipase (6.6 mM, 90.0 U/mg/min) were recorded. NPs-bound lipase of *B. thermoamylovorans* BHK67 was found to be stable/modulate on exposure of alcohols and DMSO in contrast to alkanes than the free lipase. Fe₃O₄ NPs-bound lipase in an esterification reaction of PABA and ethanol performed for 12 h at 55°C, produced 29.8 g/L of benzocaine with an achievable yield of 87% while MgFe₂O₄ NPs-lipase yielded 18.8 g/L of benzocaine with a maximum yield of 56% using similar conditions. The use of NPs-bound lipase of *B. thermoamylovorans* BHK67 was the first report in which BTL was stabilized on magnetic NPs for the local anesthetic drugs synthesis.

Keywords: *Bacillus thermoamylovorans* BHK67, Nanoparticles, Thermostability, Reusability, Benzocaine.



Green synthesized Silver Nanoparticles as a Effective Biocide against Uropathogenic *E. Coli*

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Abstract:

Antibiotics have brought a revolution to the history of modern medicine. But the use and misuse of antimicrobials has led to an increase of the number and types of resistant organisms. And thus, the growing trend of antimicrobial drug resistance in human pathogens is a big challenge to pharmaceutical and biomedical field. Antimicrobial resistance (AMR) is the ability of a microorganism to stop an antimicrobial from working effectively against it. As a result, standard treatments have become difficult, expensive, and with more side effects. The field of nanotechnology is one of the most active areas of research to combat the development of multi drug resistant organisms. They have their own intrinsic antimicrobial activity and thus contribute to fight against high risk infections caused by multi drug resistant organisms. For example, the use of green synthesized silver nanoparticles has been proved as a cost effective, eco-friendly and a potential novel biocide against uropathogenic MDR strains of *E. coli*. Based on the results obtained it can be said that the plant resources can be efficiently used in the synthesis of silver nanoparticle against infectious agents.

Keywords: Silver nanoparticles, MDR (Multi drug resistant), *E.coli*, antibacterial, uropathogenic.



Bisphenol-A: An Environmental Pollutant and its Threat to Human Health

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Abstract

Bisphenol-A (BPA), 2,2-bis(4-hydroxyphenyl) propane is an emerging environmental toxicant with endocrine disrupting properties and toxic effects on living organisms. BPA is a ubiquitous

environmental contaminant present in consumer products present in our daily lives. As it is released from consumer products and deposited in the environment, thus creating potential for human exposure through oral, inhaled, and dermal routes. BPA exposure might be able to cause oxidative damage by disturbing the balance between Reactive Oxygen Species (ROS) and antioxidant defense system of eukaryotic cells, resulting in the development of oxidative stress-related diseases. From the available information it can be inferred that a wide variety of BPA intake through any mode results into generation of Reactive Oxygen Species (ROS), altering the antioxidant balance of eukaryotic cells, induces mitochondrial dysfunction, and affects cell signaling pathways related to oxidative stress. BPA induced oxidative stress might be able to cause sperm damage, mitochondrial dysfunction, and impairment of the structure and function of spermatozoa resulting in male infertility. BPA exposure, induction of reactive oxygen species (ROS) or oxidative stress concludes it alters reproductive system functions through induced oxidative stress pathways and negatively affects the fertility of male and females.

Keywords: Bisphenol-A (BPA); DNA damage; reactive oxygen species; fertility



Eco-Friendly Microwave Assisted Facile Synthesis of Chalcone Derivatives of Indole Using Claisen – Schmidt Condensation Reaction

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Abstract

Since the use of microwaves comprises more than the simple application of a goal-oriented, innovative tool, it is crucial to be aware of the fundamentals of chemistry in the microwave field before investigating challenging reaction mechanisms.

The microwave assisted synthesis of various sodium salt of the indole can be N-substituted by chloro-acetophenone. In this way 2-(1H-indol-1-yl)-1-phenyl ethanone was prepared. This compound was used to synthesize desired Chalcones i.e. (2Z)-2-(1-H-indole-yl)-3-(4-substitutedphenyl)-1-phenylprop-2-en-1-one by Claisen - Schmidt condensation has been achieved. Indole nucleus is associated with a large number of Medicinal properties like antibacterial, anticancer, antibiotic, central nervous system modulating etc. In the same way

chalcone is an aromatic ketone that forms the central core for a variety of important biological compounds, which are known collectively as chalcones. They show antibacterial, antifungal, antitumor and anti-inflammatory properties. The application of microwave irradiation has led to support for the development of many reaction procedures, which are environment friendly, falling in the domain of green chemistry.

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Applications of Green Chemistry in our daily life

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Abstract:

Green Chemistry is the recently updated branch of chemistry. It is the combination of chemistry & chemical that has been used to design such kind of product & process that reduces the use & generation of hazardous materials. Green Chemistry is also known as “Sustainable Chemistry” because it reduces the damage made by Human’s in our daily life. Some damages made by human’s are – Hardness in water, Roughness in paper, Non-Degradable chemicals in cosmetic products etc. Green Chemistry is an Eco-friendly chemistry i.e., used in developing a new drugs delivery methods which are very less toxic & are more useful & it decreases side-effects & helps alot of Patients. Generally, in chemistry we use alot of chemicals as a Solvent like-Ethanol, Methanol, Acetone etc.,but here (Green Chemistry) we use water as a solvent.

Keywords: Sustainability, Non-Degradable, Eco-friendly, Green Chemistry, Environment

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Estimation of Phytoremediation Properties of *Cicer Arietinum* against Zinc Metal

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Abstract

Cicer arietinum is one of mostly cultivated legume crops and protein rich source. Biotic and abiotic stresses are great constraints to *Cicer arietinum* productivity. The zinc heavy metal play important role in plant development by altering different kinds of physiochemical properties. High quantity of zinc metal in *Cicer arietinum* is harmful for plants and human also. High level/quantity of zinc leads to over production of ROS, very toxic and harmful for protein, lipid, carbohydrates and many biomolecules which further goes to oxidative stress. Oxidative damage is protected by the antioxidant system in the plant. Phytoremediation a novel technique has been evolved to remove heavy metals from the environment. This technique uses for the plant to removal the heavy metal; decrease the concentration of metal and other inorganic contaminants. It is environmental friendly and cost effective technique.

Keywords: *Cicer arietinum*, Phytoremediation and toxic effects of heavy metals

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Symbiotic and Synergistic Efficiency of Bio-inoculants on medicinal plants

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Abstract :

The symbiotic association between arbuscular mycorrhizal fungi (AMF) and the roots of plants is widespread in the natural environment, established with approximately 80% of the vascular plant species in all terrestrial biomes. Arbuscular mycorrhizae fungi (AMF) are beneficial symbionts for plant growth and development, and offer a possible substitute of high input

agricultural technology employed for production of environmentally hazardous fertilizers. Therefore, the present investigation was focused to examine the impact of AM fungi (*Acaulospora laevis* Gerd. & Trappe and *Glomus mosseae* (Nicol.& Gerd.) Gerd.& Trappe) alone, and in combination with *Pseudomonas fluorescens*, on *Catharanthus roseus* and *Cymbopogon citratus* plant in a pot experiment with sterilized soil under polyhouse condition. AM inoculum and *P. fluorescens* showed significant increase in different morphological parameters after 120 days of inoculation. All treatments showed positive influence of mycorrhization on biochemical parameters over the untreated control. Mycorrhization was assessed in term of root colonization and spore number. Infestation with consortium of GAP was found to be most effective for root colonization, increasing chlorophyll content, phosphorous and phosphatase activities. GAP treatment was further followed by GP treatment for chlorophyll content and phosphorous content whereas phosphatase activity was found maximum in AP treatment. In single inoculation, *Glomus* was found to be most compatible with plant.

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Importance of Medicinal Plants in Therapy

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Abstract

One of the prerequisites for the success of primary health care is the availability and use of suitable drugs. Plants have always been a common source of medicaments, either in the form of traditional preparations or as pure active principles. It is thus reasonable for decision-makers to identify locally available plants or plant extracts that could usefully be added to the national list of drugs, or that could even replace some pharmaceutical preparations that need to be purchased and imported. This update article presents a list of plant-derived drugs, with the names of the plant sources, and their actions or uses in therapy.

Keywords: Drugs; Plant extracts; Pharmaceutical preparations; Plant sources

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Managment of Early Blight of Potato by Leaf Extract of *Thevatia Perviana*

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Abstract

Throughout the ages humans have relied on nature for basic needs for the production of food, shelter, clothing, and means of transportation, fertilizers, flavors, fragrances, and medicines. The great ancient Chinese, Indian, and North African civilizations provided written evidence of man's utilization of plants for the treatment of a wide range of diseases. In South Africa, western and traditional systems of medicine exist together, the first dating back only 300 years with the influx of European settlers and the latter possibly to Paleolithic times. Evidence accruing from observation of animals demonstrated that even chimpanzees use a number of plant species for their medicinal value. It has been estimated that 60% of the World's population rely on traditional medicines for their health care needs. In 1976 the World Health Assembly drew attention to the reserve constituted by those practicing traditional medicine. A year later it urged member states to utilize their traditional systems of medicine, and in 1978 highlighted the importance of medicinal plants in the health care systems of many developing countries.

In 1978 at the historic International Conference of Primary Health Care at Alma Ata, the World Health Assembly recommended that governments give high priority to the incorporation of Traditional Medicinal Practitioners (TMPs) and Birth Attendants into the health care team and proven traditional remedies into the national drug policies and regulations. Despite the dramatic advances and advantages of conventional medicine, it is clear that a role has been identified for herbal medicine. In the last 50 years or so, humans have relied on plants to treat all manner of illnesses, from minor problems such as coughs and colds to life-threatening diseases such as tuberculosis and malaria. Herbal medicine is presently experiencing a dramatic renaissance in Western countries, partly because of renewed interest in this field, gaining popularity worldwide as alternative and complementary therapies. The medicines for internal use prepared in the traditional manner involve simple methods such as hot- or cold-water extraction, expression of juice after crushing, powdering of dried material, formulation of powder into pastes via such a vehicle as water, oil or honey, and even fermentation after adding a sugar source.



Puerarin: Bioactive Compounds in *Pueraria* Species, Their role in Health Promotion and Disease Prevention

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Abstract

Puerarin is a member of the class of compounds known as isoflavonoid C-glycosides. These compounds are C-glycosylated derivatives of isoflavonoids, which are natural products derived from 3-phenylchromen-4-one. Puerarin can be synthesized into puerarin xyloside and also found in a number of plants and herbs, such as the root of the kudzu plant. Puerarin and its glycosides (water-soluble derivatives of puerarin) are available in the market in the form of capsules and tablets with supplementary multivitamins. The tablet or injection of concentrated *Pueraria* flavones is used to treat dizziness, headaches, glaucoma, diabetic retinopathy and hearing loss, angina, heart attack as well as myocarditis. More recently, *pueraria* flavones have been examined for neuro protective effects. Laboratory animal investigation suggests that puerarin may help reduce glutamate damage to axons. Puerarin also inhibits tumor growth, modulates immune response and has antioxidant capacity. In the future, Puerarin could be a potential preventive agent for the treatment of various types of diabetes, cardiovascular attacks. In this review, we collected the data regarding detailed pharmacological activities and analytical aspects of Puerarin which will be beneficial to the researchers, scientist and other persons of medical and pharmaceutical field.

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Phytochemical and Antimicrobial Analysis of *Cocos Nucifera* L. Oil

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Abstract

Coconut oil is consumed in many tropical countries of the world for thousands of years. Coconut oil is the most widely used oil by the Asian subcontinent hence its extraction by dry and wet methods can be adopted suitable according to individual needs. The oil possesses

antiviral and antibacterial effects and excellent healing properties. The study justifies the use of *Cocos nucifera* L. in the treatment of many debilitating ailments like cancer, diabetes, ulcer, obesity, heart disease and infections due to micro-organisms. In present study the oil sample was tested for the antibacterial and antifungal activity. From the experimental results, it can be concluded that oil is effective on *S. aureus* which is responsible for the skin infections. It has also given satisfactory result for *E. coli* which is a part of normal intestinal flora. Furtherer testing needs to be done to know about the specific molecule for this activity. Comparative study needs to be done for the antifungal activity too. The results obtained from the phytochemical analyses of the oil obtained from *Cocos nucifera* L. showed the presence of alkaloids, steroids, terpenoids, tannins, saponins and the absence of flavonoids, resins, acidic compounds, glycosides while the macronutrient analyses revealed the presence of carbohydrate, fats and Oil and absence of proteins and reducing sugars.

Keywords- Coconut, nutraceutical properties, oil extraction and Antimicrobial activity.



Screening of Antifungal Activity of Lactic Acid Bacterial Isolates

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Abstract

More than 50 lactic acid bacterial isolates was isolated from fermented green gram were screened for antifungal activity in a dual culture agar plate assay. Approximately 20% of the isolates showed inhibitory activity and 4% showed strong activities against the indicator *Aspergillus flavus*. The majority of the fungal inhibitory isolates were identified by biochemical profiling as *Lactic acid bacteria*. The degree of fungal inhibition was not only related to production of lactic or acetic acid but also related with antimicrobial peptides of Lactic acid bacterial isolates. Further, study on antimicrobial peptides is necessary for approach as biopreservatives.



Conservation of vulnerable monotypic species: *Catamixis baccharoides* Thomson

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Introduction

India is among the fast growing developing countries of world, which is wealthy in all the prospective. Now days it is growing in every aspect including technology, health, education etc. earlier it was known for its cultural heritage and ayurveda, the better use of plants and plant products for the wellbeing of mankind. The country is rich in its vegetation including most of the medicinal plant species for the treatment of life threatening diseases. But now due to some factors like deforestation, exploitation of vegetation, urbanization etc. most of the plants are losing their existence. *Catamixis* is among those species, *Catamixis baccharoides* Thoms., belongs to Asteraceae family is a chasmophyte shrub. *Catamixis* is a monotypic genus of this family, which is fighting for its existence in lower shivalik belt of Indian Himalayas (Srivastava et al., 2016). RET species are rare, endangered and threatened plant species, can be briefed as species losing its existence. *Catamixis baccharoides* is enlisted as “vulnerable” in Red Data Book of Indian plants and 1997 IUCN Red List of threatened plants in vulnerable category (Nayar and Ahmedullah, 1985).

Catamixis baccharoides

Asteracean angiospermic family of flowering plants, of which *Catamixis baccharoides* belongs. The family is also known for its economically important household products like oil, tea, seeds whereas some species has medicinal importance. *C. baccharoides* is only known species of a monotypic genus *Catamixis*. It is a habitat-restricted plant grows majorly on the sandy cliffs and steep rocky slopes of Shivalik hills (Kanjilal and Gupta, 1969). The plant species is reported found only in nine locations of Haryana, Himachal Pradesh, Uttarakhand and Uttar Pradesh in India and West Nepal (Srivastava et al., 2016). The plant is 3-5 feet high having silky to tomentose branching. The shrub having concavely curved like spoon shaped, leathery leaves with distance rounded teeth alternately set along straight, and shyly branching stems. It carries many small flower buds having florets of creamy white color with little hint of violet. It has limited period of flowering and fruiting between the month of March-June. The occurrence of species is rare (Hosetti, 2006).

Conservation

The conservation of RET plant species is a major issue as the number is increasing rapidly in India.

It is believed that many of the Himalayan species are in threat because of change in climatic conditions and geological evolution (kumar D and Tomar A). Major efforts are being suggested for the conservation of these species; despite of all those efforts plant species are disappearing. Due to this the red data list becoming longer and only few of the species are now able to mark their existence after a long time (Ramachandran and Sasi, 2012). *C. baccharoides* is critically endangered species (Nayar and Sastry, 1987; Srivastava and Pusalkar, 2015) the reason behind its loss is its narrow range of occurrence and decrease in population because of habitat loss. *Catamixisbaccharoides* was once considered as endemic to Nepal and Uttar Pradesh (India) (Srivastava *et al.*, 2016). It is expected that once this species will become extinct its genetic resources will be lost forever. Although the significance of this species is not clear yet but in villages the leaf juice is used for the treatment of vision related problems and used as herbal medicine, and as fodder but there is no such report which could prove this. So several *in situ* and *ex situ* conservation measures are being taken through biosphere reserves, national parks, world heritage sites, botanical gardens, greenhouses, etc. (Singh and Singh, 2002) for the conservation of species in this categories.

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Sulfoniumiodate (I) Salt Mediated Chemoselective Iodination of Alkynes

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Abstract

Iodo-functionalized molecules have gained considerable attention due to their synthetic usefulness as key intermediates and valuable synthons in organic chemistry.^[1] In particular, 1-iodoalkynes represent important subclass which have been widely involved as useful precursors in several attractive chemical transformations,^[2] Nozaki-Takai cross coupling,^[3] Hetero-functionalization via CuAAC “Click reaction”, total syntheses of active natural products and biologically active molecules.^[4,5] Iodoalkyne derivatives also served as promising chemical probes of utmost pharmaceutical applications such as *anti*-HIV, *anti*-microbial, and fungicidal agents.^[6]

During our research, we developed a novel and efficient method of iodination of alkyne using Sulfonium Iodate (I) electrophilic reagent under metal-free conditions. This stereo-divergent approach is amenable to a wide range of alkyne substrates and demonstrates a diverse functional group tolerance resulting in synthetically valuable 1-iodoalkyne and (*E*)- vicinal-diiodo alkenes in good to excellent yields (up to 99%) with 100% selectivity under ambient conditions.^[7]

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Herbal Hydrogel Coating Technique in Crops

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Abstract

Herbal hydrogel coating technique is eco-farmers friendly as ingredient are herbal, it is also cost effective as it is easily available globally. It helps plants to perform better under moisture stress environment. It is benefitted in saving irrigation water which reduces irrigation frequency by control erosion- runoff. In traditional system there is heavy weeds infestation which require weekly irrigation, there is no water saving if rain fails. During water scarcity in Gurgaon, administration tests on new weed and barley seeds are done in rain fed areas and high moisture zone. It eradicate the problem of weeds and hence, the need for weedicides. Sources for hydrogel are natural semi synthetic polymers and major synthetic polymers. On regular basis it can be used as emulsifiers, additives in food and medicines.

Keywords: herbal hydrogel, seed coating technique, polymers.

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Population Growth and Environmental Stress

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Abstract:

This paper examines population and environmental relationship and tries to find out the impact present on population growth on environment. Population impacts on the environment primarily through the use of natural resources and production of waste products and is associated with environmental stresses like loss of biodiversity, air and water pollution and increases pressure on arable land. Population size and rates of growth are key elements in environmental change. At any level of development, increased population increases the energy use, resource consumption and environmental stress. Population growth and consumption are fundamental drivers of human environmental impacts. In the matter of population and

environment, per capita income and per capita energy consumption have been considered. Thus it can be concluded that human population growth is the number one threat to the world's environment. Each person requires energy, food, space and resources to survive, which results in environmental losses.

Keywords: Population, Environment, Atmosphere, Energy, Water, Food

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Fruit Pod Extracts as a Source of Nutraceuticals and Pharmaceuticals

Garima Sharma

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Abstract

Fruit pods contain various beneficial compounds that have biological activities and can be used as a source of pharmaceutical and nutraceutical products. A nutraceutical is defined as any substance that is food or a part of food that provides medical or health benefits, for the prevention and treatment of diseases. Nutraceuticals include a broad range of categories such as dietary supplements, functional foods and herbal products. The active compounds or phytochemicals in plants, especially fruits, have been associated with numerous health benefits and are used as ingredients in many nutraceutical and pharmaceutical products today.

Although pods or pericarps are usually discarded when consuming the edible parts of fruits, they contain some compounds that exhibit biological activities after extraction. Most fruit pods like *Garcinia mangostana*, *Ceratonia siliqua*, *Moringa oleifera*, *Acacia nilotica*, *Capparis deciduas* and *Prosopis cineraria* contain polyphenolic components that can promote antioxidant effects on human health. Additionally, anti-inflammatory, antibacterial, antifungal and chemopreventive effects are associated with these fruit pod extracts. Besides polyphenolics, other compounds such as xanthenes, carotenoids and saponins also exhibit health effects and can be potential sources of nutraceutical and pharmaceutical components. It can be concluded that although fruit pods are considered as being of no practical use and are often being thrown away, they nevertheless contain compounds that might be useful sources of nutraceutical and other pharmaceutical components.

Keywords: fruit pods, nutraceutical, pharmaceutical, xanthenes

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Effects of Climate Change on Agriculture

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Abstract

Climate is the primary determinant of agricultural productivity. In present scenario agriculture is affected by climate change in a number of ways, including through high temperature, excess rainfall, spreading diseases, changes in level of atmospheric carbon dioxide and affecting the nutritional quality of agricultural products. The relationship between agriculture and climate change is interrelated in food safety. We need to meet current agricultural demand by using protected cultivation, plant growth promoting rhizobacteria, plant tissue culture and through new biotechnology approaches.

Keywords: Climate change, agricultural production and economic consequences.

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Isolation and Characterization of Consortium of Biosurfactant Producing Bacteria for Biotechnological Applications

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Abstract

Biosurfactants are surface active compounds of biological origin. They are amphiphilic molecules having hydrophobic and hydrophilic moieties produced by various microorganisms. They are potent in several industrial as well as medical field. With the advantage of biodegradability and production on renewable resources, biosurfactants are getting prominent and their applications are getting broader. The target industries for biosurfactant use are the petroleum remediation industries and environmental conservation agencies. Biosurfactants exhibiting the properties of dropping surface tension, stabilizing emulsions, promoting foaming and are usually non-toxic and biodegradable. Interest in microbial surfactants has been progressively increasing in recent years due to their diversity, environmentally friendly nature, possibility of large-scale production, selectivity, performance under intense circumstances and

their impending applications in environmental fortification. These molecules have a potential to be used in a variety of industries like cosmetic pharmaceuticals, humectants, food preservatives and detergents. Biosurfactants have been extensively used in the remediation of water and soil, as well as in the main stages of the oil production chain, such as extraction, transportation, and storage. This diversity of applications is mainly due to advantages such as biodegradability, low toxicity and better functionality under extreme conditions in comparison to synthetic counterparts.

In the present study, the soil sample collected from the textile effluent dye contaminated area was subjected to isolation by streak-plating methods. The isolated pure cultures were screened for biosurfactant production. The activity of the isolates for hemolysis was studied on the Blood-Agar plates. The isolated strains were also characterised morphologically, biochemically and identified using 16S phylogenetic system of classification. The dark-blue colonies were observed by CTAB method, which confirmed the anionic biosurfactant produced by the isolate. The isolates were subjected to other screening tests like reduction of surface tension, foaming, emulsification activity and oil displacement. The consortium of biosurfactants producing bacteria was also tested for the degradation of dyes and bioremediation of heavy metals. This diversity of applications is mainly due to advantages such as biodegradability, low toxicity and better functionality under extreme conditions in comparison to synthetic surfactants. Interest in microbial surfactants has been progressively increasing in recent years due to their diversity, environmentally friendly nature, possibility of large-scale production, selectivity, performance under intense circumstances and their impending applications in environmental fortification. These molecules have a great potential in a variety of industries like cosmetic pharmaceuticals, humectants, food preservatives and detergents.

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Making Sustainable Development and Tourism Co-Exist in Rajasthan

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Abstract

Tourism has now become a popular culture. Rajasthan attracts tourist all over the world, because of its rich culture, heritage and beauty. Due to heavy tourist foot fall, came rapid economic expansion with obvious environmental issues. This huge tourist influx make resources consumption .Use of rented vehicles, remote and green areas for building resorts, use of packaged food and export of various luxury goods to far distant hotels, leads to increased carbon foot print. Waste production, plastic pollution garbage dumping, urbanization in terms of hotels and resorts, this all have a destructive impact on the place and its beauty. Areas like Jaisalmer are very sensitive, throughout the year they face water scarcity and when tourist comes demanding luxury treatment it end up in resources unavailability to local people.

All these cause environment degradation, loss of aesthetic value and paying our very own survival for economic increase. Instead there must be a way that we can manage tourism and nature as well so that our future generation do not run out of resources.

Keywords: Heritage, Economic expansion, Environment degradation



A Review on Scope of Robotics to Develop Autonomous Agricultural Vehicles as to Increase Agricultural Field Yield and Production

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Abstract:

This review provides ongoing research information about the autonomous agricultural robots designed in overall world and also scope of new trends of designed robots for farming in agricultural sector. Agricultural operations is stipulation of the time to enhance the productivity with the help of tools and technology so robotics is playing a significant role in agricultural production and management which is time saving technology. There are a lot of application of robot in the field of agriculture such as chemical spraying, picking fruits and monitoring of crops. Robots like these are perfect substitute for manpower to a great extent as they deploy unmanned sensing and machinery systems.

Keywords: Robotics, agriculture, Application

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A Review: Robot design for bomb detection with wireless video transmission

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Abstract:

There are a lot of application of robot in the real time ranges from pick-place to bomb detection, chemical handling to electronic assembly and metal welding to mine finding and a lot more. In this paper we specially study a surveillance system in the form of robot designed with the help of a micro-controller for remotely controlled operation using Zig- Bee communication established between robot and the host pc in a range of 100 meters and

equipped with wireless video footage transmission using RF signal for live video at 25-30 frames per second. In the real time application, the detection of bomb is one of the tough and risky task for human life. For this we have investigate new ROBO for present era.

Keywords: Robot, Bomb detection, Zig-Bee.

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Floataction Technique for Wastewater Treatment

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Abstract

The treatment of aqueous or oily effluents is one of the most serious environmental issues faced by the minerals and metallurgy industries. Main pollutants are residual reagents, powders, chemicals, metal ions, oils, organic and some may be valuable (Au, Pt, Ag). The use of flotation is showing a great potential due to the high throughput of modern equipment, low sludge generation and the high efficiency of the separation schemes already available. It is concluded that this process will be soon incorporated as a technology in the minerals industry to treat these wastewaters and, when possible, to recycle process water and materials. In this paper, the use of flotation in environmental applications is fully discussed. Examples of promising emerging techniques and devices are reported and some recent advances in the treatment of heavy metal containing waters and emulsified oil wastes are discussed.

Keywords: Pollution, Flotation bubbles, Environmental, Waste processing

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Waste Water Treatment by *Moringa Oleifera* Seeds: An Efficient and Cost Effective Bio Alternative Treatment

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Abstract

The effectiveness of seed powder extracted from mature-dried *Moringa oleifera* seeds was studied. The water samples were collected from Jayoti Vidyapeeth Women's University campus for treatment by *Moringa* seeds in powdered form, resulting in an effective natural clarification agent for highly turbid and untreated water. Various doses of *Moringa* seed powder viz. 2, 4, 6 g/l were taken and checked for their efficiency dose on raw water. After treatment of seed powder water samples were analyzed for different parameters like pH, EC, TDS, alkalinity, hardness and sulphates. All the parameters were reduced with increasing time with the treatment with seed powder. Maximum reduction was in Sewage water in reference to pH, alkalinity and sulphates. In Duckpond, maximum reduction in EC, TDS and Sulphates. Hardness of water was maximum reduced in Tubewell water after 2 hrs . Application of low cost *Moringa oleifera* seeds is therefore, recommended for eco-friendly, nontoxic, simplified water treatment where rural and peri-urban people living in extreme poverty.

Keywords: Water purification, waterborne diseases, seed extract, *Moringa oleifera*,



Diatoms: Protists having influential part in eco-pollution and forensic investigation studies

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Abstract :

Diatoms are protists having shell made up of organic compounds and silica. Found both in fresh and marine water resources. They are eukaryotic algae, commonly unicellular, although they do

exist as filamentous colonies and are good indicators of the environmental integrity, the researchers explain. Diatoms vary from one water body to another and being quite sensitive to environment, there can be used as tool for identification for environment changes. Human interventions like industry, forest degradation and chemical use in agricultural practices affect the environment in access. Diatoms not only helpful in ecological studies they are also very much useful in forensic studies and investigations. If a person has drowned then diatoms are able to enter the human body. If a victim has breathed in water, diatoms can enter their blood stream, bone marrow, brain, lungs and kidneys which is a good indicator that the victim was alive when they entered the water. The similarity of the diatoms present in the water that the body is found in and the diatoms present in the body can help to discover whether the body was moved. Diatoms and diatomaceous sediments on clothes and materials found at sites can also aid forensic investigations in determining the actual cause. In this way diatoms are helpful in investigating that whether death occurred due to drowning or any other asphyxial cause or post or ante mortem in nature.

Keywords: Diatom, environment, Forensic investigations, Drowning, Asphyxia, Post-mortem.



Synthesis and Characterisation of New Tin (IV) Complexes with Maleamic Acid Derivatives as Ligands

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Abstract

The reaction of dimethyltin dibromide with maleamic acid derivatives has been investigated. The reactions afforded corresponding complexes. Complexes so obtained are colorless crystalline solids having high melting points and are readily soluble in polar solvents like dichloromethane, methanol but sparingly soluble in nonpolar solvents such as hexane and toluene. The maleimic acid acts as a chelating ligand and co-ordinates to the Sn atom through the O atom of the OH group and the N atom of the amidic moiety as shown in Figure 1.

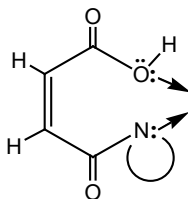


Figure 1: Co-ordinating sites in maleimic acid derivative.

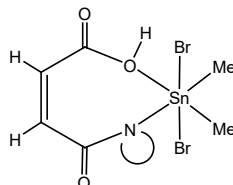


Figure 2: Proposed geometry of the tin(IV) complexes.

Maleimic acid derivatives act as chelating ligands and form 1:1 complexes with dimethyltin (IV) dibromide. A peak in the range of -49 to -115 ppm in ^{119}Sn NMR spectrum confirms the formation of a single complex in each case. ^{119}Sn NMR of the complexes indicates hexa-coordination of the tin atom on the basis of which an octahedral geometry could be perceived for the complexes.

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Stereoselective Synthesis of O-Glycosides from Glycals

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Abstract

2-Deoxy and 2,3-di deoxysugars are particularly important due to their usefulness as key intermediates in the synthesis of several biologically important molecules,^[1] such as antibiotics,^[2] oligosaccharides,^[3] carbohydrate derivatives. Deoxyglycosides are often found as components of a wider range of natural products having biological activity.^[4-6]

As a part of our ongoing research towards the synthesis of glycosides and glycoconjugates,^[7] we explore the possibility of using Lewis acid catalyst for stereoselective synthesis

of deoxyglycosides with variety of *O*-nucleophiles. The current protocol involves stereoselective synthesis of glycoside with a variety of *O*-nucleophiles in presence of other sensitive groups. Scope of this method has been demonstrated for the nucleophiles comprising allylic, propargylic, natural products, carbohydrates, amino acids.

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Synthesis of methyl butyrate using purified lipase from fungal isolate RL-1

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Abstract :

In the present study, lipase from fungal isolate RL-1 was purified and used in the synthesis of methyl butyrate, an ester used in the flavor development, as organic solvent and in cosmetics. The fungal isolate was spore forming and greenish in color when observed for morphological characteristics while microscopic characteristics showed a series of phialides, giving origin to the rounded conidia disposed in long and parallel chains. Crude lipase produced by the organism was found to have specific activity of 2.06 U/mg. The enzyme was salted out using ammonium sulfate precipitation and 60-70% saturation gave maximum specific activity of 4.83 U/mg. The enzyme was purified using Octyl Sepharose column chromatography and this resulted in purification fold of

6.96. Native and SDS PAGE analysis of purified enzyme was carried out to find homogeneity and molecular weight of enzyme. The Native PAGE gave a single band of approximately 70 kDa indicating that enzyme was purified to homogeneity. SDS-PAGE gave one band of 35 kDa which revealed that the purified lipase was a homodimer. Different parameters like molarity of substrates, incubation time, incubation temperature and amount of purified enzyme were optimized for maximum synthesis of methyl butyrate using purified lipase. The molar ratio of 2:2 (vinyl butyrate: methanol) was found to be optimum for the synthesis of methyl butyrate. The yield of methyl butyrate was maximum when vinyl butyrate and methanol were incubated for 16 h at an incubation temperature of 40°C. While studying the effect of amount of enzyme on ester synthesis, 30 µg/ml of purified lipase was found optimum to give maximum yield (86%) of ester.

Keywords: Lipase, purification, synthesis, methyl butyrate, chromatography



Eco Enzyme or Garbage Enzyme: Production and Analysis

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Abstract

The conversion of “pre-consumer waste” from supermarkets and houses like vegetable and fruits residues which are disposed to landfills into value added products. To achieve this goal is through the fermentation of pre-consumer waste to produce a solution known as biocatalytical garbage enzyme or eco enzyme. This fermentation creates natural chains of proteins, mineral salts, organic acids, alcohol, enzymes. Eco enzyme is prepared by 3 months long fermentation of a mixture of brown sugar or jaggery, pre-consumer waste and water in the ratio of 1:3:10. The fruits and vegetable residues must contain appropriate moisture. Subsequently the characterization of enzyme was conducted based on pH, total solids(TS), total dissolve solid(TDS), chemical oxygen demand(COD) and enzyme activities. The garbage enzyme contain biocatalytic enzymes such as Amylase, Protease, Cellulase and Lipase. During fermentation gases like ozone (O₃) –useful for atmosphere, Nitrates(NO₃)- useful for plants, Carbonates(CO₃)- useful for sea plants are also formed. Eco enzyme used as bio cleaners, organic fertilizers, detergents, insecticides, medical and industrial application. Eco enzymes are beneficial in future also by following ways- 1) Anti global warming effect, 2) Anti

green house effect , 3) Reduce temperature, 4) Reduce ozone depletion, 5) Reduces harmful chemical activities. “Care For Earth”

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Atomic interaction pattern of anthraquinonewith poly at.poly at sequence using computational and spectrophotometric studies

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Rahul Yadav², Udit Khandara², Rajesh Kumar², Pamita Awasthi¹**

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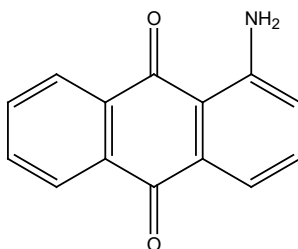
Introduction:

In less developed countries cancer has been reported as leading cause of death. The primary choice of cancer treatment is chemotherapy and in clinical and laboratory studies DNA and telomerase are one of the most effective as a drug target. Anthraquinone compounds have been used as an anticancer drug against various type of tumors. Mitoxantrone, a semi synthetic anthraquinone based anticancer drug, has been extensively used for the treatment of advanced breast and prostate cancer, lymphoma, acute leukemia and non-Hodgkin's lymphoma presently in cancer hospitals. The major drawback associated with mitoxantrone is -highly cytotoxic, weaken heart muscles and change the skin color. UV- Visible spectral studies are widely used to measure and detect interaction between drugs and DNA.

Results:

In UV-Vis spectra of 1-aminoanthraquinone shows absorption maximum at 482 nm and successive addition of DNA in increasing concentration shows decrease in the intensity of absorption and also

red shift from 485nm to 492nm. This hypochromic and bathochromic shift suggested interaction of drug with DNA. These shifts suggest that 1-aminoanthraquinone intercalates partially into double helix of DNA. Interaction of drug with DNA indicates that there is change in conformation of DNA upon interaction with drug. Further the molecular docking study has been carried out on the same molecule with Poly AT. Poly AT sequence.



Structure of 1-aminoanthraquinone

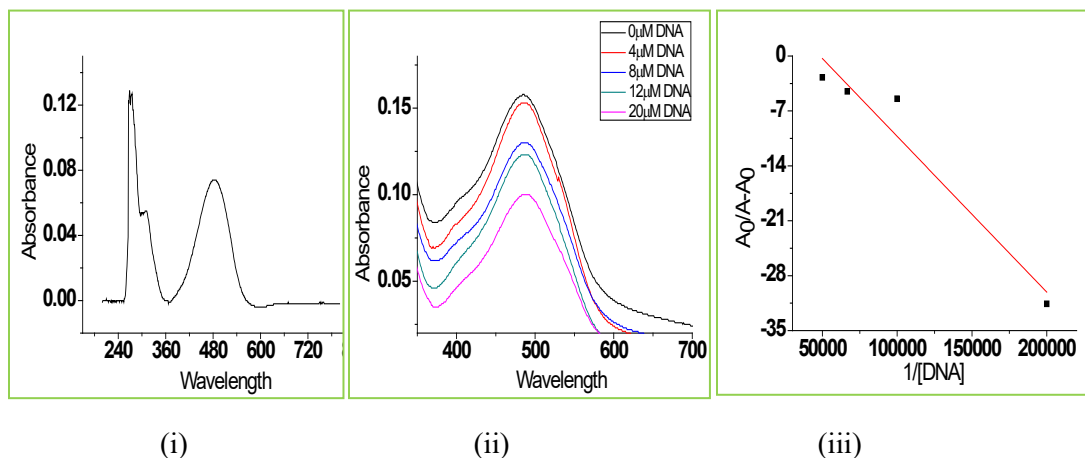


Figure 1: (i) UV-Visible spectra of pure drug 1-amino anthraquinone. (ii) UV-Visible spectra of drug 1-amino anthraquinone in absence and presence of ct-DNA. (iii) Plot of $A_0/A - A_0$ vs $1/[DNA]$.

Table 1. Free energy of binding ΔG_b (Kcal/mol), Inhibitory constant K_i (μM), and hydrogen bond interactions of 1 amino anthraquinone.

Analogue	Inhibition constant- K_i (μM)	Lowest binding energy- ΔG_b (Kcal/mol)	Binding interactions	Hydrogen bond length ($\text{\AA}$)	Number in cluster
1AAQ	61.34	-5.75	STACKING	-	2

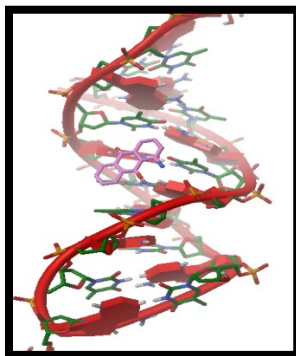


Figure 2. Docked image of 1-Aminoanthraquinone with Poly AT. Poly AT Sequence.

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Synthesis and Antimicrobial Studies of Indole-3-Yl Chalcones and its Derivatives

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Abstract

Indole are one of the most important nitrogen containing heterocyclic molecules, found extensively in biological system which play vital role in biochemical process. Indole ring system is found in many natural products, pharmaceutical agents and polymer materials. The indole and its derivatives have great importance in clinical chemistry. The 2-aryl indole moiety is present in diverse biologically active molecules displaying antiestrogen¹, anti-inflammatory and cytotoxic properties.

Indole-3-yl-Chalcone derivatives are potent biologically active agent has lead to the exploration of large number of structural variants, containing indole -2-carboxylic moiety as an invariable ingredient so the synthesis of these compound has become an important target.

Indole -3-yl- Chalcone derivatives have been listed for various pharmacological activities such as anticancer, antitumor, anxiolytic, anti-HIV, antiviral, antimicrobial, antihypertensive,

antidiabetics, cardiovascular The reaction of formylindoles with acetophenones gave indolylchalcones. All the synthesized compounds have been characterized by elemental and spectral (IR, PMR and Mass) analyses. A few representative compounds have been evaluated for their antibacterial and antifungal activities.

Keywords: indoles, Chalcones, amines

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Preparation of A Simple Biocompatible Magnetite @ Citric Acid: An Efficient Reusable Solid Acid Catalyst for the Rapid Synthesis of Bio-Important Quinoxaline Derivatives

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Abstract

Citric acid immobilized magnetic nanoparticles (MNPs@CA) have been synthesized and used for the preparation of bio-important quinoxalinelesser reaction time with very high yield under ultrasonication. The catalyst was characterized by FT-IR, powder X-ray diffraction (XRD), field emission scanning electron microscopy (FESEM), high resolution transmission electron microscopy (HRTEM), and thermogravimetric analysis (TGA). The functionalized nanoparticles were easily separated using an external magnet during work-up procedure and show excellent reusability upto 5 cycles without any significant loss in catalytic activity.

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Metal-Free/Metal Assisted Sustainable and Facile Synthesis Methodologies for Small Molecules

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Abstract

Chemical transformation using green methodology is a new challenge in this Era. Various organic synthetic methodologies were reported for synthesis of small molecules like aldehydes, ketones and amides. These molecules have significant applications in chemical industry. The hydrations of alkyne and nitrile, olefin oxidations, have been the most common methods using precious metal catalysts (Hg, Pd, Rh, and Au) and typical organo metallic reaction set up. Hence, there is a considerable demand to develop the economic alternatives for the bulk synthesis. In recent, we have developed air, moisture insensitive, and water soluble homogeneous and reusable Rh catalyst for the acetylene hydration. In addition, there is no need to separate catalyst, no activation, no by-product, and no chemical waste. This methodology was found superior in terms of reaction temperature and time in comparison to previous reports. Another catalyst free reaction methodology was optimized to produce ketones via alkyne hydrations. However, this reaction takes time to complete but does not require any reagent or catalytic assistance. Every ingredient used in this reaction is completely reusable and does not produce any by product or chemical waste. Reaction was also optimized to produce excellent product yield up to gram scale. The present reaction consists of a metal-free, economical, robustly feasible, shows significant functional group tolerance and high yield properties. Moreover, the use of different dihydroxy alcohols made this process more benign and valuable towards the metal-free development of ketones.

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Environmental Sustainability Issues

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Abstract

The term environment has been derived from a French word “Environia” means to surround. It refers to both abiotic (physical or non-living) and biotic (living) environment. Environment is the sum total of conditions in which an organism has to survive or maintain its life process. It influences the growth and development of living forms. Environmental sustainability is defined as responsible interaction with the environment to avoid depletion or degradation of natural resources and allow for long-term environmental quality. The practice of environmental sustainability helps to ensure that the needs of today's population are met without jeopardizing the ability of future generations to meet their needs. When nature is left alone, it has a tremendous ability to care for itself. However, when man enters the picture and uses many of the natural resources provided by the environment, things change. Human actions can deplete natural resources, and without the application of environmental sustainability methods, long-term viability can be compromised.

India makes up 2.4 % of the world's land, while supporting 16% of the world's population. Mismanagement and overuse of India's once abundant forests has resulted in desertification, contamination, and soil depletion throughout the sub-continent. This has serious repercussions for the livelihoods of hundreds of millions of Indians that live off the land. In Rajasthan alone, it is approximated that nearly five million tribal people (as of 2004) rely on the collection of forest produce as their only source of income or nourishment. Without continual access to forest products such as fruit, honey, or firewood these communities experience debilitating hunger and are reduced to extreme poverty. Drought is having severe consequences for the people Rajasthan who have endured chronic shortages of water. In 2003, one-fifth of the villages in Rajasthan reported that they had no access to a reliable water source, and approximately half relied on a single source for the entire area. This affects the availability of safe drinking water, the success of the livestock population, and the security of basic food sources. Without water, health, and agricultural productivity, Rajasthan people are forced to struggle for their survival.

Numerous NGOs in Rajasthan focus on environmental issues as they are extremely pressing concerns for this region. FSD works with NGOs that have been enormously effective in protecting natural resources and minimizing the effects of drought.

Keywords: Environmental sustainability, Environment, Natural resources, population.



N-Formylation of Amines by CuO Nanoparticles under Microwave Irradiations: A Green Approach

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Abstract

We have synthesized nanoparticle of CuO for N-formylation of aromatic and aliphatic amines under microwave irradiations. The N-formylation of aromatic and aliphatic amines were carried out in solvent free condition using CuO as a catalyst (10 mol%) under microwave irradiations, which afforded good to excellent (84%-98%) yield of N-formamide. The catalyst also provides product yield in shorter reaction time without required any specific reaction conditions. We obtained excellent yield (98%) of N-formylated product of relative amines in shorter reaction time (2 min). In addition we have also demonstrated that synthesized nanoparticles of CuO could be recovered and reused upto 8 cycles without significant loss in yield of N-formylated product.

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A Novel Heterogenous Enslaved Nano-Metal Complex and its Catalytic Performance for Ecofriendly Suzuki-Miyaura Coupling

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Abstract

In recent years, nano-metal complexes have attracted attention owing to their significant properties as catalyst for Suzuki-miyaura cross coupling. Heterogenous enslaved nano-metal complexes have wide range of applications across environmental areas such as catalysis. The study presents synthesis of novel heterogenous nano-metal complex and their application as catalyst for Suzuki-miyaura coupling.

Keywords: Heterogenous, enslaved, nano-metal, catalyst, Suzuki-miyaura coupling.

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Medicinal Properties and Phyto-Chemical Characterization of Bioactive Compounds from Seed Spice Crop *Cuminum cyminum*

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Abstract:

Seed Spices are the most important and widely grown crops in the world. Seed Spices hold prime position in the world trade market and economy. Enormous diversity is present in each spice crop at their geographical level as well as domestic level. The climatic conditions of India are most suitable for almost all spices because of its varied agro-climatic regions. Rajasthan and Gujarat these both states are well known as “seed spices bowl of India” in worldwide. Rajasthan has achieved considerable victory in the export of seed spices in the last few years. Cumin, Coriander, Fennel, Fenugreek, Ajwain, Caraway, Dill, Nigella, Anise and Celery are the most important seed spices produced in India. *Cuminum cyminum* is considered as important seed spice crop. It is commonly known as cumin, belongs to family Apiaceae. Cumin is popular seed spice and used as flavoring agent in many products such as cheese, pickle, soup and dishes. Besides its culinary uses it is also known for its medicinal properties such as in the treatment of skin disorders, nausea, bloating, anemia, constipation. It boosts the blood circulation. The results obtained from the phytochemical analysis of the extraction obtained from Cumin showed the presence of alkaloids, steroids, terpenoids, tannins, saponins, flavonoids and the absence of resins, acidic compounds, glycosides while the macronutrient analyses revealed the presence of carbohydrate, lipids and essential oil and absence of proteins and reducing sugars. Aqueous and Methanolic extracts were prepared and subjected to phytochemical screening in which the secondary metabolites were confirmed based on tests of coloration and precipitation. The seeds have shown the presence of all the phyto constituents like carbohydrate.

Keywords: Seed spice crop, Cumin, Nutraceutical and medicinal properties

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Enhanced Production of Xylanase from *Bacillus* Sp. XRL5 and its Application in Beverage Industry

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Abstract

Xylanases which catalyse the degradation of xylan have gained worldwide interest because of their utmost significance in wide range of industrial processes including fruit and vegetable processing, pulp bleaching, biofuel production, bioscouring of fabrics besides their potential utility in the saccharification of lignocellulosic biomass. The current study was aimed at the isolation xylanolytic microorganisms followed by the optimization of culture conditions for enhanced enzyme production. Out of the 77 bacterial strains screened for xylanase production, newly isolated *Bacillus* sp.XRL5 showed considerable xylanase producing ability. Process optimization resulted in 10.6 fold increase in the overall enzyme activity in comparison to the unoptimized conditions. Besides, *Bacillus* sp.XRL5 xylanase was also evaluated for its potential for fruit juice processing. An overall 52.6 % reduction in the turbidity of the raw pineapple juice was observed at 50 °C after 24 h of incubation. The results of the present study indicated the potential utility of xylanase in the beverage industry. However, extensive R&D efforts are needed on scale up, purification and immobilization before moving further.

Keywords: Xylanase, lignocellulose, *Bacillus*, fruit juice clarification.



Review-Chemistry of Heterocyclic Drug Compound

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Abstract:

Heterocyclic chemistry is the branch of organic chemistry dealing with the synthesis properties and application of heterocycles. Heterocycles are organic compound containing C-chain along

with non C-atoms (heteroatom). Heterocyclic chemistry constitutes about 60% of organic chemistry. Heterocyclic compound are widely distributed in nature as they plays vital role in metabolism of all living cells and thus essential to life. Heterocyclic compounds are used in pharmaceuticals and agrochemical industries. They are used as sanitizers, developers, corrosions, antioxidants, inhibitors, copolymers, dyes etc. Heterocycles also plays an active role in inflammatory and anti tumour drug therapy. Even some natural products like naturally occurring antibiotics (penicillin), alkaloids (vinblastine, vincritin), and naturally occurring drugs (morphine) also have heterocyclic moiety. The main reason of vital application of heterocycles is that its structure can be subtly manipulated to achieve required modification in function.

Key Words: Heterocycles, Heteroatoms, Pharmaceuticals, Penicillin, Alkaloids, and Vinblastin



Sustainable Alternative Approach of Green Chemistry

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Abstract

The design of chemical products and processes that reduce or eliminate the generation of hazardous substances and protect our health are significant goals of green chemistry. It is likely a scientifically based natural evolution of pollution prevention initiatives. It leads to a cleaner, more sustainable, economically beneficial and other positive social impacts. This area of chemistry is a rapidly developing field providing the sustainable development of future science and technology. We are able to develop chemical processes and earth-friendly products that will prevent pollution in the first place. We can create alternatives to hazardous substances which are used as source materials and environmentally benign synthetic protocols to deliver life-saving medicines. The designing of chemical processes to reduce waste and reduce demand of depleting resources must be fulfilled by using the green chemistry.

Keywords: Hazardous, Sustainable, Social impacts, Alternatives



Biodiversity and its Conservation

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Abstract

Nature has blessed India with a rich biodiversity which include over 40,000 species of plants and 75,000 species of animals under natural condition, there is extinction of species brought about by geologic and evolutionary changes in times and space. As a result some of the most beautiful and interesting plant and animal species have been lost forever. Conservation of biological diversity leads to conservation of essential ecological diversity and life support systems. Biological diversity provides immediate benefits to the society such as recreation and tourism. The International Union for Conservation of Nature and Natural resources has played a significant role in high-lighting this problem.

Keywords: Biodiversity, endangered species and Germplasm conservation.



Statistical optimization by response surface methodology to enhance cellulase production by *Bacillus licheniformis*

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Abstract

In the present study, response surface approach has been used to study the production of cellulase from *Bacillus licheniformis*. Interactions were studied for six different variables such as inoculum size, CMC concentration, peptone concentration, temperature, pH and incubation time. In Plackett-Burman design, only three variables inoculums size, concentration of CMC and peptone were found to be important factors affecting cellulase production significantly. The ANOVA analysis and three dimensional surface plots confirmed interaction among variables. After optimization using Response Surface Methodology (RSM), maximum activity of enzyme (0.989 U/ml) was found close to predicted value (0.933 U/ml) and the

activity of the cellulase increased by 1.23-fold as compared to activity obtained (0.801 U/ml) using one variable at a time.

Keywords: Cellulase, Response Surface Methodology, Plackett-Burman, Analysis of Variance (ANOVA).

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Enhancement of extracellular *Bacillus safensis* RB-5 RNase by response surface methodology (RSM) approach

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Abstract

A Gram's positive, rod shaped and endospores-forming 'bacterial isolate RB-5' was identified as *Bacillus safensis* by the biochemical tests and 16S rRNA based sequencing. The extracellular ribonuclease activity of *Bacillus safensis* RB-5 was successfully improved by optimization of nutritional and physical parameters in a set of non-statistical and statistical experiments. Plackett-Burman and Central Composite Design in Response Surface Methodology were used to build statistical models to screen out the significant variables and then study the effect of such variables on ribonuclease production. Four significant variables namely peptone, glucose, sodium nitrate, MgSO₄, NaCl and fermentation broth pH were selected via 2⁴-factorial Central Composite Design (CCD) for ribonuclease production *Bacillus safensis* RB-5. The optimized values obtained by the statistical analysis showed that peptone 1.13 % (w/v), sodium nitrate 1.13 % (w/v), glucose 1.0 % (w/v), MgSO₄ 0.6% (w/v), NaCl 0.5 % (w/v) and pH 7.5 affected maximum ribonuclease production by *Bacillus safensis* RB-5. The ribonuclease production after optimization increased up to 2.1-fold with 93.52 % yield in comparison to the conventional strategy. Analysis of variance (ANOVA) revealed high coefficient of determination (R²) of 0.9564 for the respective responses at significant level ($p < 0.05$).

Keywords: *Bacillus safensis* RB-5.; Optimization; RNase; Response Surface Methodology; Central Composite Design; Plackett–Burman Design.

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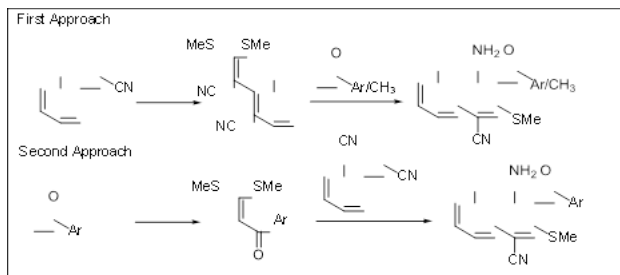
Ketenedithioacetal as a Precursor for the Synthesis of Naphthalenes

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Abstract

Ketenedithioacetals are very interesting precursor and used for synthesis of a variety of aromatic and heteroaromatic compounds. 1-Amino- naphthalene-2-yl-phenyl-methanone derivatives exhibit broad spectrum of biological activities, such as antitumor, anticancer, and antiproliferative activity. These aryl naphthyl ketones were synthesized by reaction of 2-amino-5-chlorobenzonitrile and Grignard's reagent, 1-naphthylmagnesium bromide, in diethyl ether.² A novel synthesis of 4-amino-3-aryl/acetyl-2-methylsulfanyl-naphthalene-1-carbonitriles have been carried out by reaction of 2-(1-cyano-2,2-bis methylsulfanyl vinyl)-benzonitrile³ and various aryl methyl ketones under basic reaction conditions. Precursor can be synthesized by reaction of 2-cyanobenzylcyanide with carbon disulphide and methyl iodide under basic conditions at 0 °C. In an alternative approach desired molecule can be synthesized by reaction of 2-cyanobenzylcyanide with 3,3-bis(methylthio)-1-arylprop-2-en-1-one under similar reaction conditions.



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Role of Fluorescent *Pseudomonas* Plant Growth Promotion Isolated from phyllosphere of *Triticum aestivum*

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Abstract

The outer surface and interior of the aerial parts of vascular plants (phyllosphere) harbour certain PGPRs like *Pseudomonas* which determines the growth of plants. Some strains of *Pseudomonas* produce water-soluble yellow-green fluorescent pigment (Pyoverdine and Pyocynine) known as fluorescein which is responsible for the phenomena called fluorescence. The strains of *Pseudomonas* responsible for fluorescence are referred as fluorescent *Pseudomonas*. Fluorescent *Pseudomonas* not only promotes growth but also have potential to act as bio-control agents. In present work 25 isolates of fluorescent *Pseudomonas* were isolated from phyllosphere of *Triticum aestivum* (wheat plant) and screened for various PGPR traits *i.e.* Phosphate solubilization, IAA, siderophore and HCN production. Among these isolates PI-5 showed maximum positive results for all selected parameters and nominated as best. Obtained results were suggested the use of fluorescent *Pseudomonas* as bio-fertilizer and also as bio-control agent for promoting the plant growth, it also suggested that along with rhizospheric bacteria phyllospheric bacteria also helps in plant growth promotion and enhance the fertility which is beneficial to environment as well as for mankind.

Keywords: Biocontrol, fluorescence, plant growth promoting rhizobacteria, phyllosphere.



Climate Change and Protected Cultivation

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Abstract

One of the most ominous physiological responses that accure in response to climate change is the shortened growing period, causing distinctive reduction in production of crops. Protected cultivation can be defined as a cropping technique where the micro climate surrounding the plant body is controlled partially or fully as per the requirement of the plant species grown during their period of growth. Crops could be grown under inclement climatic conditions when it is not possible to grow in open field. It increases the productivity and quality of produce. Effective control against disease and reduces the use of pesticides. Cultivation can be done during off season. Protected cultivation can be run through greenhouse, shadenet house, walk-in-tunnels, plastic tunnels, plastic mulch, lath house.

Keywords: climate change, protected cultivation, climate control, efficient use of resources.



Ionic liquid catalyzed attribute for the expeditious and Eco-compatible synthesis of quinoxalines

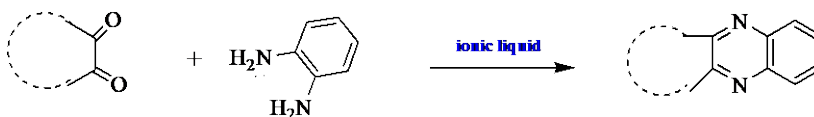
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Abstract :

Quinoxalines are an important class of heterocycles found in many pharmacologically and biologically active molecules (Fig.1). It has wide applications such as antiviral, antibacterial, antiinflammatory, anticonvulsant, anticancer, anti HIV and as kinase inhibitor. Moreover, they are widely used in the field of semiconductors, dyes, suitable ligands in coordination chemistry electroluminescent material and in chemically controllable switches. Consequently a number of synthetic strategies have been devised for the synthesis of various substituted quinoxalines. Commonly a highly efficient method comprises the reaction of aryl 1,2-diamines with carbonyl

compounds. Usually this condensation reaction is carried out under reflux condition in ethanol or acetic acid²¹. However in recent years several new feasible methods have been developed including the use of β -cyclodextrins, iodine, MnCl_2 , DABCO, fluorinated alcohols and alumina supported heteropolyoxometallates. While, some deliberately sound improvisation have been documented for upliftment of reaction condition, but somewhere down the line it still require the adaptability due to the use of expensive and/or toxic catalysts, incompatibility with certain functional groups, critical product isolation procedures, expensive reagents and limited substrate applicability. Therefore the necessity of designing a synthetic protocol which abides the principles of green chemistry remains an attractive goal. To circumvent the above drawbacks and develop a simple, efficient and green route for the synthesis of quinoxaline, herein, we describe dual catalytic-solvent system role of ionic liquid as a green solvent as well as catalyst for the synthesis of quinoxaline derivatives *via* reaction of 1,2-diamine with different carbonyl substrates at room temperature (Scheme 1). The general efficiency of this protocol was also studied for the synthesis of a variety of quinoxalines and it was found that this reaction offers a wide substrate scope, a series of aromatic diamines with both electron donating and electron withdrawing substituent reacted with benzil under the optimized reaction conditions. The structures of the products were established by IR, ^1H , ^{13}C NMR and Mass studies.



Scheme 1. Synthesis of quinoxalines

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Sources of Renewable Energy as Sustainable Development

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Abstract

All renewable energy sources (RES) are sustainable due to depletion of energy resources and environmental damage viz. GHG emissions, air pollution, acid rain, loss of biodiversity and discharges of waste. Technologies promote sustainable energy including renewable energy sources such as hydroelectricity, solar energy, wind energy geothermal energy, biomass energy, tidal power and also technologies designed to improve energy efficiency. These have significant potential contribute to the economic, social and environmental energy. They improve access to energy for most of the population reduces emissions of local and global pollutants and they may create local socioeconomic development opportunities. Detailed environmental impact assessments on biodiversity, greenhouse gas emissions, local air quality and plans should be taken into consideration during energy supply and development of infrastructure projects for waste disposal. Green chemistry aims at making chemistry more energy efficient, at reducing waste disposal and producing innovative products with less consumption of natural resources.

Keywords: sustainable, biodiversity, pollutants, environment.



Diversity and Isolation of Halophilic Algae from Salty Lakes of Rajasthan, India

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Abstract

The western part of Rajasthan known as a Thar Desert. A little amount of rain fall water deposited salt and minerals in inland Lake of Rajasthan like Sambhar, Didwana, Pachpadra. These lakes contain high salinity by their water evaporation mechanism. Sambhar lake is highly logged by water during monsoon but Didwana and Pachpadra is logged by little amount of water. These

environments facilitate growth of halophilic organism bacteria, algae and fungus. In last few decade these organism pulled attention to study.

Contamination with species of algae is a serious problem for monospecific/ axenic cultures of micro-algae. The most common sources of contamination include the culture medium (sea water and nutrients), the air (from the air supply as well as the environment), the culture vessel, and the starter culture. Accumulation of nutrition and organic matter facilitated algae contamination called eutropication. Salty and Seawater used for algal culture should be free of organisms that may compete with the unicellular algae, such as other species of phytoplankton, phytophagous zooplankton, or bacteria. Sterilization of the seawater by either physical (filtration, autoclaving, pasteurization, UV irradiation) or chemical methods (chlorination, acidification, ozonization) is therefore required. Algae play prominent role in human life like in sea area algae are used as a food, some are release antibiotic, some are that marine (saltwater) algae can be just as capable as freshwater algae in producing biofuels. In this present study organized to isolation of halophilic algae from salty lake of Rajasthan. Their diversity which determined by their morphological and internal structure, their role in our regular life which are beneficial to human life.

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Wildlife Reserve in Rajasthan

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Abstract:

The safeguard of forests has been included in the list of fundamental duties of the citizens of India in Article 51(g). The Wildlife (Protection) Act of 1972 and its implications along with the amendments of 1986, 1991, 2000, 2003, 2006, and 2008 have also been presented chronically. The Government of India has also constituted the National Board of Wildlife, National Tiger Conservation Authority, Other Endangered Species Crime Control Bureau, and Tiger Conservation Foundation under various sections and Amendment Acts of the Wildlife Protection Act, 1972. Likewise, the state government has also constituted the State Board of Wildlife, Advisory Committee, Conservation Reserve Management Committee, Steering Committee for community reserves, State Biodiversity Board, Tiger Task Force, or State Empowerment Committee under these Acts.

Keywords : Wildlife Conservation Methods And Reserves

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Sustainable Approach towards the Synthesis of Doped Carbon Dots for Multifunctional Application

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Abstract

The fabrications of self-doped CD, where the additions of the external dopant material may be avoided / minimized could be a sustainable approach. It may refer to the ease in fabrications of the self-doped/self-embedded CD using the biomaterials like plant leaves. As they already possessed the metals inside as an essential leaves extract and its simpler carbonization to yield the red emitting magnesium-nitrogen embedded (self-doped) CD as “r-Mg-N-CD. The as-prepared r-Mg-N-CD showed the excitation independent emissions at red region of the visible spectrum situated at ~ 667 nm, showed excellent photo stability, and high quantum yield values. Importantly, the evaluation of bacteriological test, a simplest approach was used, which is related to the use non invasive oral ingestion. r-Mg-N-CD were proven to be a biocompatible probe concerning its nontoxic behavior based on the bacteriological test performed on the two different bacterial strains; *Escherichia coli* and *Proteusvulgaris*. Addition to the conventional imaging application, these r-Mg-N-CD are used for the fluorescence based selective sensing of Cu (II) from the tested many heavy metals with the detection limit as low as of 50 nM and the red-emitting r-Mg-N-CD-based fluorescent filter papers under UV light r-Mg-N-CD can be used as an red-emitting fluorescent ink.

□□□

Detection of Adulteration in Dairy Products and Spices

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Abstract

The main objective of this study is to detect the presence of various adulterants in the dairy and spice samples taken from different areas. Adulteration is an act of adding certain unwanted and harmful substances that degrades the quality of the food in order to increase its quantity and financial gain. Nowadays, adulteration has become a very common practice in every food industry. Adulteration can be detected by physical, chemical and biochemical tests. Here,

certain laboratory tests were performed that showed the presence of adulterants like starch, urea, detergents, bacteria etc. in milk samples. The spices were also found to be contaminated by toxic compounds like argemone seeds, sudan red dye etc. Adulteration leads to various harmful health effects like allergies, skin diseases, neural disorders which become prominent if not treated. Hence, food adulteration should be banned and proper health, quality and hygiene should be maintained. The food should match the standards of Food and Safety Standards Authority of India (FSSAI).

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Enviornmental Pollution by electronic waste

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Abstract

In a world of technological advancement and countless gadgets, the quest to acquire the latest models is overwhelming: a slimmer desktop, new music system, televisions and so on. However the downside of the constant quest for better gadgetry is the rapidly piling hazardous wastes in our landfills. Discarded electronics are generated when users or owners of the products decide that they no longer want them. E-waste encompasses ever growing range of obsolete electronic devices such as computers, servers, main frames, monitors, TVs and monitor devices, telecommunication devices such as cell phones and pagers, calculators, audio and video devices, printers, scanners, copiers and fax machines besides refrigerators, air conditioners, washing machines and microwave ovens, E-waste also covers recording devices such as DVDs, CDs, floppies, tapes, printing cartridges, military electronic waste, automobile catalytic converters, electronic components such as chips, processors, mother boards, printed circuit boards, industrial electronics such as sensors, alarms, sirens, security devices, automobile electronic devices. In this manuscript impact of E-waste on health and environment, and various management strategies have been delineated.

Keywords: CFCs; Heavy metals; Health hazards; Environmental impacts; Renewable materials; Material management.

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Fungal Exopolysaccharide: A Good Alternative of Natural Gums

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Abstract

Plant pathogenic fungi have been described as producers of important bioactive compounds; however, they remain under-exploited as exopolysaccharides (EPS) sources. Therefore, this work reports on EPS production by submerged cultures of six plant pathogenic fungi isolated from Chilly, belonging to genera *Alternaria*, *Fusarium*, *Penicillium* and *Phoma*. After fermentation for 14days, 5 fungi secreted EPS: *Alternaria Alternata*, *Fusarium Oxysporium*, *Fusarium Equisetum*, *Fusarium Palliroadosium* and *Phoma*. The EPS from *Alternaria Alternata* differed statistically from the others, with a higher percentage of carbohydrate (95%) and lower amount of protein (4%). It is an important to screening of such different natural sources for production of exopolysaccharides secreting fungi is capable as there is hope of isolation new productive microorganisms with properties superior to those of existing polymers. Isolation of exopolysaccharide secreting fungi from various fungi infected plants will be a valid alternative to plant and algal products considering that their properties are almost identical to those currently of used gums (Sutherland, 1956) and these exopolysaccharides activities can play a relevant role in biomedical and industrial applications, particularly in the field of antibacterial, emulsification, flocculation etc. for their intrinsic biocompatibility and potential low cost.

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Halophilic Bacteria and their Biotechnological Applications

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Abstract

Halophiles are the salt loving microorganism that can survive in high saline environment and can be categorized as slightly, moderately or extremely halophilic, depending on their extremely salinity tolerance. The organism that can grow in presence of high salt concentration

are called halotolerant halophiles. They include variety of microbes that are heterotrophic, phototrophic, and methanogenic archaea, photosynthetic, lithotrophic and heterotrophic bacteria, and also photosynthetic and heterotrophic eukaryotes.

Halophilic bacteria have the potential to be utilized in biotechnology due to their adaptive strategies to cope with the osmotic pressure, tolerate heavy metals, antimicrobial activity, to produce novel bioactive substance and in different fields. Halophiles which requires more than 0.5 mol L^{-1} salt concentration for optimal growth have developed two different adaptive strategies to cope with the osmotic pressure: (1) accumulation of molar concentrations of potassium and chloride with extensive adaptation of the intracellular macromolecules ("salt-in" strategy). (2) osmolyte synthesis and/or accumulation of organic osmotic solutes ("osmolyte" strategy).

At the protein level, the halophilic species are characterized by low hydrophobicity, overrepresentation of acidic residues, under representation of cysteine, lower propensities for helix formation and higher propensities for coil structure. It is also evident that the core of these proteins is less hydrophobic. At the DNA level, the halophiles exhibit distinct dinucleotide and codon usage.

A few hypersaline environmental naturally contain heavy metals in them. The different mechanisms by which the halophilic bacteria resist the heavy metal toxicity are:

- (1) Sequestration of metal ion by biopolymers.
- (2) Efflux pumps mechanism by which metal ions are actively pumped out of bacteria.
- (3) By enzymatic detoxification.

Halophilic bacteria are considered as dependable source for deriving novel bioactive compounds, novel enzymes, and other industrial important molecules. Enzymes present in halophilic microorganisms are produced under high salt concentrations, environment having high % of amino acid residues, aspartic and glutamic acid and low levels of aliphatic residues and lysine. These enzymes do not degrade when exposed to high temperatures, extreme pH etc and are used to improve extractions, perform bioconversions and reduce viscosity etc. All these compounds have agricultural, industrial, pharmaceutical and biotechnological applications.

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Oxalate Decarboxylase: A Therapeutic Approach for Treatment of Kidney Stones

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Abstract

Affecting around one fourth of the population worldwide, kidney stones or nephrolithiasis has become a terrible pathological condition worldwide. Influenced by a number of environmental, physiological and nutritional disorders kidney stone formation and re-occurrence has become a common issue because of the inefficiency and ineffectiveness of the present day therapeutic strategies. Hyperoxaluria i.e. excessive intestinal absorption of oxalate is the major cause of formation of kidney stones. Treatment with oxalate decarboxylase enzyme that catalyzes the disproportionation reaction of oxalate to CO₂ and formate is a strong therapeutic strategy for recurrent calcium oxalate kidney stones. Recent investigations on various model experiments reveal that the oxalate decarboxylase gene expressed in the probiotic bacteria or oxalate decarboxylase formulations given orally significantly reduce the oxalate contents in urine and prevent oxalate crystal formation. Therefore kidney stone treatment with oxalate decarboxylase provides several advantages over the conventional methods used, which give disappointing results.

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A S.I. Engine Using Hng as a Fuel– Ecofriendly approach

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Abstract:

Combustion and emission characteristics of a spray guided direct-injection spark-ignition engine fueled with natural gas-hydrogen blends were discussed. Article show that the brake thermal efficiency increases with the increase of hydrogen fraction and it shows an increasing and then decreasing trend with advancing fuel-injection timing. For later injection timings, the beginning of heat release is advanced with increasing hydrogen fraction, while the beginning of heat release is advanced and then retarded with the increase of hydrogen fraction at earlier

injection timings. The flame development duration, rapid combustion duration and total combustion duration decrease with increasing hydrogen fraction. Maximum cylinder gas pressure, maximum mean gas temperature, maximum rate of pressure rise and maximum heat release rate show an increasing and then decreasing trend with the increase of hydrogen fraction.

Brake NO_x emission is increased and then decreased, while brake HC, CO and CO₂ emissions decrease with the increase of hydrogen fraction.

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Negative Differential Resistance Observed in Polymeric Heterostructure Device

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Abstract:

We have prepared polymeric heterostructure by spin coating the layers on ITO coated glass substrate. Al electrodes were deposited using thermal vacuum evaporation technique. Thereafter *I-V* characteristics were measured at room temperature before annealing and after annealing at 40°C, 60°C and 80 °C. *I-V* curves resemble a typical resonant tunnel diode characteristic, which is destroyed after annealing. It is explained in terms of the internal morphology of P3HT and PCBM comprised of isolated domains of either amorphous phase or crystalline phase contrary to bicontinuous network. A repeated arrangement of alternate isolated domains in conduction channels transport the current through quantum tunneling which requires that the barrier thickness or domain size should be small enough to enable appreciable quantum tunneling. Thermal annealing reduces the quantum tunneling effect either due to increased grain size or oxidation of polymers or both.

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Genotoxicity assessment of green synthesized nanoparticles in comparison to chemically synthesized nanoparticles

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Abstract :

Now days silver nanoparticles are one of the most commonly used nanomaterial. Silver nanoparticles remain controversial issues with regard to its genotoxicity and toxicity. So the aim of this study was to compare the genotoxicity between chemically synthesized nanoparticle and green synthesized nanoparticle using the *Allium cepa* test. Root tip cells were treated with nanoparticle solution at different concentrations (10mg/l, 50mg/l & 100mg/l) at different interval of time (24 hrs, 48 hrs & 72 hrs). Mitotic abnormalities, chromosomal aberrations were observed under microscope. Mitotic index and phase index were analyzed. The results reported that silver nanoparticles were more toxic at 100mg/l as compared to 10mg/l and 50mg/l. So, the study demonstrated that chemically synthesized nanoparticles are more toxic as compared to green synthesized nanoparticle.

Keywords: silver nanoparticles; genotoxicity; *Allium cepa*; Mitotic index; chromosome aberrations



Study of Charcoal Prepared from Medicinal Plant for Defluoridation of Drinking Water: An Overview

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Abstract

The defluoridation of ground water is the most important area of attention in the whole world community. Fluoride concentration in water in the range of 0.8-1.20 mg L⁻¹ is considered beneficial according to WHO. The fluoride concentration higher than 1.5 mg L⁻¹ are reported to be harmful to the teeth and bones of man and animals. Excessive intake of fluoride is a serious health hazard.

There are several methods used for the defluoridation of drinking water by process of adsorption with the help of various parts of medicinal plant as biosorbent. The process generally found effective due to easy operation, simplicity of design set up and for the economical and environmental reasons. The present study is an attempt towards cost effective defluoridation of drinking water by charcoal and various parts of medicinal plant. It was observed that absorbent during the process were highly influenced by temperature, pH of water, and initial fluoride concentration.

Keywords: Biosorption, pH, Adsorption, defluoridation.



Process optimization of extracellular lipase production by *Issatchenkia orientalis*

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Abstract :

Lipases (EC 3.1.1.3) are the class of hydrolytic enzymes which catalyze the hydrolysis of triacylglycerol to glycerol and free fatty acids which are widely found in animals, plants, and microorganisms. In this study, the given yeast isolate was sent to Xcelris Labs Ltd. Ahmedabad (Gujarat), where it was identified as a pure yeast strain and further by 26S rRNA sequencing. The yeast was identified as *Issatchenkia orientalis* strain F701 26S because it presented ~99% rRNA sequencing homology with the specified yeast strain. A phylogenetic dendrogram was constructed to show the relationship of the identified yeast with related species. Also, the lipase activity of the yeast isolate *Issatchenkia orientalis* was studied and compared at different parameters such as temperature, pH, time, polar and non-polar solvent tolerance, detergents, sugar fermentation tests etc. During optimization of reaction conditions and medium content, the addition of carbon source i.e. dextrose to about 1%, w/v at pH 8.0, maintaining the incubation temperature at 25° C, at agitation rate of 160 rpm for 24 h resulted in a yield of 21.9 U/ml.

Keywords: Lipases, Yeast, *Issatchenkia orientalis*, Dendrogram, Dextrose.



Production of cholesterol oxidase by a novel isolate *Castellaniella* sp.

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Abstract:

Cholesterol oxidases are bifunctional flavoenzymes produced by diverse bacterial species. These enzymes catalyse the oxidation of steroid substrates containing a hydroxyl group at the 3 β -position of the steroid ring backbone. Cholesterol oxidase is of significant importance owing to its use in analysis of cholesterol amount in various clinical and food samples. In addition, the enzyme also acts as a larvicide biocontrol agent against many insects and is also involved in the biotransformation of a number of steroids. The most promising and active extracellular cholesterol oxidase (CHOX) producer bacterial isolate was selected and identified by 16S rDNA sequencing as *Castellaniella* sp. The sequence of 16S rDNA gene from the newly isolated strain was submitted for the global access in NCBI GenBank with Accession number MF973093. The effect of medium composition and physical parameters was studied on extracellular CHOX production. The optimized medium was found to contain cholesterol (0.1%, w/v), NaNO₃ (1%), yeast extract (0.5%) and Triton X-100 (0.2%). The optimum pH and temperature for CHOX production in optimized medium were found to be 8 and 35°C, respectively.

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Eco-Friendly Greener Synthesis of Chalcone Derivatives of Indole

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Abstract

3-substituted Mannich base was synthesized by using greener approach. Then N-alkyl indole was synthesized. In this way 3-substituted methyl 1-H indole compound was prepared by Mannich reaction. N-arylation of this product gives 1-phenyl-2-[-3-(substituted)-1-H-indole-1-yl] ethanone. Finally this product was used for the synthesis of desired Chalcones, 3-

substituted-1- $\{(2E)-1-1\text{phenyl-3-(3, 4, 5 trimethoxyphenyl) but-2-en-1-one}\}$ indole by Claisen – Schmidt condensation has been achieved. It is a well known fact that the indole nucleus is associated with a large number of pharmaceutical properties like antibacterial, anticancer, antibiotic, central nervous system modulating etc. In the same way chalcone is an aromatic ketone that forms the central core for a variety of important biological compounds, which are known collectively as chalcones. They show antibacterial, antifungal, antitumor and anti-inflammatory properties. The application of microwave irradiation has led to support for the development of many reaction procedures, which are environment friendly, falling in the domain of green chemistry.

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Review on A Stock-Dependent Inventory Model in an Imperfect Production Process

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Abstract:

This paper explains economic manufacturing quantity model for stock – dependent demand in imperfect production process. During long manufacturing processes, this system undergoes out of control state and the process starts producing imperfect quality products. Production of imperfect quality items depends on time and reliability. These imperfect items are reworked at a cost to restore to its original quality. In our model, the unit production cost is a function of reliability and production rate. The profit function is maximized by Euler Lagrange method by considering different type's costs. Concavity of the product function establishes the existence of global maximum solution.

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Potential of Bacterial Carbonic Anhydrase in Carbon Dioxide Sequestration to Mitigate the Climatic Change

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Abstract :

Microbes and their enzymes play an important role to environment sustainability and bioremediation. Microbial carbonic anhydrases are the zinc containing metallo-enzymes which catalyze the reversible hydration of CO₂ to bicarbonate. This is one of the fastest known enzymes with catalytic efficiency 10⁸ M⁻¹s⁻¹. In vertebrates, physiological function of CA is acid–base balance in the blood and transport of CO₂/bicarbonate. Uncontrolled emission of CO₂ from industries, power generation and automobiles impart in global warming and climatic change. The natural ways of CO₂ conversion such photosynthesis, algal based CO₂sequestration are limited to a particular geographical area. Highly populated cities and industrial area with lesser number of plants and water bodies contains higher concentration of CO₂ in the air which causes serious health problems to human beings. The carbonic anhydrase of microbial origin can be exploited as a sink to convert the excessive amount of CO₂ into carbonate derivative using an integrated chemo-enzymatic system. Mechanism of CO₂ hydrolysis reaction catalyzed by CA follow two steps ping-pong mechanism. The observed CO₂ concentrations reached 413.0 ppm, which seriously affect the health of large population. In this regard, CO₂ sequestration using biocatalyst carbonic anhydrase (CA) may prove eco-friendly and cost-effective due to availability of raw material such as industrial waste, marble mines. The enzymatic CO₂ sequestration approaches, in which bacterial CA and its mutants can be utilized to convert CO₂ into environmentally safe mineral carbonates such as CaCO₃ is an excellent approach. CaCO₃ product of CO₂ sequestration can be easily separated and used for various industrial applications such as ceramics and sugar refining, glass, iron and steel making industry.

Keywords: CO₂, sequestration, global warming, eco-friendly, carbonic anhydrase



Trends of Raag Chikitsa in Modern Indian Culture

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Abstract :

Music is a universal language. Music therapy is a medium for change. It helps the client re-connect with themselves and forms a healing relationship with the music therapist. This relationship is created and enhanced through the use of music and musical elements. It takes one's mental, emotional, physical, and spiritual health into account. Indian music is based on the concept of raga and rasa. Raga is the arrangement of notes in a particular order so as to create a musical adornment. It depends upon melodic movement, that is, the occurrence of tones or musical notes to create a single line of tune, rather than upon harmony, which uses several lines of melody in pleasing contrast with each other, as is common in Western music.

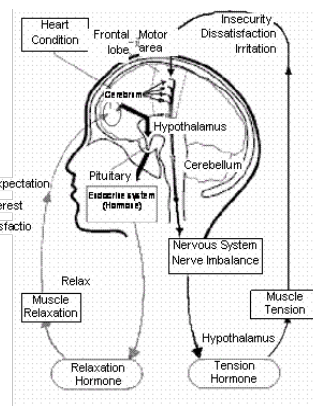
Key-words-Music, Music-Therapy, Raags, Raag-therapy

Music Therapy

Music therapy is a new form of approach to help children and adults, who have problematic behaviors, to make effective adjustments toward social, emotional, mental and educational aspects, where brain plays a dominant role. Many of the imbalances in the so called normals may also be made set right by regular exposure to certain raagas with special emphasis on certain notes. Music Therapy acts on the human beings before being transformed into thought and feelings. Music Therapy is one of the alternative form of therapeutic treatment, it is the planned and creative use of music to attain and maintain health, wellbeing. Individual of any age and ability may benefit from Music Therapy program, regardless of musical skill and background. Music Therapy may address physical, psychological, emotional, cognitive and social needs with therapeutic

Music and Mind

Music works both sides of the brain. Creates a diversion from neurotic concerns or obsessions. Music can evoke thoughts and feelings that allow us to become more aware and connected to ourselves and our environment. Musical sounds have positive impact on the mind. It brings mind to a state of equilibrium. Once this equilibrium is achieved, stress and tension just vanish giving rise to mental peace. Mental peace ultimately helps in eradicating many psychosomatic disorders in the body.



Music Therapy Techniques

Every listener has individual taste, his own pattern of associations, and his particular degree of receptivity to stimulation. These personal factors largely condition the listener's response and thus present real difficulties to the musical therapist. Musical therapists can not prescribe music as the doctor prescribes a pill. The choice of music must depend upon an accurate evaluation of the various conditioning factors of the individual listener.

- ☐ Music Listening
- ☐ Lyric Discussion
- ☐ Relaxation Techniques
- ☐ Song Writing
- ☐ Improvisation
- ☐ Singing and Playing Instruments
- ☐ Recording
- ☐ Music and Movement

Indian music therapy

Indian music therapy is a complementary therapy that promotes the inbuilt natural healing process. The music produces beneficial effects and is physically, mentally, emotionally and spiritually uplifting. It can be effective by itself and also can be applied as an adjuvant therapy from our ancestors who were spiritually evolved and had realized essential harmony between the human being and nature. In India music therapy was prevalent from time immemorial. Music therapy is known as Raga Chikitsa in India. The ancient system of Nada Yoga, acknowledges the impact of music on body and mind. Vibrations are produced from sounds to uplift one's level of consciousness. Ragas have curative power, the vibrations in their resonance can synchronize with one's moods and health thereby stimulating our moods and controlling the brain wave patterns. Ragas help fight aging and pain.

Indian Music Therapy as Raga Chikitsa

The ancient Hindus had relied on music for its curative role: the chanting and toning involved in Veda mantras in praise of God have been used from time immemorial as a cure for several disharmonies in the individual as well as his environment. Several sects of 'bhakti' such as Chaitanya sampradaya, Vallabha sampradaya have all accorded priority to music. Historical records too indicate that one Haridas Swami who was the guru of the famous musician in Akbar's time, Tansen is credited with the recovery of one of the queens of the Emperor with a selected raga. The great composers of classical music in India called the 'Musical Trinity', -

who were curiously the contemporaries of the 'Trinity of Western Classical Music, Bach, Beethoven and Mozart– were quite sensitive to the acoustical energies. Legend has it that Saint Thyagaraja brought a dead person back to life with his Bilahari composition Naa Jiva Dhaara. Muthuswamy Dikshitar's Navagriha kriti is believed to cure stomach ache. Shyama Sastry's composition Duru Sugu uses music to pray for good health. Raga chikitsa was an ancient manuscript, which dealt with the therapeutic effects of raga. The library at Thanjavur is reported to contain such a treasure on ragas that spells out the application and use of various ragas in fighting common ailments.

Some Therapeutic ragas of Indian Classical

Raga	Disease(s) it helps cure
Darbari Kanada	Headache, Asthma, Sedative
Ahir Bhairav	Indigestion, Arthritis, Hypertension
Bhimpalasi	Anxiety, Hypertension
Bageshri	Insomnia
Asavari	To build confidence
Sarang	Depression
Chandrakauns	Anorexia
Gujari Todi	Cough
Gunkaji	Constipation, Headache
Hindol	Sodalitys, Backache, Hypertension
Jaunpuri	Diarrhea, Constipation, Gas
Kafi	Sleep disorder
Kedar	Cold, Cough, Asthma
Madhuvanti	Piles, Hemorrhoids
Malhar	Asthma
Marva	Indigestion, Hyperacidity
Puriya	Colitis, Anemia
Puriya Dhanashri	Anemia
Sohani	Headache
Yaman	Rheumatic, Arthritis

Conclusion

Indian music therapy is highly subjective, and is geared to meet individual needs, while focusing on the spiritual element. Its goal is to achieve union with the ultimate reality, and harmony in a musical sense is not employed. The spiritual basis is seen in the way it encourages the expression of devotion to the spirit. The approach used here is raga-based, and produces changes in the body which relieve anxiety, effect relaxation and bring about sleep. It also,

however, brings about gentle stimulation, and increases the attention span. It is individualistic in that its dependence upon swara allows the singer to tailor the music to the listener's preferences and listening habits. It is different from Western music therapy in its focus on deep religious feelings.

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Antibacterial Potential of Different Fractions of *Helicteres Isora*

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Abstract:

In this paper, we have evaluate the antibacterial activity of *Helicteresisora* extracts and tested different concentrations of three Ethanol, aquoues and hydroethanol fractions of *H. isora* root on elected pathogenic gram positive (*Staphylococcus aureus*, *Bacillus subtilis*, *Enterococcus faecalis* and *Bacillus cereus*) and gram negative bacteria (*Pseudomonas aerogenosa*, *Proteus mirabilis*, *Salmonella typhie*, *Klebsiella pneumonia*, *Proteus vulgaris* and *Escherichia coli*) with the well diffusion method in agar. All the tthree extracts exhibited antibacterial activity against seven strains of pathogenic bacteria. Hydroethanol extract showed best antibacterial activity as compared to both other extracts. Ethanol extract showed good antibacterial activity against *K. pneumonia* in comparison to other extracts. However aqueous extract showed minimum antibacterial activity against all the pathogens. This finding showed the good antimicrobial activity of *H. isora*, so it forms the basis for further antibacterial drug isolation from this medicinal plant.

Keywords: *Helicteresisora*, Antibacterial, Medicinal plant.

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Optimisation of Cellulase Production from Bacterial Isolate CPS-66 and Its Application in Beverage Industry

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Abstract

Cellulose is the most abundant biomass on earth and its hydrolysis requires cellulase, the multi-component enzyme system which works synergistically to breakdown cellulose into soluble sugars. Besides various applications of cellulases, their use in fruit juice clarification has a great contribution in improving the juice quality. In the present study, out of total 37 cellulase producing isolates screened for cellulase activity, CPS-66 exhibiting maximum enzyme activity was used for further studies. The growth of cellulase producer microorganism (CPS-66) and subsequent extracellular cellulase production were measured while growing it under varied conditions of pH (5-11), temperature (25-70°C) and different concentrations of carbon and nitrogen sources. The bacterial isolate (CPS-66) with initial cellulase activity of 4 U/mg when cultured under optimal conditions i.e. 6% (v/v) of 9h old culture, CMC (1.25% w/v), meat extract 0.2% (w/v), pH-9.5 at 40°C under continuous shaking (150 rpm) in CMC broth for 30h resulted in 7 fold increase in activity (i.e. 28.12U/mg). The ability of cellulase enzyme to clear haze of fruit juices was experimented with mausambi, orange and pineapple juices separately. Although the enzyme could clarify all the juices, but maximum clarification (68.3%) was observed in case of orange juice after 6h of incubation. The initial results indicate usefulness of cellulase from the bacterial isolate CPS-66 to clear fruit juices to a greater extent. Further improvement, is possible by using purified enzyme and also using immobilized enzyme.

Keywords: Carboxymethyl cellulose, cellulase, juice clarification

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Xylose Reductase Production from *Candida* sp. XLT-01 Using Corn Cobs Hydrolysate

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Abstract:

Xylitol is a low calorie pentose sweetener with rising global market demand due to its potential applications in food industries. It is also an ideal sweetener for diabetic patients besides an anti-cariogenic compound. Xylose reductase is the key enzyme for xylitol production during xylose metabolism. The present work was conducted to screen ligno-cellulosic biomass for xylose reductase production and xylitol production subsequently using microbial isolate *Candida* sp XLT-01 isolated from soil sample from Himachal Pradesh. 09 ligno cellulosic biomass from fields and industries including beverages, and sugar mills were collected and screened for their potential application. Out of them, corn cobs recorded with highest C5 sugar content after auto-hydrolysis therefore used for xylose reductase production. Xylose reductase activity was increased with mineral salt supplementation to hydrolysate. Maximum enzyme activity of 83.15 ± 0.65 U/mg proteins was recorded at 30°C after 60hrs with the conversion rate on 0.35g/g substrate. Efforts were also made to purify the xylitol from fermentation broth which was quite successful but need more refinement as presence of lignin resulted in xylitol loss. The potential utility of the microbial isolate for xylitol production will be tested at large scale so as to use it in various applications for the welfare of mankind and society.

Keywords: Xylitol, xylose reductase, *Candida* sp. Xlt-01, Corn cobs.

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Novel Synthesis of Flakes like CoS/NiCo₂S₄-Rgo Composite for High-Performance Super Capacitor Application

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Abstract:

Transition metal sulfides has excellent potential for high-performance super capacitor applications. Super capacitors have higher power density than batteries, higher energy density than conventional electrostatic capacitors, fast charge and discharge rate and long service life. The rGO serve as interconnected porous matrices that are highly conductive, thus allowing the hybrid electrode to realize fast ionic and electronic transportation. Benefiting from the synergistic effect between CoS/NiCo₂S₄ and rGO, surface characteristics of the materials have much effect on the electrochemical properties.¹⁻⁴In this context, CoS/NiCo₂S₄-rGOcomposite was prepared in an advanced hydrothermal heating method using a novel precipitating agent. The detailed physiochemical properties of CoS/NiCo₂S₄-rGOcomposite were studied by PXRD, TGA, SEM, TEM, RAMAN and XPS analyses. The as-synthesized CoS/NiCo₂S₄-rGOcomposite was used as an electrode material for super capacitor application. The electrochemical study of CoS/NiCo₂S₄-rGO was performed by cyclic voltammetry, galvanostatic charge-discharge cycles and electrochemical impedance spectroscopy analyses. The electrochemical analyses of the composite shows excellent pseudo capacitance, cyclic stability, Coulombic efficiency and low charge-transfer resistance due to the facile transfer of electrolyte ions and better utilization of the electro-active porous surface. This study clearly reveals that the as-prepared CoS/NiCo₂S₄-rGO composite can be an excellent electrode material for smart energy storage application.

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A Review on “Sustainable Metal Nano Catalysed Organic Transformations for the Generation of Biologically Active Heterocycles

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Abstract

Chemical science for the synthesis of various chemical products is highly inefficient and rising environmental and health concerns to the chemical waste, necessitates the process and ‘greener’ chemical products. Manufacturing protocols, with the support of green chemistry program, can be made economic, greener and more sustainable, by vigilant use of nanocatalysis, which reduces or eliminates the chemical waste harmful to human health and the environment. Nanocatalysts have emerged as sustainable alternatives to conventional materials, as robust high surface area heterogeneous catalysts and catalyst supports. The nano-sized particles increase the exposed surface area of the active component of the catalyst, thereby enhancing the contact between reactants and catalyst dramatically and mimicking the homogeneous catalysts. Several reviews have been published on the use of nanosized metal particles as catalysts for green chemical organic reactions. Accordingly, this review briefly introduces the production of heterocyclic compounds catalysed by metal nano particles separately and/or in combination with the various green chemical techniques.

Keywords: Nanocatalysis, Bioactive Heterocycles, Green Chemistry, Organic Transformations

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The 13th Anniversary India-Japan Fest



BICON-2018



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Welcome to India-Japan Fest-2018 and Pink City Jaipur, India!

This year we are celebrating the 13th Anniversary of India-Japan Fest at Biyani Girls College, Jaipur. Since, the first conference in 2006, it has become an annual feature of our institution and has continued to grow. The institution is leaving no stone unturned in encouraging the spirit of research and innovations and strengthening the bilateral academic relationship between India and Japan. Every year, this event receives increasing number of participants from both the countries, India and Japan, and we continue to evolve, adapt and develop new collaborative programs between various institutions in India and Japan.

We are privileged to announce the new academic alliance with two more universities, Kwansei Gakuin University, Japan and AIST, Japan. We are also welcoming “WELL GROUP” as the placement partner for our students enrolled for Technical Internship Training Program (TITP). The most attractive feature of this year event is the honouring of Prof. Yuzuru Husimi with the “Biyani Life Time Achievement Award-2018” for his exemplary work in the field of Evolutionary Molecular Engineering”.

We are the proud to announce that Biyani Group of Colleges has been empanelled as a SENDING ORGANIZATION by NSDC, MSDE, New Delhi. This program will provide opportunity to our technically qualified youth in enhancing their skills as well as getting placed in the top organizations of JAPAN. The objective of the seminar on TITP is to guide the participants regarding the eligibility criteria, sectors available and the placement opportunities in Japan.

Biyani Group of Colleges is organizing this mega event in joint collaboration with **DAICENTER** (a joint India-Japan research center between **DBT** and **AIST**) and partner institutes from Japan including **Japan Advanced Institute of Science and Technology, Akita Prefectural University, Saitama University, Kyushu University**. This event is also co-sponsored by **Indian Council for Social Science Research, New Delhi**.

The theme of **BICON-2018** is to promote India-Japan activities on **sustainable development** guided by different departments including Commerce & Management and Information Technology (Day-1), Science and Nursing (Day-2) and Social Science and Law (Day-3) based on ‘multidisciplinary-to-interdisciplinary’ approach. This is an initiation to introduce and promote sustainable development among nations and identify the challenges hindering the same.

BICON-2018 has decided to call for Abstract of the paper to be published in the conference proceeding with ISBN numbers. The Technical Program Committee is charged with reviewing all abstracts to accommodate the growing number of paper submissions. In a rigorous and time-consuming review process, the committee members worked hard to ensure the continued high

quality of accepted papers. In this year's conference program, there are 24 invited talks (11 Japan + 13 India).

The months of planning, hard work and team effort by dedicated people has culminated into the success of this event for which we would like to thank the management committee who trusted us to organize this conference and contributed significant funds to support this event. We would also like to thank the technical program committee and the reviewers for their excellent work in reviewing the abstracts as well as their invaluable input and advice. We would also like to express our sincere thanks to all the dedicated BICON-Team members for their active role and support in all aspects of this conference from collecting abstracts, assisting in coordination, helping to plan the agenda, recruiting sponsors and assisting in organizing the conference. We cannot thank them enough for their constant support and dedication for being a brilliant and amazing team. I want to thank all the conveners of each symposia : Dr. B.N. Gaur (Commerce & Management), Er. Vivek Sharma (Information Technology), , Dr. Malti Saxena (Social Science), Dr. Priyanka Dadupanthi (Science), Dr. N L Gurjar (Law) and Dr. Satish Gupta (Nursing) and Graphic designer Mr. Nilesh Sharma and team for editing the conference proceeding in the last running moments and beautifully designing the brochure and other materials.

Finally, we want to express our sincere thanks to all the invited speakers, offline and online, who have joined us from India and Japan taking out time from their busy schedule to participate in this conference. It has been a great pleasure to interact with them and receiving their interest in collaborating in the future.

The venue of this conference is located in pink city Jaipur and we have tried to promote a sense of the local culture and North-Indian cuisine to the attendees during this conference. We hope that this conference is intellectually stimulating, enjoyable, professionally satisfying and memorable for all the attendees.

With warmest regards,



Manish Biyani

Dr. Manish Biyani
Organizing Chair

- Res. Director,
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- Res. Asso. Professor,
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Biyani Group of Colleges,
Jaipur



Devika Agarwal

Dr. Devika Agarwal
Secretary
Head-Training,
Biyani Group of Colleges,
Jaipur

Prof. U.C. Sankhla

Former Vice - Chancellor
Dr. Bhimrao Ambedkar
Law University Jaipur
Dean, Students Welfare
& Department of Law
Former Principal & Director
University Law College Centers
University of Rajasthan Jaipur



Message

It a matter of immense pleasure and pride to know that the Biyani Shikshan Samiti Jaipur India is going to Organize and sponsoring 4 days 13th Anniversary India - Japan Fest- BICON - 2018 from November 25-28, 2018 and that is co-sponsored by the India Council of Social Science Research and the National Assessment and Accreditation Council Bangalore in collaboration with its Valued Partner Institutes in Japan a dedication to the Education.

The Biyani Shikshan Samiti is running a group of Various College's / Institutes / Faculties in Various Discipline namely Law, Social Science, Nursing, Science, Management and Information Technology Avowed Object to Prepare and send Young India Talents for Advanced Knowledge and Training in Industries in Japan made in Japan skill and guiding long term career in industries/profession in India delivered make in India concepts.

I hope that the discussions and deliberations made in this 13 the Japan-India Bilateral International Conference would turn out to be exceptionally prolific. I Wish The Success of the Conference.



(Prof. U.C. Sankhla)

CENTRAL UNIVERSITY OF RAJASTHAN

राजस्थान केन्द्रीय विश्वविद्यालय

ARUN K PUJARI
Vice Chancellor
अरुण कुमार पुजारी
कुलपति



Bandarsindri, NH-8, Kishangarh,
District- Ajmer-305817
Rajasthan, INDIA



Date: November 03, 2018

No. CURAJ/VCS/Msg/2017-18/0123

MESSAGE

I am glad to know that Biyani Girls College Jaipur is organizing “**13th India-Japan Bilateral Conference**” between November 26-28, 2018 jointly with DAILAB and partner Institutes Japan Advanced Institute of Science and Technology, Akila Prefectural University, Saitama University, Kyushu University Japan and cosponsored by ICSSR New Delhi to celebrate ongoing bilateral academic and research activities and to promote further stronger relationships between India and Japan.

I extend my good wishes and heartiest greeting for organizing this Bilateral Conference and look forward that budding Research Scholars, Academician, Students and other professionals across the world to be benefitted with this conference. It's my sincere hope that this conference will proliferate the knowledgebase of its various stakeholders. I congratulate the organizing team of this event.

I extend my best wishes for successful conduct of this mega event.

(Prof. Arun K Pujari)



MESSAGE

Dear Dr. Manish Biyani, Directors of Biyani Group, I should like to express a word of gratitude for your decision on the first Biyani Life Time Achievement Award. First, I do apologize for not attending this ceremony because of my health problem.

At Saitama University for the most time, I have been developing for 40 years the field of Evolutionary Molecular Engineering, which was coined by Professor Manfred Eigen in 1984.

“Directed evolution of proteins”, which was a title of Nobel Prize 2018 Chemistry, is a small part of this field. Objects of this field are not only proteins but also nucleic acids and even synthetic copolymers.

Evolutionary Molecular Engineering is performed with an evolution-reactor process. There are two types of evolution-reactors, that is, a natural selection-type and an artificial selection-type. An example of the former is cellstat, which we made for measuring rapid evolution of recombinant fd phage in 1982, and an example of the latter is phage display panning. “Directed evolution” is the artificial selection-type evolution-reactor process.

Evolutionary Molecular Engineering has been providing not only various commercial nucleic acids, proteins and peptides, but also various insights on basic science of biopolymers, including the realistic possibility of “RNA world” in Origins of Life. In fact, I have been studying on the origin of biological information using evolutionary molecular engineering. It was revealed that “evolvability of biopolymers” is a very important key-word in this basic science.

Dr. Manish Biyani has also been developing this field for long years, starting at Saitama University and Saitama Bio Project on evolutionary design of advanced biomolecules. He invented several innovative evolution-reactor processes. During this activity, he constructed a broad academic personal network, which, I believe, was the basis of this India-Japan BICON. Ten years ago, I myself visited this beautiful Pink City, invited by him to attend the 3rd India-Japan BICON. I do not forget warm hospitality of the Biyani Group.

Thank you very much for your recognition of my work on the occasion when Nobel Prize has celebrated Directed Evolution of proteins. Thank you very much also for your contribution to the advancement of education, research and practical implementation in this field.

I would like to end this word of gratitude with an earnest hope for the great success of this India-Japan Bilateral Conference.

November 27, 2018

Yuzuru Husimi



प्रो. आर. के. कोठारी
Prof. R. K. Kothari



कुलपति
Vice-Chancellor

राजस्थान विश्वविद्यालय, जयपुर
University of Rajasthan, Jaipur

19th November 2018

Message

I am extremely delighted to know that the Biyani Girls College, Jaipur is jointly organizing the 13th India-Japan Bilateral Conference (BICON-2018) from 25th to 28th November 2018 and that a Souvenir is being brought out on this occasion. It is equally good to know that a joint India-Japan Technical Intern Training Programme (TITP) will be launched on this occasion. Certainly such an initiative will richly benefit the students to explore various job opportunities available in both the countries.

I congratulate the organizers and convey my best wishes to the participants of the 13th India-Japan Bilateral Conference.

प्रो. आर. के. कोठारी
(R K Kothari) 19-11-18

Phone: 0141-2707863/ 2710465 Fax: 0141-2711799 E-mail: vcuj@gmail.com
J.L.N. Marg, Jaipur-302004, Rajasthan, INDIA



Rajasthan Technical University, Kota

Rawatbhata Road, Kota (Raj.) 324010

Prof. N.P. Kaushik
Vice Chancellor

No.RTU/VCS/F(1)26/2018/

Date 22-11-2018



MESSAGE

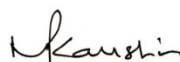
It gives me immense pleasure to know that Biyani group of Colleges is organizing 13th India-Japan Bilateral Conference (BICON-2018) from 25th to 28th Nov.2018.

It is also happy to note that this is an annual event organized by Biyani Group of Colleges, DAICENTER and partner institutes from Japan including Japan Advanced Institute of Science & Technology, Akita Prefectural University and others.

A very contemporary and relevant theme of sustainable development in Computing Technologies for Business world has been selected for the Conference of this year.

I am confident that this conference would provide a platform to the technocrats, academicians and stakeholders to exchange their ideas which will be beneficial to the next generation.

I convey my best wishes for the grand success of the Conference.


(Prof.N.P.Kaushik)

Phone No. 0744-2473001 Fax. No. 0744-2473002 website: www.rtu.ac.in
Email : vcoffcertu@yahoo.co.in, vcoffice@rtu.ac.in, npkaushik@rtu.ac.in



Rajasthan ILD Skills University (RISU)

(Established under the Act No. 6 of 2017)

Dr. Lalit K. Panwar
IAS (R)
Vice Chancellor
Former Secretary Tourism; GoI
Tel. No. 0141-7154211
Mob. No. +91 9650687888

Message

I am delighted to convey my warmest congratulations to Biyani Group of Colleges on the occasion of the 13th India-Japan Fest to be organized from 25-28 November, 2018 in Jaipur.

I also congratulate Biyani Group of Colleges for being empanelled as a "Sending Organization" by NSDC, MSDE for India-Japan TECHNICAL Internship Training Programme.

I am glad to note that Japan Advanced Institute of Science and Technology (JAIST) is working with various Indian Universities to enhance collaborative endeavors between India and Japan.

It is particularly heartening to note that JAIST is encouraging young scientists, faculty members, corporate personnel and research scholars from both countries to participate in these conferences.

I am confident that the scientific deliberations at the Conferences will lead to constructive recommendations for strengthening scientific collaboration between the two countries.

I am sure the scientific and academic fraternity in India and Japan will take full advantage of the opportunities offered by this collaboration.

I wish the 13th India-Japan Fest a Grand Success.

Dr. Lalit K. Panwar, IAS (R)

Dated : November 20, 2018

6/2, Jamdoli, ILD Campus, Jaipur 302031, Rajasthan
Phone: +91-141-7154217
E-mail : risujaipur@gmail.com, Website: www.ildindia.org



MESSAGE

I am glad to convey my warm congratulations to Biyani Group of Colleges on occasion of the 13th India-Japan Bilateral Conference (BICON-2018) on sustainable development, going to be organised from 25-28 November, 2018. It is remarkable that JAIST and other Institutes from Japan has been working with Indian Universities to enhance collaborative endeavour between India and Japan.

I am pleased to note that this event will promote India-Japan activities on sustainable development and hence mark out the hindering challenges. The launch of joint India-Japan activities for Technical Intern Training Program will provide immense opportunities for student's skill development.

I wish great success to Biyani Group of Colleges for their efforts to organize such prestigious event.


(Rajendra Sharma)
Registrar

Rajasthan Nursing Council,
Jaipur



MESSAGE

I am delighted to know that Biyani Group of Colleges is geared up for organizing the 13th India-Japan Fest from 25th November to 28th November, 2018.

I extend my heartfelt gratitude to the Group for their efforts at accelerating the potential of Indian youth by providing them with internship opportunities through the India- Japan Technical Intern Training Program.

I would like to convey my best wishes to Biyani Group and sincerely hope that with their relentless efforts many youth would be benefitted by becoming educated and employable in Japan.

Manish Kumar
MD, NSDC
New Delhi

N.M. Ranka

Senior Advocate, Tax
Consultant & Social Activist
Former President, All India
taxation Association/
Rajasthan Tax Consultant
Association Jaipur 302004

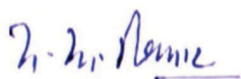


Message

I am happy and delighted on invitation at 13th India - Japan Bilateral International Conference organized by most prestigious and pioneer Biyani Girls College's Jaipur on 25-28 Nov. 2018.

It shall provide an opportunity to interact between two cultures with "Sustainable Development". Subjects for discussions and deliberations are of great important and would be addressed by eminent experts. It would over all improve the qualities and virtues in the youth the future of India.

I wish the conference a grand success with best wishes.



(N.M. Ranka)
Senior - Advocate

Resi .: Ranka House, Moti Dungri, J.L.N. Marg, Jaipur 302004, Rajasthan
E-mail : nmrankaassociates@gmail.com
(M). 9314504824



VASUNDHARA RAJE
CHIEF MINISTER RAJASTHAN

Message

It is good to know that the Biyani Girls College, Jaipur is organising the 13th India-Japan Bilateral Conference (BICON-2018) from November 25th to 28th, 2018.

Rajasthan maintains special relations with Japan in terms of investment. This relationship has strengthened during the past years as investment made by the Japanese companies in the state has brought prosperity to the region.

I hope that this event shall be a good forum to discuss the issues related to the bilateral relations of India and Japan.

I wish the conference the very best.

(Vasundhara Raje)



गुलाबचन्द कटारिया
मंत्री
गृह एवं न्याय, गृह रक्षा एवं नागरिक सुरक्षा, जेल,
आपदा प्रबंधन एवं सहायता विभाग



2119, मुख्य भवन
शासन सचिवालय, जयपुर
(ऑ) 0141-2227362
(नि) 0141-2228741

MESSAGE

I am very happy to learn that Biyani Girls College, Jaipur is organising 13th Indian-Japan Bilateral Conference to be held in Biyani Girls College from 25th November 2018

I hope that this conference will attract bilateral academic/research agreements and promote further stronger relationship between Japan (Akita prefectural University, Saitama University, Kyushu University) and Higher level Indian Institutes. Participation of the accomplished girls from Biyani College in this event shall Foster Women empowerment in our state.

I wish great success to the conference.

(Gulab Chand Kataria)

Dr. Rajeev Biyani,
Chairman,
Biyani Girls College,
Sector-3, Vidhyadhar Nagar, Jaipur-39



कालीचरण सराफ मंत्री

चिकित्सा एवं स्वास्थ्य, चिकित्सा एवं
स्वास्थ्य सेवाएं (ईएसआई), चिकित्सा शिक्षा,
आयुर्वेद एवं भारतीय चिकित्सा पद्धति विभाग



6116, मंत्रालय भवन,
शासन सचिवालय,
जयपुर-302005 (राज.)
फोन नं. (नि.) 0141-2723333, 2724488
(का.) 0141-2227125
ई.पी.बी.एक्स. : 5153225 (विस्तार) 21268
स्वास्थ्य भवन : 0141-2220685, 5110738
फैक्स नं. : 0141-2227125

संदेश

मुझे यह जानकारी अत्यन्त प्रसन्नता हुई कि बियानी ग्रुप ऑफ कॉलेज,
जयपुर द्वारा "13th India-Japan Bilateral Conference (BICON-2018)" का
आयोजन किया जा रहा है।

मुझे आशा है कि आयोजित सेमिनार में दोनों देशों के कल्याण एवं
विकास के संबंध में विचार-विमर्श होगा। साथ ही दोनों देशों के संबंध भी
मजबूत होंगे, जो कि देश के विकास में एक अहम कदम साबित होगा।

मैं सेमिनार एवं इस अवसर पर प्रकाशित होने वाली स्मारिका के सफल
आयोजन की हार्दिक शुभकामनाएं प्रेषित करता हूँ।


(कालीचरण सराफ)



किरण माहेश्वरी

मंत्री
उच्च, तकनीकी एवं संस्कृत शिक्षा
विज्ञान एवं प्रौद्योगिकी विभाग
राजस्थान सरकार
Kiran Maheshwari
Minister
Higher, Technical and Sanskrit Education,
Science and Technology Department
Government of Rajasthan



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शासन सचिवालय, जयपुर - 302005
2114, Main Building,
Secretariat, Jaipur-302005
0141-2227062 (O)
0141-2221466 (R)
email- saikiran.udr@gmail.com

Jaipur, Date: 19th November, 2018

Message

I am very happy to learn that Biyani Girls College, Jaipur is organizing 13th India-Japan Bilateral Conference (BICON-2018) to be held in Biyani Girls College from November, 25th to 28th, 2018.

I hope that this conference will attract bilateral academic/research agreements and promote further stronger relationship between Japan and India especially Rajasthan.

This event is organized to celebrate the bilateral research agreements and promote strong relationship between JAIST and Indian Institutes.

I wish Biyani Group of Colleges a great success for the conference.

Kiran Maheshwari
(Kiran Maheshwari)



राजेन्द्र राठौड़
मंत्री



ग्रामीण विकास एवं पंचायतीराज,
संसदीय मामलात एवं निर्वाचन विभाग
राजस्थान सरकार, जयपुर-302005

DO Letter No-Minister /RD&PR/E&A/2018/

JAIPUR, Dated:

MESSAGE

I am glad to know that Biyani Group of colleges, Jaipur is organising 13th India-Japan Bilateral Conference (BICON-2018) between 25th -28th November, 2018. It is jointly organized by Biyani Group of colleges (India) and partner institutes from Japan (Japan Advanced Institutes of science and Technology, Akita prefectural University, Saitama University, Kyushu University).

Through the programme, relationship between the countries India and Japan will be stronger. The theme of the conference Technical Intern Training programme, Skill Development and Entrepreneurship is Impressive.

The prospects of such activities have much more scope for the younger generation to uncap their talents and touch greater heights of achievement.

I wish to convey Biyani Group of Colleges a great success in the event.

With best wishes.


(RAJENDRA RATHORE)
Minister

Dr. Rajeev Biyani
Chairman
Biyani Girls College,
Sector-3, Vidhadhar Nagar, Jaipur.
PIN 302039.



D. B. Gupta
IAS
डी. बी. गुप्ता, आईएएस



Chief Secretary

मुख्य सचिव

GOVERNMENT OF RAJASTHAN

राजस्थान सरकार

Government Secretariat, Jaipur-302 005

शासन सचिवालय, जयपुर-302 005

Message

I am delighted to learn that the 13th India- Japan Bilateral Conference (**BICON- 2018**) is being organized under the joint auspices of Biyani Group of Colleges, DAICENTER (an Indo- Japan research partnership between DST and AIST), NAAC, ICSSR and a couple of prominent Japanese institutions, from November 25th to 28th, 2018 at Jaipur.

It is heartening to note that the event is dedicated to promote collaboration between India and Japan on issues related to sustainable development.

It is commendable that the forthcoming event also proposes to launch Technical Intern Training Program (**TITP**).

I am confident that this event will cement the Indo-Japan relationship further and provide a forum for exploring and sharing best practices of sustainable development, which is the need of the hour.

I compliment the Biyani Group of Colleges for their efforts to string a multitude of prestigious institutions in order to curate this event and wish it a grand success.


(D. B. Gupta)

FROM THE CONVENER'S DESK

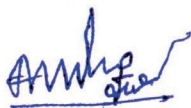
It gives us immense pleasure to present the souvenir of BICON 2018. We are grateful to all the speakers, delegates, organizers and guests, who have accepted our invitation to participate in the international conference.

It is time to renew contacts and discuss opportunities of mutual interest with the delegates from both Japan and India.

It is gratifying to note that the agenda of the seminar covers a wide range of very interesting topics relating to higher education frontiers in India and Japan, and resulting opportunities for both the countries.

No matter how much we can do by ourselves at the national level, whether it be research or development, it is never enough. In a spirit of true cooperation, we in Asia, and particularly in Japan and India, are proud of nurturing past and present civilizations and cultures. We must join in an action-oriented effort to recognize and capitalize on the bilateral opportunities in higher education sector in both the countries.

The dedication of the management, the teaching and non-teaching staff and the students at Biyani Girls College has brought this event to fruition. It is an outcome of the hard work and persistent efforts of all our colleagues. We hope that our efforts shine through, and all the delegates and participants have a fulfilling and rewarding experience here, that carries forward long after the event itself is over. Once again, a very warm welcome to you all.



CORE COMMITTEE :

- Ms. Pushpa Biyani (Mentor)
- Dr. Rajeev Biyani (Chairman)
- Prof. Sanjay Biyani (Director-Acad.)
- Prof. Manish Biyani (Director-R&D)
- Prof. Neeta Maheshwari (Principal, BGC)
- Ms. Sujata Biyani (Asst. Director)
- Ms. Priyanka Biyani (Asst. Director)
- Dr. Madhu Biyani (Asst. Director)
- Dr. Neha Pandey (Registrar)
- Ms. Renu Tandon (HR Manager)
- Dr. Devika Agarwal
- Prof. (Dr.) N.L. Gurjar
- Ms. Malti Saxena

ORGANIZING COMMITTEE :

- | | |
|---------------------------|-----------------------------|
| • Prof. (Dr.) N.L. Gurjar | • Ms. Malti Saxena |
| • Dr. Rehana Khan | • Dr. Geeta Garva Sharma |
| • Dr. Sangram Singh | • Dr. Shiv Jhalani |
| • Dr. Ramakant Gautam | • Dr. Alka Tyagi |
| • Ms. Pooja Sharma | • Ms. Shashi Agarwal |
| • Mr. Sunil Kumar Kumawat | • Mr. Tanveer Ali Zaidi |
| • Ms. Sushma Sharma | • Ms. Kritika Sharda |
| • Mr. Virendra Kumar | • Ms. Jamila Bano |
| • Ms. Rekha Vajpayee | • Ms. Vijaya Laxmi Chauchan |
| • Mr. Mohit Rawat | • Ms. Shilpi Tanwar |
| • Ms. Ritu Sharma | • Ms. Kanchan Swami |
| • Ms. Akansha Rathore | |

PROGRAMME AT A GLANCE

Timing	Programme	
8:30-9:00	Registration	
9:00-11:15	Inaugural Session	
9:00-9:05	Lighting of the Lamp by Chief Guest, Prof. U.C. Sankhla, Former VC, Dr. B.R. Ambedkar Law University, Jaipur	
9:05-9:20	Welcome address and opening remarks - Prof. Manish Biyani, Chair-BICON-2018	
9:20-9:45	Inaugural address by Academic Director Dr. Sanjay Biyani	
9:45-10:00	Address by Chief Guest	
10:00-10:30	Invited Talk-1: Prof Akihiko Fujiwara, Kwansei Gakuin University, Japan	
10:30-11:00	Invited Talk-2 Prof. (Dr)Arun K Pujari, Central University of Rajasthan	
11:00-11:15	Vote of thanks by Prof. Manish Biyani and group photo	
11:15-11:30	Tea Break	
11:00-1:00	Invited Session	
11:30-12:00	Invited Talk-3: Prof. Madhu Shastri, Law, Amity University	
12:00-12:30	Invited Talk-4: Mr. Sushil Sharma, Chairman, BCI, Jodhpur	
12:30-13:00	Invited Talk-5: Dr. Sanjula Thanvi, Associate Professor, Department of Law, University of Rajasthan, Jaipur	
13:00-14:00	Lunch Break	
14:00-14:30	Invited Talk-6: Dr. Toolika Gupta, Director IICD and Dean (Design Skills) Rajasthan ILD Skills University, Jaipur	
14:30-15:00	Invited Talk-7: Dr. Ishrat Ullah Khan, Associate Professor, Head, Department of Drawing and Painting, University of Rajasthan, Jaipur	
15:00-15:15	Vote of Thanks by Dr. Neha Pandey and Group Photo	
15:15-16:45	Technical Session/Poster exhibition by visual arts & designing	
	Chair: Dr. Dipa Chakrabarty Head-Amity school of Languages , Amity University TS 1: Sustainable Development: A Guide to Literature & Cultural Heritage	Chair: Mr. N.M. Ranka Senior Advocate, SCI and RHC TS 4: Sustainable Development in Indian Legal Framework
	Chair: Dr. Sanjula Thanvi, Associate Professor, Department of Law, UOR, Jaipur TS 2: Sociology & Global Sustainability	Chair: Dr. Kushal Kumar TS 5: Media Role in Enhancing Sustainable Development
	Chair: Prof. Madhu Shastri Law, Amity University TS 3: Sustainability: Policies & Governance	Chair: Dr. Ishrat Ullah Khan, Head, Department of Drawing and Painting, UOR TS 6: Sustainability: A framework of Visual Arts & Culture
16:45-17:15	Closing Ceremony/ Cultural Program Chief Guest: Dr. S.P.S Shekawat, Head, Dean and Member Syndicate Dept. of Law, UOR Guest of honour : Mr. N.M. Ranka Senior Advocate, SCI and RHC Guest of honour: Mr. Lokesh Yadav, International basketball player and coach for Prize Distribution Ceremony	
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Invited Lecture 1



Akihiko FUJIWARA

Akihiko FUJIWARA gained his Ph.D in 1995 from Tohoku University in Japan. He worked at Department of Physics in the University of Tokyo as a Research Associate (1995 – 2001), at School of Materials Science in Japan Advanced Institute of Science and Technology (JAIST) as an Associate Professor (2001 – 2010), and at Japan Synchrotron Radiation Research Institute (JASRI/SPring-8) as a Chief Scientist (2010 – 2015). From 2015, he has been a Full Professor at Department of Nanotechnology for Sustainable Energy in Kwansei Gakuin University. Beside the above primary research position, he was a Visiting Professor at Department of Physics in Tohoku University and at JAIST. His main research interests are experimental condensed mattered Physics focusing on semiconductor and battery materials for sustainable development

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Invited Lecture 2



Arun K. Pujari

Vice Chancellor, Central University of Rajasthan

Prof. Pujari received Ph.D. from IIT Kanpur. He has been working with University of Hyderabad for last 30 years. Prior to joining University of Hyderabad, he worked at JNU, New Delhi and Auto-Cartography Cell, Survey of India. During his tenure at University of Hyderabad, he has been invited on visiting assignment to several reputed international institutions such as University of Tokyo, University of Paris, University of Griffith, United Nation University, University of Memphis etc. He has served on advisory capacity in several decision making committees of DST, AICTE, DOS etc. He has served as member of Governing Bodies of several Government Institutions and Corporates. He has served as Dean, HoD and other responsible posts at University of Hyderabad. He has also been Vice Chancellor of Sambalpur University. He has 100+ publications and has supervised 20 Doctoral students. As Vice Chancellor of Central University of Rajasthan, new innovative courses have been introduced like M.Sc. (Atmospheric Science), M.Sc. (Computer Science) in Big Data Analytics, M.Sc. (Yoga), M.Tech. (Physical Cyber Security) etc.



Invited Lecture 3

Concept of Sustainable Development - An Indian Perspective



Madhu Shastri

Amity Law School, Amity University Rajasthan, Jaipur

Abstract:

"Earth provides enough to satisfy every man's needs, but not every man's greed." - Mahatma Gandhi

The sustainable development is now deeply embedded in both National and International scenario, it is a big Global problem; therefor India has also keen concern on the protection of environment, development and sustainable development. The depletion of natural sources, industrialization, and urbanization, development of science and technology and also tremendous growth of population are major threat to human survival. Ecology is common heritage for all human being the need of society increase day by day and its effect on the natural sources and environment, natural sources are limited and irrecoverable. Therefore it is a pious, moral and legal obligation and duty on Government, judiciary and citizens of India to protect, conserved and preserved the natural resources and environment with sustainable development .The Indian judiciary and Government have emerged as most important tool for promoting sustainable development with protection of environment and natural sources.

Keywords : Development, environment, natural sources, and sustainable development.

Introduction:

Sustainable Development is a multidimensional concept. It is widely accepted as a new policy goal to govern human life .The etymological meaning of sustainable development is any development which is on-going. It evokes the idea of preservation and nurturing.

In simple words, it is conservation of environment and development together. Both economically and ecologically sustained development is Sustainable Development. The term indicates systematic way of planning of development.

Social, economic and environment all these components concept of sustainable development.

Origin of Concept- The term sustainable development was coined at the time of the Cocoyoc Declaration on Environment and Development in the early 1970's. Since then it has become a trade mark of international organization dedicated to achieve beneficial development.

But For the first time, the doctrine of "Sustainable Development" was discussed in the Stockholm Declaration of 1972. Thereafter, in 1987, the World Commission on Environment and Development submitted its report, called "*Our Common Future*", which is also known as Brundtland. G.H.Brundtland the prime minister of Norway chaired the commission where in an effort was made to link economic development and environment protection. In 1992, Rio Declaration on Environment which is regarded as a significant and a milestone set anew agenda and Development codified the principle of Sustainable Development.

The doctrine of 'Sustainable Development' had come to be known in 1972 in the Stockholm declaration. It had been stated in the declaration that:

"Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and wellbeing and he bears a solemn responsibility to protect and improve the environment for present and future generation--."

But the concept was given a definite shape in a report by world commission on environment, which was known as '*our common future*'. This definition emanates from *Our Common Future*, also known as the Brundtland Report of the World Commission on Environment and Development in 1987.

"Development that meets the needs of the present without compromising the ability of the future generations to meet their own needs".

The goal of which is to achieve balance/harmony between environment sustainability, economic sustainability and socio-political sustainability. To meet the challenges of continuing growth without destroying the environment, planning for sustainable development is crucial.

Principles of Sustainable Development:

There are various principles of 'Sustainable Development' as mentioned by the described in 'Brundtland report' are as follows: -

a) Inter-Generational Equity: The principle talks about the right of every generation to get benefit from the natural resources. Principle 3 of the Rio declaration states that: The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations. "The main object behind the principle is to ensure that the present generation should not abuse the non-renewable resources so as to deprive the future generation of its benefit".

b) The Precautionary Principle-

This is the most important principle of 'Sustainable Development'. Principle 15 the Rio declaration states that: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

c) Polluter Pays Principle-

The Principle 16 of the Rio declaration states that 'National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

It is quite obvious that the object of the above principle was to make the polluter liable not only for the compensation to the victims but also for the cost of restoring of environmental degradation. Once the actor is proved to be guilty, he is liable to compensate for his act irrelevant of the fact that whether he's involved in development process or not.

Development comes through industrialization, urbanization & science and technology which in turn the main factor behind the degradation of environment. To resolve the issue, the experts worldwide have come up with a doctrine called 'Sustainable Development', there must be balance between development and ecology. Sustainable Development maintains a balance between development and the environment. It promotes inter-generational equity, i.e. better quality of life for present and future generations. The benefit from development ought to be equated with the impact on the environment for such development. While development is important or in fact necessary?. The basic concept of sustainable development aims to maintain a balance between economic advancement while protecting the environment in order to meet the needs of the present as well the future generations.

The principle of 10 of Rio declaration, 1992 states that *"Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided."*

The Constitution of India and Concept of Sustainable Development: Indian constitution envisages specific provisions for the protection and improvement of environment . India also has

credit to be the first country which made provisions for the protection and improvement of environment in its Constitution. By way of 42nd amendment to the Constitution in year 1976, Article 48- A which specifically deals with Environment protection and its improvements in several environmental cases the Indian courts also guided by the language of this Article .Article 51A (g)casts duty on the citizens for protection of environment. Schedule VII containing the three lists clearly lays down various areas relating to environment protection upon which the centre and states can legislate. As a result of which the Indian Parliament enacted various legislations which deal with environment protection and put the idea on track of sustainable development.

Indian Parliament also passed various laws effecting and regulating the environmental issues. Legislative enactments were always with the principles of economic, social security and sustainable development.

Role of Indian Judiciary visa-vice sustainable development-

The Constitutional Mandates of Environmental Jurisprudence the role played by the Supreme Court in using the Constitutional provisions especially Article 21 in order to provide environment related justice will be evaluated. As has been pointed out by Justice Kirpal “Article 142 afforded the Supreme Court considerable power to mould its decisions in order that complete justice could be done.”¹ Hence it assumed a primal position in the Indian environmental legal system by holding that environmental degradation in a number of ways violates constitutional provisions. One of the most innovative parts of the Constitution of India is that right to enforce the fundamental rights which is itself a fundamental right under Article 32 of the Constitution. The decisions of the Supreme Court shall be binding on all lower Courts of India (Article 141 of the Constitution).Clean and healthy environment is the basic need of human being which can be ensured with ecological balance which has been made possible by judicial activism and foresight of Courts of India- specially supreme court and various high courts. These judicial pronouncements have given new jurisprudence and dimension to environmental protection by adopting the doctrine of Sustainable Development.

The Rio Declaration on Environment and Development (1992): Over the years the Supreme Court and High courts have been playing pivotal role for protection of environment and sustainable development. Public interest litigation cases have been played vital role in the decision of most of the environmental cases. **The Supreme Court** and also various High Courts have landmark judgements for protection of environment & sustainable development and its various principles.

One of the most significant parts of the Constitution of India is that right to enforce the fundamental rights is itself a fundamental right under Article 32 of the Constitution as it has been recognised as one of the fundamental right under Article 21.

In the case of *Vellore Citizen Welfare Forum v. Union of India* the doctrine of Sustainable Development was implemented for the first time by the Supreme Court. The Petitioners therein had

filed a petition in public interest litigation against the pollution caused by discharge of untreated effluent by the tanneries and other industries in the river Palar in the State of Tamil Nadu. In the instant case, the Supreme Court held that the precautionary principle and polluter pays principle are a part of the environmental law of India. The court also held that: "*Remediation of the damaged environment is part of the process of 'Sustainable Development' and as such polluter is liable to pay the cost to the individual sufferers as well as the cost of reversing the damaged ecology*". The judgment marked all efforts to maintain a harmony between environment and development.

But before Vellore Citizen's case, the Supreme Court has in many cases tried to keep the balance between ecology and development. *In Rural Litigation and Entitlement Kendra Dehradun v. State of Uttar Pradesh*,⁷ which was also known as Doon valley case, ***was the first and unique case of ecological imbalances and environmental degradation*** of India where issues related to environment and ecological balance was brought up. Two orders were given by the Court one in 1985 and the other in 1987 in which the Supreme Court It is a social obligation and let us remind every Indian citizen that it is his fundamental duty as enshrined in Article 51 A (g) of the Constitution." highlighted the fact that India citizens have the fundamental of protecting the environment under Article 51A (g).

Dispute arose over lime mining in the Shivalik hilly areas. The Supreme Court after much investigation, ordered the stopping of mining work and held that this would undoubtedly cause hardship to them, but it is a price that has to be paid for protecting and safeguarding the right of the people to live in healthy environment with minimal disturbance of ecological balance and without avoidable hazard to them and to their cattle, homes and agricultural land and undue affection of air, water and environment."

After that, the Supreme Court interpreted and implemented the doctrine of Sustainable Development that" in Narmada Bachao Andolan vs. Union of India observed that "Sustainable Development means what type or extent of development can take place, which can be sustained by nature or ecology with or without mitigation".

In T.N. Godavaraman Thirumulpad vs. Union of India, the Supreme Court said "as a matter of preface, we may state that adherence to the principle of Sustainable Development is now a constitutional requirement. How much damage to the environment and ecology has got to be decided on the facts of each case. In Indian Council of Enviro-Legal Action vs. Union of India, the Apex Court held: "while economic development should not be allowed to take place at the cost of ecology or by causing widespread environment destruction and violation; at the same time, the necessity to preserve ecology and environment should not hamper economic and other developments". Hence, importance has been given both to development and environment and the quest is to maintain a fine balance between environment and economic development.

The Supreme Court of India emphasised on the need to set up specialised environment courts for the effective and expeditious disposal of cases involving environmental issues, since the right to healthy environment has been construed as a part of right to life under Article 21 of the Constitution.

The first case that can be discussed in respect to the Courts interpretation of Article 21 is **MC Mehta v Union of India** or the Oleum Gas Leak Case. A writ was filed under Article 32 on the event of leakage of Oleum gas from one of the units Shri Ram Foods and Fertilizers Industries. The primary issue dealt with in this case was the scope of Article 21 and 32 of the Constitution. And application for enforcement of right to life a "hyper-technical" approach cannot be adopted which would defeat the goal of justice. "Right to life means a life of dignity to be lived in proper environment free from danger of diseases or infections. In this case Supreme Court established the rule of absolute liability and held that if any damage is caused due to hazardous or dangerous activity than the sufferer is liable to be compensated. Further, the Court also observed that the claim for compensation under Article 21 is sustainable. In respect to Article 32 the Court observed that the ambit of Article 32 is extremely broad and it allows the Courts to force new remedies and to formulate new strategies to enforce fundamental right

The case *Chhetriya Mukti Sangharsh Samiti v State of UP* was one of the earliest cases where the right to environment was linked to right to life. In this case the Supreme Court unequivocally held that "every citizen has a fundamental right to have the enjoyment of quality of life and living as contemplated by Article 21 of the Constitution. Anything which endangers or impairs by conduct of anybody either in violation or degradation of laws, the quality of life or living of people is entitled to be taken recourse of Article 32 of the Constitution".

Another noteworthy case that can be mentioned is Indian Council for **The Indian Environ-Legal Action v Union of India**. In this case writ was filed under Article 32 on behalf of villagers alleging that dangerous chemicals were being emitted by private companies and this violated the right to life of the villagers. The Court found that the sludge released by the companies was toxic in nature and it made the water in the wells and streams unfit for human consumption. The Court held in this instant case that if Companies flagrantly violated the right to life of individuals then the Court has a right under Article 32 of the Constitution to intervene to protect the right to life and liberty of the citizens.

Similarly, in **Subhash Kumar v. State of Bihar** The Supreme Court observed that "The right to life is a fundamental right under Article 21 of the Constitution, and it includes the right of enjoyment of pollution-free water and air for full enjoyment of life. If anything endangers or impairs that quality of life in derogation of laws, a citizen has the right to have recourse to Article 32 of the Constitution..."

Another important judgment that has to be discussed in this regard is **MC Mehta v Union of India**, In this case it was alleged that the foundries, and hazardous industries as well as refineries in

Mathura where emitting sulphur dioxide which when combined with oxygen in the presence of atmospheric moisture was transformed into sulphuric acid or acid rain which was corroding the marbles of the Taj Mahal. A PIL was filed accordingly and it was further contended that refinery emissions, vehicular traffic, etc. polluted the ambient air around the Taj Trapezium (TTZ). The Supreme Court held that the emissions resulted in the violation of the right to life of people living in the TTZ and also damaged a prestigious monument like the Taj.

The Supreme Court in ***Samatha v State of Andhra Pradesh***, held that It is the duty to ensure that the industry or enterprise do not denude the forest to become menace to human existence nor a source to destroy flora and fauna and biodiversity.

In Bombay Dyeing and Manufacturing Co. Ltd v. Bombay Environmental Action Group, The Supreme Court observed that with major threats to environment such as climate change , global warming etc.; the need to protect the environment has become priority, at the same time it is also necessary to promote development , so much so that it has become the most significant and local point of environment legislation and judicial decision relating to the same .

Similarly, the apex court in *Amarnath Shrine, in Re vs. Union of India and Others*, explained that the doctrine of Sustainable Development and precautionary principle have been applied where development was necessary, but not at the cost of environment” appropriate balance between the various activities of the states very foundation of socio- economic security and proper environment of the right to life. “And this balance to be made by the courts to ensure the protection of environment and forests.

The Indian Government and Indian judiciary, both are playing vital role in developing the principle of sustainable development by protecting, preserving, and conserving the environment and natural sources. Article 21. Right to clean and healthy environment has been interpreted as a part and parcel of right to dignified life of people of India by the Indian judiciary specially our apex court.

Indian judiciary is playing very pivotal role to make safe environment and bring an equilibrium between ecology and sustainable development.

A lot has been done legally and judicially to protect environment, but still we are lacking far behind from our goal. Preservation and protection of the environment and keeping the ecological balance unaffected is a mission which is not only for Governments and judiciary but also for every citizen of India, it is a pious, social ,moral and legal obligation on every Indian citizens, it is also their fundamental duty as enshrined in Article 51 A (g) of the Indian Constitution. It is an opportunity to come together and achieve the goal of” Sustainable Development “as envisaged by the U.N. Millennium Goals of 2000and declared by the Rio de Janeiro- Summit on Sustainable Development (1992,2012), the Johannesburg Conference on Sustainable Development (2002) .

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Invited Lecture 4



Sushil Kumar Sharma

Chairman, Bar Council of Rajasthan, Jodhpur, Rajasthan

Message:

I am immensely happy to know that Biyani Group of Colleges, Jaipur is organizing International Conference on eve of rejoicings the 13th Anniversary India-Japan Fest-BICON-2018 on "Sustainable Development" on 25th to 28th November, 2018. The thematic and sub-thematic thrust areas has deep Philosophical, ideological, academic and practical implications for development and progress of mankind.

The "Sustainable Development" is a multidimensional process encompassing social, economic, educational, Political, technical, management, environmental, ecological and development aspect & any nation in pursuance of sustainability must creates society based one equity and non difference.

I am sure the participants will discuss in depth all these sub-thematic in thrust areas and there dissensions related to the "Sustainable Development".

I am confident that deliration & the outcome of this important conference would significant by contribute in bringing all about better understanding on them at topic challenges, issues and perspectives.

I convey my heartiest greeting and felicitations to all the Participants and organizers of the conference and wish the conference a grand success.

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Invited Lecture 5



Dr. Sanjula Thanvi

Associate Professor of Law, University Of Rajasthan

MESSAGE :

It gives me great honour to write a message for “BICON-2018” on the theme “SUSTAINABLE DEVELOPMENT” organised my Biyani group of Institutions, Jaipur in collaboration with academic institutions of Japan.

Development means the process of becoming something bigger, stronger, better or advance which in turn brings degradation, deprivation of some other process so there must be balance between the two means development should be sustained. Doctrine of sustainable development comes in existence at the world commission on environment, when Ms. G.H.Brundland, Norway Prime Minister, defined “Sustainable Development” as “Development that meets the needs of the present without compromising the ability of the future generation to meet their own needs”. In preserving development of society - Judiciary, legislatures, executives and Academicians plays an important role Legislatures has enacted various laws to create something grow or change and becomes more advanced i.e. to achieve sustainable development. Executive role is to execute the law and Judiciary, especially Supreme Court and High Court, play a vital role to solve the problem by interpretation of Laws. Academicians are meant to create some change in society, sense the issues creating problems, respond to society and influence the society.

Process of globalization, path-breaking and radical developments in Science and Technology, fierce market competitiveness, ever rising power and capacity of influencing state by regional and multinational companies, position and potentials being acquired by the financial Institutions (World Bank, WTO, RBI & others) in impacting national economic, trade and development policies are the major developments but they also create serious challenges to sustainable development

I am sure this 13th India-Japan Bilateral Conference on “Sustainable Development” would be an occasion for judiciary, lawyers, academicians, researchers, students and other professionals in India & Japan to discuss the issue at hand and suggest the solutions to the sustain the development in the various field . I wish all the best to organising team for their unique approach towards the great issue.

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Invited Lecture 6



Dr. Toolika Gupta

Director, IICD

Dr. Toolika Gupta has amassed experience as a designer, consultant and academic in India and abroad. She has travelled extensively in India, USA, Europe and parts of south-east Asia. She started her career as a designer in 1996 after completing her Master's degree in Textiles and Clothing from Delhi University (Lady Irwin College), continued as a researcher and free-lance designer, then taught at NIFT (National Institute of Fashion Technology), New Delhi full time from 2005 to 2011 as an associate professor. She moved to UK in 2011 and did a short course from the University of Oxford in 'Archaeology of Clothing'. She began her PhD from the University of Glasgow in 2012, which was successfully completed in 2016. Her PhD was titled 'Influence of British Rule on Elite Indian Menswear: The Birth of the Sherwani'. During these years she was associated with CTR, Centre for textile Research (Copenhagen, Denmark) as a PhD fellow, where she was a part of very exciting research group, and worked on understanding of research methodology. She has also presented papers in many national and international conferences, some of which are online, She has been a consultant for the industry and for museums and other projects. Last year (2016), she was one of the ambassadors of the Costume Society of UK. She is a founder member and secretary of the Textiles and Clothing Research Centre, TCRC, India.

MESSGAE:

Sustainability is in the way we work and plan for future, each action of ours needs to be taken after thinking of its impact sustainably. Sustainability should be seen in the light of sustainable employments, sustainable materials and an entire sustainable eco-system. I feel happy to know that Biyani College is taking careful steps towards this direction, and I wish them good luck for the India-Japan Bilateral Conference to be held in November 2018.

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Invited Lecture 7



Dr. Ishrat Ullah Khan

Affiliation :

Associate Professor, Head, Department of Drawing & Painting, Convener, Board of Studies, University of Rajasthan, Jaipur

Education :

M.A. Ph.D. (Drawing & Painting)

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- Shiksha Gaurav Award (2005)
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- Ex-Vice Principal, Univ. Rajasthan College, Jaipur
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CONTRIBUTED PAPERS

Moral Judgment Under Dilemma Situation in India

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Abstract:

The present study examined morals in Indian people by moral dilemma task. The results showed that the situation includes direct cause and accidental harm enhanced utilitarian judgment. The effect of personal force in moral scenario was different from previous studies, and it might reflect specific sense of values in India.

Keywords: Morality, Moral dilemma, Decision-making, Culture

Introduction:

How can we measure our morality? In order to resolve it, some tasks were developed [1]. The moral dilemma task is one of them, and which is the task participants need to choose sacrificing one person in order to save others or overlooking others death. The task was improved in current years, and it is elucidated that there are factors of situation which affect our judgment in moral dilemmas [2]. Those are Personal force (whether touch the person directly), Benefit recipient (whether own life can be saved), Evitability (whether victim comes out without own action), Intentionality (whether there is clear intention of murder). However, cultural difference as which aspect is respected is still unclear. This study examined moral judgment in India as first step for cultural comparison study.

Result and Discussion:

The mean ratings of moral acceptability (1: disagree to kill one person to save others (deontological judgment) ~ 7: agree to kill one person to save others (utilitarian judgment)) for each participant were analyzed (Figure-1). A Two-by-Two-by-Two analysis of variance (ANOVA) was conducted. Each factor of moral scenario (Personal force, Evitability,

Intentionality) were the within-participants factor. There were significant effects of personal force ($F(1, 88) = 10.89, p < .01$), intentionality ($F(1, 88) = 19.48, p < .001$). It means direct cause and accidental harm of sacrificing in dilemma situation enhance utilitarian judgment. Conversely, evitability of victim is not critical factor of moral judgment for Indian people.

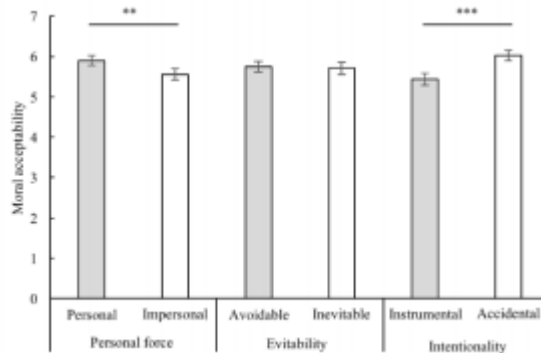


Figure 1 Mean moral acceptability ratings

Experimental:

This study was conducted as interview survey based on questionnaire. The research area were a campus of Biyani group of colleges and markets around there. 100 persons participated survey. Eight scenarios of moral dilemma were selected as task from previous study [2] with three factors(Personal force, Evitability, Intentionality).

Conclusion:

This study revealed that Indian people tend to choose utilitarian judgment in moral dilemmas, and it is enhanced by situation includes direct cause of sacrificing.

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The effect of Diet Habits on Health Status among Diabetes Patients in India

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Abstract:

The general objective of this study is that the effect of the living habits (dietary practice) induced by different religions on the diabetes patients in India. We conducted the survey by the questionnaire. The basic characteristic of diabetes patients including the age, gender and the relationship among the religion type, diet type and BMI are studied.

Keywords: Diabetes, Religion, Diet habits, India

Introduction

Diabetes is one of the largest global health emergencies of 21st century¹. Each year more and more people live with this condition, which can result in life-changing complications. India is one of highest number of people with diabetes and still experiencing an alarming increase in the prevalence of diabetes². The resulting morbidity, reduced quality of life, and risk for complication make preventive strategies imperative. And, with good self-management and health professional support, people with diabetes can live a long, health life. However, the contribution of the Indian diet and related religions to the increasing prevalence of diabetes in the country is not well understood. The research is mainly focus on the relationship between the health status and diet habits of diabetes patients in India.

Result and Discussion:

The samples characteristics as the 77.8 % diabetic patients have belonged to 40-70 years. 54.8% diabetes patients are male. The religion of samples are Hinduism, Islam and Christianity and the 6.7% people are Islam, the proportion are 90.5%, 6.7% and 2.9%, respectively. As the [Fig1](#) showed more than half of diabetic patients are vegetarian and overweight in this research. The results in [Fig2](#) showed 59% diabetes patients are vegetarian, 29% diabetes patients are non-vegetarian. On the side of body mass index (BMI) results that be used to judge the health status of diabetes patients, we can see about 70% patients are overweight. Also, we collect the education status among the diabetes patients as the [Fig3](#) showed. The education status have no significant different to effect the portion of the overweight. The self-management and economic

status possibility affect the results. Furthermore, the relationship of BMI and different parts of diet consumption be studied in the Fig4. The consumption of vegetable, fruit, high-fat food, high-sugar food and sugary drink were studied. There are no apparent different in diabetes prevalence based on type of BMI and different parts of diet consumption.

The people are Hinduism who have a unique dietary practice and lifelong pattern in India. Hence, combination the pattern of dietary may yield findings which part of dietary is high consumption. Thus, it is possible to assess dietary associations with diabetes even chronic diseases. In the future, prospective research with better measure of dietary intake and clinical measures of diabetes are needed to clarify the relationship between the diabetes and living habits formed from different religion.

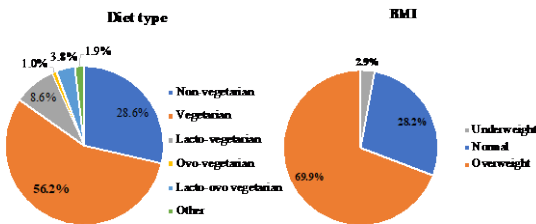


Fig1. The status of diet type and BMI in diabetes patients

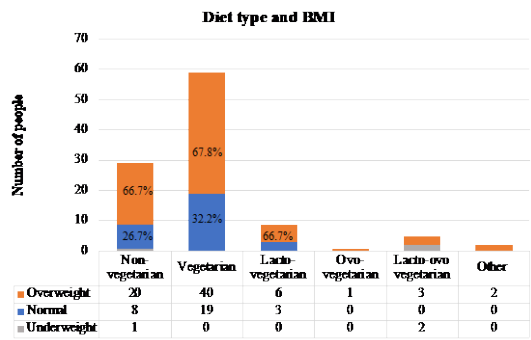


Fig2. The relationship between diet type and BMI

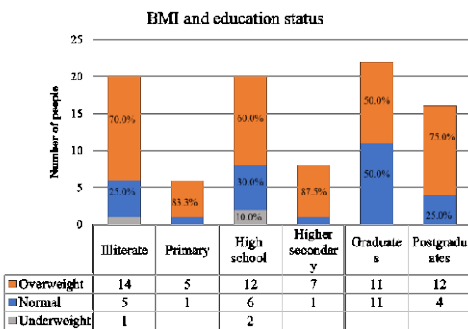


Fig3. The relationship between education and BMI

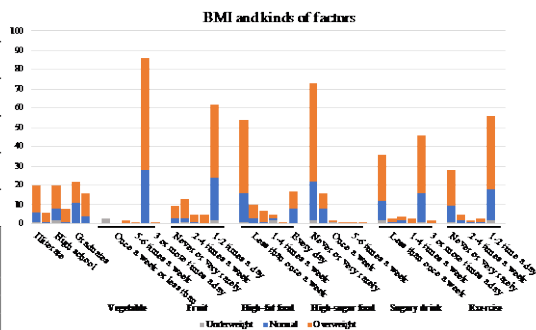


Fig4. The relationship between BMI and diet consumption

Experimental

Conducted as international collaboration research between Kyushu University Decision Science center and Biyani University. The survey was conducted at the local diabetes clinics including

the Dhand's diabetes clinic and Dana Shivam Heart & Super specialty Hospital of Jaipur and face-to-face interview 100 diabetes patients who have different religions. The prepared questionnaire was used to collect information on various like general profile, disease history, food habits, exercise, etc.

Conclusion:

The 100 diabetes patients have no significant different in diabetes prevalence based on type of BMI and different parts of diet consumption.

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Clarifying of Bring Up Process as Successor by Regional Development Coordinator

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Abstract:

In this paper, I clarify the process of promoting successors for regional development coordinator in Japan where the population supporting the regional economy is decreasing. Especially, I focus on local cities where the population declines remarkably and show how to grow successors of regional development in business. This work provides some insights that respond efficiently and flexibly to problems through sustainable self-reflection and original work. In addition, the results can help coordinators to improve their behavior.

Keywords: Regional development, Self-reflection, Participant observation, Coordinator

Introduction:

Japan is facing a problem of economic decline due to a decreasing labor population and an increasing elderly population. By that influence, municipalities and businesses have not been able to

continue to work without successors. Especially, depopulation is in progress, especially in rural areas. Regional activities such as “community development” and “town development” are gathering attention to maintain and develop the economies of the areas where these problems occur. Among them, the “regional coordinator” adjusts how to solve regional problems and promote regional coordinator as an important role in regional activities.

However, it has not been clear how the “regional coordinator” is developing in regional development coordinator in Japan. In addition, other problems such as labor, cost and time of building new human resources as successors have emerged as an important topic. Moreover, a problem that arises not only in community development but also in the company environment is the “regional activities”. It is conducted without “the reason why community development is necessary”. Therefore, this research assumes that the regional economy is not dependent on administrative subsidies, but that the region itself is “to maintain culture and society”. It focuses on finding a way to be “sustainable and economically independent” and successor responsible for regional development focus on regional activities.

The purpose of this research is to clarify how to train regional successor by taking participant observation in community-based companies as regional coordinators. By this way, both the regional coordinator and the successor will clarify the mechanism of how the knowledge on training is accumulated and how they are inherited. Regional development is structured by three elements: “Industry creation”, “Creating a place” and “Human resource”. Among them, despite the importance of “Human resource” [1][2] is pointed out, how to bring up the regional successor is not revealed [3]. Nanao city and Ishikawa prefecture, which are survey in this study, are located about 80 km northeast from the economic center of Ishikawa. Kanazawa city, with a population of about 53,000 people and an area of 318.32 km², has an extensive fishing industry. Nanao city has one of the festival called “mikoshi”(a sacred palanquin). The mikoshi is a special carriage for the gods (attendants are people who walk and sing alongside it). Moreover, trade in Hokkaido from the 17th century (Kitamae ship) was also flourishing.

In recent years, about 30% of the population of Nanao city has become elderly people over 65 years old and thus young people are required as regional successors. This paper shows how the successor can solve regional problems by participating the internship at the company “Misogigawa Co., Ltd.” which involve in building such regional successor and giving guidance to intern students. There are several intern students. They are in charge of working at the meeting. The teaching method adapts OJT, but the problem is always shared with employees and interns directly or through information exchange via the Internet by using “cloud” such as Google Drive. However, by sharing alone, OJT does not require the skills to deal with various problems. For this reason, the author watched the work contracted by intern students in the site of OJT and described what kind of guidance the employees train regional successor.

Result and discussion:

Besides meeting with employees, interns (= students) also wrote documents for self-reflection, which are called “retrospect sheets” every work or project ends. The content of the document is suitable for reflection and improvement points. Employees get hints from the improvement points about their teaching methods. Then, “familiar” with residents of local cities, OJT was conducted not only from employees but also from the residents. By that employees paper-based education and information sharing with interns by utilizing the Internet technology can make the jobs efficiently and smoothly.

The series of actions shown in this result are the PDCA cycle and the SECI model. Every time one work is over, they strongly impressed by having retrospective and remedial measures. In addition, they can deal with similar situations in the future. Employee also gained hints for improving educational methods for interns from the document. In modern society, almost works depend on the Internet system such as mobile phones. Moreover, the self-reflection using the document such as the knowledge “Yugard” gathered by the predecessors, and “New Gard” which is the combination of modern new iterative self-reflection “Yugard” is created.

Experimental:

The strategy of this research is to participate observation to the regional community development company as I am an intern student. The targets of the observation are the behavior of OJT and intern between employees and interns. The period of this research is from July 1st 2018 to the end of Sep 2018.

Conclusion:

In this research, intern students gained the experience from self-reflection and self-growing materials. It is the opportunities for the coordinators too. However, this research could not visualize the level of understanding for the. In future work, this problem should be considered.

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Challenges before Sustainability: A Dynamic Paradigm of Global Culture

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Abstract:

Sustainability lies at the heart of our strategy. Our vision for a cleaner world is reflected in our ambition to drive the transformation towards a low-emission energy system to engage our customers and society at large to help us drive this change. Sustainability looks to protect our natural environment, human & ecological health, while driving innovation and not compromising our way of life. Four factors are specially leading to this drastic change: Climatic change, Urbanisation, Digitalisation and Technological Advancement. Our role is to accelerate this change by reshaping the energy system, improving resource efficiency and providing smart solutions. The National Environment Act 1980 marked a new era for the legal framework of sustainability especially in terms of protection of environment.

Keywords: Sustainability, Energy Efficiency, Renewable, Urbanisation, Legal framework.

Introduction:

Sustainability is the method of maintaining the resources in a balanced way, to avoid unnecessary exploitation and to meet human needs and aspirations in the future period. This theory considers that the resources are finite and should be used conservatively and wisely with a view to long term priorities and consequences of the ways in which resources are used. Sustainability is a broad discipline giving students and graduates insights into most aspect of the human world from business to technology to environment & to the Social sciences. The core skills with which a graduate leaves college or University is looking into the modern world to change it drastically and develop the technologies of the future. When we hear the word “Sustainability” we tend to think of renewable resources, reducing carbon emissions, protecting environments and a way of keeping the delicate ecosystem of our planet, Earth in balance. Under the concept of “Sustainability” there is a study of how natural systems function, remain diverse and produce everything it needs for the ecology to remain in balance. It also acknowledges that human civilisation take resources to sustain our modern way of life. Thus Sustainability takes into account how we might live in harmony with the natural world around us, protecting it from damage & destruction. It is not yet clear what our sustainable future will look like but with emerging technologies & the improvement of older cleaner fuel sources many people now look to a past fossil fuel world-including businesses. As we know that our entire energy sector is transforming now-a-days so we have to be very cautious on the point of

sustainable development in global perspective. With emergence of cross boarded pollution issues, the international community realised the need of the legal framework towards sustainability. The Stockholm Conference of 1992, the Earth Summit held (1992) were the great leap towards sustainable development.

Result and discussion:

After discussing on the above issues, the result which can be taken out is that we need to be very much vigilant in the aspect of environmental protection and sustainability. For this proper implementation of laws should be done and people should morally support such legal frameworks to give them a meaningful shape and multidimensional heights.

Conclusion:

Many developed countries have attained modernization through the process of industrialization. But there is a need to bridge the gap between rich and poor nations in regard to resource utilization and sustainable path of development. For this there is a prior need of regional cooperation. Part of the research capacity of these industrial nations like money, advanced skills and sophisticated equipments should be used rationally to tackle the challenges before sustainable society especially in the developing countries like India.

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The Role of Mass Media in Sustainable Development

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Abstract:

Sustainable development means economic development that is conducted without depletion of natural resources. India and Japan have made many collaborative efforts in the past and are still making efforts in the present to sustain the economic, environmental and educational development in India and Japan. The use of mass media has played a significant role in the sustainable development of both the countries. This international conference “13th India – Japan Bilateral Conference” is a witness to the global sustainability. Efforts towards environmental hygiene, towards going green in economic building process and media's strong role in enhancing sustainable development is the key focus of the present research paper.

Keywords: Sustainable Development, Going Green, Mass Media, Economic Building, Collaborative Efforts, catalytic agents.

Introduction :

Mass media is a significant force in Indian modern culture. Mass media is communication whether written, broadcast, or spoken that reaches a large audience. It includes television, radio, advertising, movies, the internet, newspaper, magazines, and so forth. Sociologists have referred to this as mediated culture. Youngsters, officials, old people rather the whole community is bombarded constantly with messages from a multitude of sources including TV, newspapers, magazines, face book, twitter, what's app, you tube and many other social sites on internet.

Today due to mass media people living in the remotest part of the world do not remain untouched by latest happenings in the world and innovation and changes taking place every moment in the field of machinery, education and technology. Media's role in sustainable development can be analysed from political, economic and social perspective. In the political sphere media's role can be found in areas of democracy and good governance, political transparency, foreign policy, human rights, war on terrorism, and public relations. In the economic sphere, media can play their role in the area of economic policy and growth, economic empowerment, advertisements and tourism, business and investment, etc. In the social sphere, media's role covers the social issues, such as corruption, criminal violence, communal conflicts, prostitution, war on drugs, population control, education and food security.

India is much ahead of all the developing countries in creating the role of communication in nation building and sustainable development. Even for Gandhiji, the father of our nation, the key to a newspaper's role in arousing social awareness was integrity and credibility. Social commitment was

basic. Transparency in all its operations was essential to maintain its reputation (Bhattacharjee, 2003).

It's true that mass media are the catalytic agents in national development some of our rural areas still lack the facilities of mass media. Dua (1994) felt that media should give more coverage to the agricultural programmes relevant to farming community. It is a fact that half of our population is still illiterate and does not have access to newspapers and other printed material. As a result of this, pace of adoption of technology has remained lower than the expectation of scientists.

Japanese and Indian mass media have played a crucial role in promoting educational and invitational programmes for Indian and Japanese students wanting to study either in Japan or India. In 2015 Takeshi Yagi, the Japanese ambassador to India discussed the possibility of boosting collaborations with Indian students wanting to study in Japan at the Japan-India education summit. In these summits it is the role of mass media through which all the students are made aware about different technical and educational programmes for Indian students who are wanting to study in Japan. Through these programmes many Indian students become familiar with Japanese higher education and take advantage of these institutions.

MEXT has designated The University of Tokyo. India office as 'Coordinator in India for Higher Education in Japan'. MEXT has also designated four universities, such as the University of Tokyo (U Tokyo), Nagaoka University of Technology, Japan Advanced Institute of Science and Technology and Ritsumeikan University as representatives of the Re-Inventing Japan project, especially for India.

Tokyo has collaborated with IIT Kharagpur in the field of railways. RITS signed an MOU with IIT Hyderabad to promote educational and academic exchange. Nihon University sends students to Goa University every year. Japanese university also has a student exchange programme with Delhi University.

Many Japanese universities have started offering the English medium course recognising the fact that one of the biggest barriers for Indian students to study in Japan is language. The Japan science and technology agency (JST), working closely with MEXT, has launched a new short-term invitational programme for Indians up to 40 years of age. The Sakura Science Exchange Programme in science invited some 300 Indian university students and young professor's to Japan for up to three weeks in 2015-16 with necessary costs borne by JST. The necessary information was provided by the Japanese host institute on web address ssp.jst.go.jp/EN/index.html. These are a few examples of internet services which are genuinely serving the Indian researcher's students in the field of educational programmes.

It's through mass media we realize that JICA (Japan International Cooperation Agency) has played a major role in sustainable development in India in various sectors, whether it is the field of technology, health and medical care, transportation field, power and energy field, agricultural and

rural development, conservation of natural resources, environment, urban and regional development and urban environment.

It's really the use of internet services that applicants can stay connected with JICA through the following websites:

1. JICA website
2. JICA India website
3. JICA'S Training and Dialogue Programs
4. JICA Alumni India website

This year JICA has signed agreement with centre to provide loan of Rs 500 crore to government of India that is 8,082 million Japanese Yen approximately. Source: m. times of india.com Apr 2, 2018. And it is another feather in the cap of sustainable development in the field of an efficient traffic system to meet increasing traffic demand in Chennai metropolitan area by installing intelligent transport systems and to migrate traffic congestion and economic growth.

JICA India office, chief representative, Takema Sakamoto said that this project would "optimise the way traffic lights work, reducing long queues at city's main intersections", he said, adding, mitigating traffic congestion would lead to effective utilization of road infrastructure

The list of the role of mass media in the sustainable development of India is endless; mass media has paved the way for the better relations between India and Japan in the field of overall development of Indian economic growth whether it is health sector, education sector, better infrastructure and various other social sectors which have also been benefitted from the various sustainable programs provided by the Japanese government to Indian government.

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Fashion Sustainability-A Culture for Community Development

Bindu Sharma

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Abstract :

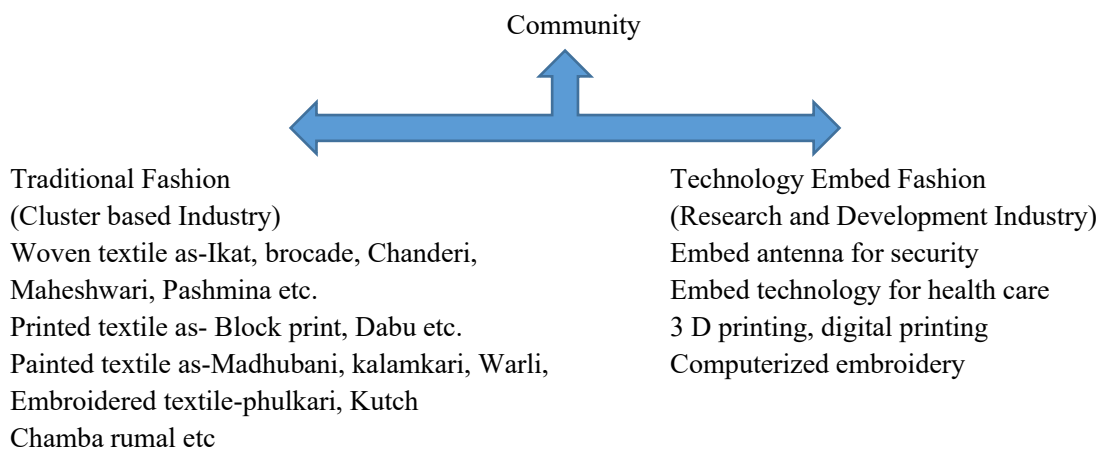
Fashion sustainability is broader aspect of Y generation which widely influenced by culture and to the culture. Traditional fashion represent the mammal or semiautomatic process product whereas smart textile serve another corner of technology and advancement. In this conceptual paper provide a community development frame work through fashion sustainability and harmony in traditional and technology based fashion. Frame work provide insight of not only the economic aspect its casing the social and environmental aspect of art and fashion culture. The paper provide a solid based for fashion business startups as well as culture impact on consumer behavior and community development through SEE frame work.

Keywords : Fashion, Sustainability, Culture and Community development.

Introduction:

Fashion as a paradox of as custom (fashion2012), signalized by continuously change or fashion cycle movement which is non-constant, it is an art, culture, science and behavioral aspect for social culture. Fashion provide a vital role in micro level as traditional, ritual and cultural for specific product whereas technology pay greater role to product not only for mass production through automation it also reveal the niche market for smart fashion embed with technology. The urge of today's fashion, a two way street for culture and community development.

Two way street of CCD through fashion.

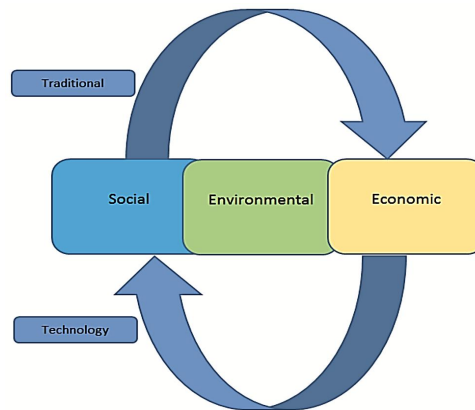


In current scenario, blending of tradition and technology is essential for development of community as y generation is required technology due to diverse phenomena of ethical and technological fashion to maintain the ritual and culture of traditional fashion as well as lead in their peer group in technology wise.

Sustainability

Sustainability is a contradictory term which concern with 3 fold development of socio-eco and environmental (SEE) aspect for society and fashion industry have led to a rise in the implementation of sustainability initiatives to grow the ethical and technological fashion for improving their environmental impact and the social responsibility throughout their supply chains. Environmental sustainability refers to the ability of something to continue without upsetting earth's ecological balance. Sustainable apparel products can be defined as a part of the growing design philosophy and trend of sustainability, the goal of which is to create a system which can be supported indefinitely in terms of environmentalism and social responsibility.

Cultural cycle-SEE (Social, Economic and Environmental)



Culture:

Culture is intellectual collectiveness phenomena regards ritual norms and traditions among an organization or a group in society. Fashion have vast cultural impact on society not only in aspect of creativity, innovation as well as economic and socio aspect. Culture have a powerful effect on community as a fashion. The Y generation have different priorities for fashion as they involve in different activities which required different culture for multi-tasking, ever changing technology connecting to whole world, global awareness and social responsibility.

Whereas fashion culture is contributed a new perspective to the social-cultural.

1. Social and economic arena - way of life, wealth, dressing habits, consumption, etc.

2. Environment and health - climatic changes, protection of animals, environment friendly materials, sport, etc.
3. Legal and ethical environment - international agreements, etc.
4. Custom and rituals effects - historical and folk costumes, street-styles, etc.
5. Art and Technology - applied art, painting and sculpture, theatre, music, literature, etc.
6. Technological developments - new fabrics, intelligent textiles, new production and logistic procedures, etc.
7. Sexuality - blurred border between male and female dressing, etc.
8. Internet - presence of the global world.

This cultural contribution result is the innovation itself expected by certain circles of fashion and regenerate the demand for new innovation fashion as per Y generation activities.

Community Development:

Community development is a practical approach of society development and fashion as culture open up new opportunities for women's economic and social upgradation especially in rural areas where women's cooperative communities indulge in traditional fashion embroidery and handwork. Creativity and managerial skills of women's are making them eco-leaders, power house, group dynamics, learning while earning, and social strength.

In other hand women's also have strong appearance in technology field a group of technocrats revels smarter technology for protection device.

Y generation have innovative demand as well as ethic demand where fashion culture casing the direct and indirect development of community as changing in lifestyle and status. Fashion culture revive the demand of innovative needs which fulfill by the fashion creators and fashion setter may be work strong ground.

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Role of Indian Judiciary on Sustainable Development Legal and Judicial Trends and Solution

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Abstract :

Judiciary may be reported as the most sharp-eyed protector of democracy. It is one of the three towers upon which the structure of the constitution is constructed. It will not be wrong to say that “environmental variances have created some striking case laws in India. Because, Judiciary courageously and enthusiastically enforcing the law and filled the gap in the field of environment and sustainable development”. “It facilitated legislators without legislating”. Indian Judiciary has ever assumed the role of defender of the environment and insurer of the fundamental right of life and sustainable development. It has been played important role for advancing the concept of sustainable development. It is relevant to quote here that the legislature has recently started talking about sustainable development in some of the enactments. But, mainly the acclaim for making sustainable development as fundamental principle of Indian legal system goes to judiciary. If we look at the number of legislations related to environment in India, we would found that there is no shortage of laws.

Above decisions makes it clear that the risk of harm to the smaller number of people for public interest is admissible. But, it is submitted that ***Doctrine of Proportionality of Risk must be used with greater degree of alertness, because the life of the some can't be sacrificed*** for the purpose of large public interest. *Several Judgments of Indian judiciary very much clears that the role of Indian Judiciary in context of environment protection and sustainable development is marvellous and laudable.* Judiciary in India has done a great service by declaring the right to pollution free air, water and clean environment as fundamental right. It is the efforts of judiciary that the concept of sustainable development has become the important part in constitution of India and environmental jurisprudence in our country along with certain other “*principles such as polluters pays principle, precautionary principle, intergenerational equity, public trust doctrine, use and conservation of Natural resources, environment protection, obligation to assist and cooperate, doctrine of proportionality of risk, doctrine of absolute liability and extended producer responsibility (EPR)*” Number of times, for the protection of environment, judiciary applied the principle of sustainable development while deciding the cases. Moreover, judiciary through the concept of Public Interest Litigation, arousing social awareness about the importance of environment protection and sustainable development and encouraged people to participate in the prevention and control of pollution programs. But still there are a number of hindrances in the way of achieving sustainable society, which are given as under:

Powers of Apex Court are limited. Number of times, Supreme Court has issued directions to the administration regarding the closure of industries and projects which are harmful for the environment and sustainable development, but administration refuses to accept the directions of Apex Court on the name of Policy decision.

Apart from that, there is inadequate sensitivity amongst the professional, technical and even judicial people. Therefore accountability and transparency in judicial institutions is the need of the hours.

Keywords : Sustainable Development, Judiciary



Sustainable Development and Environment Protection in India: Challenges and Expectations in Socio-Legal Scenario

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Abstract:

Environment protection and preservation is integral part of Indian religious practices and beliefs. It is belief of all Indian religions that to preserve the environment is one of the ways to serve the humanity and God. Undoubtedly, Indian Constitution implements the religious faith of Indian community on environment preservation by the insertion of various provisions concerning protection of natural resources like forests, lakes and wild life. Moreover, keen participation in various international conventions, conferences rather affirms that, most of the issues, which the humanity is facing today, are revolving around the human beings. Environmental pollution and unsustainable pattern of development is such kind of issue. It is emphasized that these issues are not for single nation, therefore it is the obligations of the all nations whether developed or developing, rich or poor must concentrate to find out the solutions of these problems. Undoubtedly, various resolutions have been taken by world community through international conferences, conventions, declarations to resolve the above said issues. The first international conference for environment preservation and sustainable development is Stockholm Declaration on Human Environment, 1972, in which India participated and promised to implement the principles of Stockholm declaration in regional level. In other words, one can say that consciously, it was initial step of the Indian Government to fight against the problem of environment pollution and unsustainable development.

The above discussed constitutional provisions very much clear that concept of environment protection and sustainable development is a hidden aspect of our Constitution and connected with our religious and social beliefs. Under these, a good number of legislations have been enacted and they are capable of producing good results but the most important thing is the strong will power of government and community participation to produce the desired results. In order to control environmental pollution in April 1981 the National Committee on Environmental Planning (NCEP) was established. The NCEP is doing commendable work in the areas of appraisal of development projects, human settlement planning, and formulation of environmental planning and in creating environmental awareness at various levels. Moreover, dignified life could not be achieved without affording the right of sustainable development and right to live in clean environment to citizens. Constitutional Forty-Second (Amendment) Act, 1976, inspired from the Stockholm Conference on Human Environment, in which India participated very actively and promised to the world community for implementation of sustainable development principles. Apart from that, Part-IV and Part IV-A also deal with the same concept. Above provisions makes it clear that India has fulfilled all its obligations, which India has promised in international treaties, conventions, and declarations on Environment Protection and sustainable development.

Keywords : Sustainable Development, Environmental Protection, Government Policies



Indian Jurisprudence and Sustainable Development

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Abstract :

Indian Jurisprudence is well balanced with principles of sustainable development. The whole idea of living was based on the harmonious coexistence with the nature. "Mahinsyahsarvabhutani is a lesson of the Rigveda, meaning "Do not harm anything". Elements of nature were respected to the extent that they were personified as gods and worshipped. "Nearly all the higher gods of the Rig Veda are personification of natural phenomena, such as the sun, dawn, fire, wind and rains.

By accepting the divinity in all beings, living and non-living, Hinduism views the universe as a family or, in Sanskrit; Vasudhaiva Kutumbakam".

The detailed analysis of Indian Jurisprudence it is concluded that the Constitution of India in its directives imposes duty to the state and citizens to make measure on conservation of resources towards environmental sustainability. In fact, there are legislative and policy measures on effective conservation of resources at different level the bendiness of the concept as well as ineffectiveness of the institutions that as remarkably created a chaos in harmonizing developmental and environmental controversies. Realizing the mandate for achieving environmental sustainability in catena of cases the constitutional courts relied the soft law and transform the status of concept of Sustainable Development and remarkably accepted as part of our Municipal law. Critics argued that the courts while handling issues relating to environmental degradation, they generally apply the principles of Sustainable Development and administrative justice. Ignoring, the critics, it is need of the hour to make effective coordination among the existing institutions and broader understanding to achieve environmentally sustainable policies along with global trade targets.

Keywords : Jurisprudence, Sustainable Development, Environmental Degradation



Block Printing Workers of Rajasthan: A Study

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Abstract:

The impact of the textile industry on the environment and the consumption of raw materials and natural resources are becoming prime concerns. Due to the German ban on synthetic dyes because of their carcinogenic, pollutant and non-biodegradable nature; the attention has shifted to the use of natural dyes. India, since ancient times is known for its unique arts and crafts. One of the earliest techniques used to colour fabric was printing with a block printing. One of the most popular form of hand printing is - block printing. Printing is the process of applying colour to fabric in definite patterns or designs. It is also known as localized application of dye or pigment in thickened form to a substrate to create an attractive design with well-defined boundaries. The objective of present study is to find out about the dyes, binders, thickeners used by block printers and physical problems faced by them. For this purpose twenty respondents were purposively selected and structured interview schedule was used for data collection. The results reveals that majority of the respondents were using the synthetic dyes and thickeners and facing the health problems related to skin followed by breathing and back ache.



Role of Media for Sustainable Development and Environmental Protection: Media Role in Sustainable Development- some observation and expectations

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Abstract :

It may be little surprising to know that the first civilization in the world to collapse due to ecological factors was Sumer in Mesopotamia more than 4000 years ago. One might perhaps think that it was some natural disaster that led to the extinguishing of the Sumerian civilization. But the reality is different. In fact, it was, in a great measure, a man made catastrophe caused by the increasing salinity in the extensive irrigation channels built by the Sumers for cultivation. Historical and archaeological evidence points out that ecological factor played a crucial role in the collapse of a number of ancient civilizations like the Indus Valley, Greek, Phoenician, Roman and the Mayan. Today again, a similar possibility is in front of us. In the present context, we cannot turn our back towards development.

Development brings advantages as well as challenges. Sustainable development is the key for success. In 1987, the World Commission on Environment and Development (WECD), which had been set up in 1983, published a report entitled Our Common Future. The document came to be known as the Brundtland Report named after the Commission's Chairman, Gro Harlem Brundtland, the then Prime Minister of Norway. This document developed the guiding principles for sustainable development as it is generally understood today.

To conclude, media has been playing a pivotal role in achieving the Millennium Development Goals. It needs to focus more on the developmental aspects rather than focusing too much on the entertainment aspects of society. It has been creating public opinion and whenever media participates wholeheartedly, it has brought in sea change in the society. Hence, the role of media in sustainable development is very significant.

Keywords : Media, Sustainable Development, Goals

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Economic Growth with Sustainable Development

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Abstract :

Sustainable development is the organizing principle for meeting human development goals while at the same time sustaining the ability of natural systems to provide the natural resources and ecosystem services upon which the economy and society depends. *Sustainable development* is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Development all alone does not mean development of the present and not caring about the future generation it should be a balance between the present needs and future needs.

Economic growth, reflected in increases in national output per capita, makes possible an improved material standard of living. Development is driven by satisfying present needs, without fully considering the wider or future impacts. The damage this kind of approach can cause, from large-scale financial crises caused by irresponsible exploitation of natural resources. The longer the unsustainable development, the more frequent and severe its consequences are likely to become, which is why it needs to take action now.

Living within our environmental limits is one of the central principles of sustainable development. One implication of not doing so is climate change. But the focus of sustainable development is far broader than just the environment. It's also about ensuring a strong, healthy and just society. This means meeting the diverse needs of all people in existing and future communities, promoting personal wellbeing, social cohesion and inclusion, and creating equal opportunity.

Economic Sustainability

Sustainability focuses on equal economic growth that generates wealth for all, without harming the environment. Investment and equal distribution of the economic resources will strengthen the sustainability for a complete development. Many challenges facing humankind at present, such as climate change, water scarcity, inequality and hunger, can be resolved at a global level and by promoting sustainable development.

The Goals to Sustainable economic development

1. Eradicate poverty and hunger and guaranteeing a healthy life
2. Universalize access to basic services such as water, sanitation and sustainable energy

3. Support the generation of development opportunities through inclusive education and decent work
4. Foster innovation and resilient infrastructure, and guarantee the global wellbeing of people
5. Reduce inequality in the world and protect the planet.
6. Care for the environment combating climate change and protecting the oceans and land ecosystem
7. Promote collaboration between different social agents to create an environment of peace and sustainable development.

Environmental constraints in Developing countries are characterised by pressures from Population Growth, Inefficient Technology, Weak Governance, Poor Health Sector, Low per capita Income, and Poverty. Therefore, the emphasis for developing countries is on the need for progress, a desire to have social and economic growth. Hence, growth would take precedence to the environment.

In terms of the perspective from the developed countries, economic growth results in increasing wealth, income, standard of living, and improved health care facilities. This state of affluence on the other hand came at a price of environmental degradation, which commenced from the dawn of the industrial revolution. The drive to industrial development was based on the increasing use of fossil fuels, raw materials, synthetics and chemicals (such as pesticides, DDT etc.) to name a few.

This rapid consumption and production drive placed a great pressures on the environment through overexploitation and depletion of resources, accumulation of CO₂ and greenhouse gases in the atmosphere, pollution, and destruction of eco-systems. Therefore, one can infer that issues arising in the environment are as a result of both the lack of development and the consequences of economic growth in the countries of the world.

Keywords: Sustainable Development, Economics, Carbon Emission, Growth



Birbhum Landscape: A Physical Experience of walking through a Village within the Frame of a Mural

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Abstract:

Art is able to excite our curiosity. That is its primary function. Curiosity leads to debate, and debate leads communities to engage themselves. - Rosina Gomez-Baeza.

A mural is a piece of artwork painted or applied directly on a wall, ceiling or any other immovable permanent surface. Fundamentally a mural is often depicted as an architectural element in a given space and incorporates the space of the surrounding harmoniously into its objective.

The “Birbhum Landscape”, a mural by Benod Behari Mukherjee, done on the ceiling of Kala Bhavana (the art college of Santiniketan) boys’ hostel in 1940 is significantly established the fundamental concepts of a mural on an immovable space. This mural is all about any rural village around Birbhum District of provincial Bengal, guided by its entire local experiences like red earth, varied flora and fauna, variously occupied men spreads around a pond in the center. In this mural Benod Behari gathers his experience of the local villages in an encyclopedic manner and unrolls it around a central pond like an intricate network of images that carry us to the four corners of the ceiling constantly shifting perspective and focus to explore new things like an travelling viewer.

In this mural, Benod Behari has extensively explored the formal and expressive possibilities of Far Eastern scroll into the context of a mural, and most radically he has explored the physical limitations of the audience and turned that into possibilities. The complete mural is not visible in a single glance as it is done on a low ceiling; one has to stand on the floor and look up, then, in few inches above, he will find a portion with intricate and identical details of the depicted village as one finds while walks on the paths of a real village and his gradual movements unveils the whole village as a real experience as he has travelled on his own feet. The sensible use of variety, colour, perspective, lines, forms and compositional placements by the artist makes the journey of a viewer through the mural very intensive and generates a taste of belongingness. The mural transmits the vividness of the landscape and life of a village into the mind of its audience through his own will which is not directed by the artist.

Keywords: Sustainable Development, Rural Development, Travelling



Dyeing of Textile with Organic & Eco Friendly Dye –Natural Dye

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Abstract:

In India in different states, on different occasions and every day a huge amount of flowers, leaves, plants, seeds, wood powder are wasted. Survey report reveals that in India, West Bengal is in forth position to cultivate flowers and different natural plants, fruits etc. after Andhra Pradesh, Karnataka Tamilnadu.40%of the total product flower are wasted every day. These flower are thrown in water of rivers or any other places which create water pollution, and they increased atmospheric Carbon dioxide, Chlorofluorocarbons (CFCS), Methane, Nitrous oxide, Sculpture which then dissolved in water and atmosphere air and fall to the grounded as acid rain, Hazardous products and they caused increased skin, heart, liver, mental, diseases and responsible for global warming.

These Natural Resources can be used to extract dye which can be used as Natural dye for coloring Textile Fiber and residuals can be used as Bio-Fertilizer also. These natural dyes can be easily extracted and employed in dye sensitized Photo electrochemical cells. Practical application of natural dye more suitable to economically viable solar energy device for our society, and is cost effective, eco-friendly and renewable and has no side effect and allergic action on skin, and also non-hazardous and non-toxic 100%safe for men and the environment.

Keywords: Sustainable Development, Carbon Emission, Textile Industry, Natural Resources



Literature as a Mirror & Lamp to the Development

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Abstract:

The literature is a mirror and lamp to the development of the society. Literature indeed reflects the society and helps to show right path to the people in the society. Literature, as an imitation of human action, often presents a true picture of what people think and execute in the society. In literature, we find stories designed to portray human life and action through some characters who, by their words, action and reaction, convey certain messages for the purpose of education, information and entertainment. It is impossible to find a work of literature that excludes the attitudes, morale and values of the society. The stories and the novels which deal particularly with the problem of social, economic and political life of a country are bound to reflect contemporary history. A few of the stories and novels deal exclusively with historical themes, and such works are essentially realistic and serve as the correct picture of society. The novels of Scott., Galsworthy, Bankim Chandra, Sarat Chandra, Prem Chand, Chekov etc. are of this type. Literature creates a way for people to record their thoughts and experiences in a way that is accessible to others, through fictionalized accounts of the experience.

Literary tradition is both oral and written. Civilizations that existed without a written language still managed to pass down their stories through oral telling. Many Native American cultures practice an oral literary tradition. The primary use of literature in ancient settings was to pass down customs, beliefs and traditions to the younger generations. In more recent centuries, literature has taken on a more comprehensive role of mirroring society in order for humans to study themselves and understand the underlying truths common to all people. For students, studying literature is a critical component in education, as it teaches students to see themselves. We start thinking more and more about natural phenomenon's, we find out logics behind everything, we become strong enough to raise questions about the unseen eventually broadening the horizon of mind reflected in art. It helps you see patterns, structures, connections and truths that had been hidden in the literal world, disguised by the horror of evil. No discipline, even the scientific method, does as much to teach us how to think by merging the complexity of life with the order of the universe. Self-development, inspirational books, biographies of successful personalities are helpful to billions of people in leading a successful life. Career enhancement, detailed study materials, research journals etc. also contribute in a great way. When you read war literature, whether it is Walt Whitman, Alfred Tennyson etc, and their works take you to another dimension. You can feel almost everything they have written. Virginia Woolf, feminism in her works reflects the quality of her thoughts, which this generation lacks. Shakespeare wrote plays so beautifully, every emotion is a

masterpiece. Anton Chekhov's short stories with harsh reality are realised. It is our strength and an escape as well. It also provides us aesthetic pleasure with pattern recognition: the quest, the romance plot, the defeat of the monster, the rise and fall of the tragic hero. Literature enables people to see through the lenses of others, and sometimes even inanimate objects; therefore, it becomes a looking glass into the world as others view it. It is a journey that is inscribed in pages, and powered by the imagination of the reader. Ultimately, literature has provided a gateway to teach the reader about life experiences from even the saddest stories to the most joyful ones that will touch their hearts.

In order to promote a flourishing and sustainable literary culture, we would need to do more than just "grow" writers... It is clear that literature education in schools has a vital role to play as the breeding ground for readers and audiences, as well as other members of the literary and cultural ecosystem. Literature education provides a platform for critical discussions about what it means to live the good life, which is the just life, the meaningful life, and the ethical life.

Keywords: Literature, Sustainable Development, American



Benefits of Cashless Economic Policy for Sustainable Development

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Abstract :

This paper is focused on the benefits of cashless economic policy for sustainable development. The study showed that cashless economics policy helps customers to carry out a number of financial transactions without delay. Produces speedy and accruable financial report in efficient manner, increase in customer satisfaction, improved the effectiveness of monetary policy in managing inflation and driving economic growth there by contributes significantly to sustainable economy development.

Sustainable development is development that meets the needs of the present without compromising the ability of the future generations to meet their owns needs. Cashless economic policy in an economic setting in which goods and services are bought and paid through electronic media. A cashless economy is an economic is an economy were transactions can be done without carry physical cash as means of exchange transactions but rather with the use of credit and debit card payment for goods and services. The major benefits of cashless economy policy for sustainable department are below-

1. Check on terrorist financing.

2. Provision of Evidence against corrupt official.
3. Reduction in money laundering.
4. Effectiveness of the monetary policy.
5. Create more employment opportunities in industrial & banking sectors.
6. Enhance the quality of life.
7. Beneficial to the bank with customer's relationship.

Keywords : Cash Economic, Sustainable development



Sustainable Development of Teacher Education in Social Era

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Abstract:

The paper is concerned with reforms in Education and the need for sustainable development in Teacher education. In the process, key concepts like Teacher Education and professionalism were explained. In the context of social atmosphere in India; we all are aware that how a teacher plays a vital role in respect of social responsibility. Re-define the role of teacher education with development is the challenge in current scenario. This process may take time to understand in social structure because people not perceive this change in a positive manner. Every aspect of Teacher Education is very important for social affairs. The value is derived from enhanced academic performance that produces outcomes appropriate to the established educational needs. Compared to traditional educational methods, the re-engineered methods using advanced technology and associated resources can provide major reductions in cost to individual learners, institutions, and society in general. Strategies for the improvement of teacher education and professionalism- The pattern of rotating specialist classroom teachers across streams of classes should be put in place as is done in most countries presently, There should be government policy interventions. There should be social engineering to enhance societal perception of teaching.

We observed that the most important action any nation can take to improve her education is to strengthen the teaching profession in terms of subject matters, development of new skills, training and values.

Keywords: Sustainable Development, Teacher, Profession



Rousseau's first discourse: Nature vs. Society

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Abstract:

Jean-Jacques Rousseau, the Genevan philosopher lived in France and contributed largely to the intellectual thought of the 18th century French Enlightenment. His First Discourse (originally in French) entitled "A Discourse on the Moral Effects of the Arts and Sciences" was published in 1750. This was considered as one of his most important works that subsequently influenced his later works as well. In this discourse, Rousseau talks of the destructive influence of civilization on human beings. He won the first prize for this essay from the Academy Of Dijon. Rousseau used a fictional Frenchman as a literary device to lay out his intent in the essay and actually penned down his great principle that nature made man happy and good but that society depraves him and makes him miserable... vice and error, foreign to his constitution, enter it from outside and insensibly change him. Rousseau attacked the magical illusion of his times that science and arts, in other words, civilization contributed to the progress of mankind.

Keywords: Sustainable Development, Nature, Society



An Overview of Laws Pertaining to Sustainable Development in India

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Abstract:

The concept of Sustainable development in India has gathered momentum in recent few decades. In this context Article 21 and Directive principles of State play an important role in ensuring the right to have a quality life. Sustainability refers to use of resources in such an organised manner so that it can be of optimum use for the whole society for prolonged purposes. The same has been emphasised in the seventh five year plan also whereby it was cleared that resources must be used in such a way so as to sustain the gains of productivity. The laws pertaining to sustainable development in India are multifarious, however, a proper application is required. The concept is such that most of the defaulters take the benefit of some

loopholes in interpretation of laws. The paper shall highlight the existing laws and how they can be applied in the most efficient manner so as to maintain the sustainability of resources.

Keywords: Law, Momentum, Interpretation



Sustainable Development: A Guide to the Literature and Cultural Heritage

Dr. Ruchida Barman

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Abstract:

Economic growth, social development and environment protection are the three pillars of Sustainable development. Sustainability has different meanings for different contexts. Economies of Developed nations work for sustainability in lifestyle while in the developing and underdeveloped nations it is for livelihood. For most of us 'Development' is about 'Change for the better' and this change should be reflected in the quality of lives. Quality of life should become better for all sections of society. This is the big question before India. India sadly is still going through the transition phase even after 72 years of Independence. With the population below poverty line still remaining huge and respect and safety diminishing especially for the women and girl child, change for the better is still a far cry for India. A delve into society through Literature which can bring about an awareness first and then a change is the need of the hour. A focus on the works of Mahesh Dattani and Edith Wharton bring out this aspect of society and development.

Keywords: Sustainable Development, Literature, Heritage



Environmental and Economic Sustainability: Comparison between Developed and Developing Countries

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Abstract:

Environmental sustainability is necessary element for sustainable development. With the increasing level of industrialization and urbanization to drive growth, the environment has been compromised. The deterrence of environmental degradation especially in developing and under developed country could result in decreasing the output of the country. For eg. Deterioration of soil nutrients level affects the resources which negatively impact the overall food output. Moreover, energy uses like burning of fossil fuels and other traditional sources of energy are major contributors to serious environmental and health problems which affects the sustainable future of any country. So, there is a need for maintaining equilibrium between the economic growth and the proper use of environmental resources. This paper covers the various topics like current and emerging status and issues over the environmental challenges and its impact of sustainable economic growth; overview of energy trends and energy mix that helps in accessing the current situation and future prospective to have sustainability. It also outlines major policy taken by some developed and developing country to achieve the environmental sustainability and drew comparison between them.

Keywords: Economic growth; Environment; Sustainable Development; Energy; Developed Nations; Developing Nations

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Carbon Emission & Sustainable Development- A Comparative Analysis of Developing Nations

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Abstract:

Climate change is one of the most discussed topic and also major issue that the world is currently faced with. Increase industrialization, deforestation activities and too much human interaction has resulted in unabated release of greenhouse gases in the atmosphere. The development activities have

the depleted environment and the world is facing the issue of sustainable development and to achieve the same there is need to combat reliance on the fossil fuels and carbon emission. Since, all nations strive to achieve the Energy-Economy-Environment model which requires socio-economic transformation towards sustainable goals despite the international agreements. The paper uses panel data analysis to draw comparison between developed and developing countries post Kyoto protocol and emission reductions taken by them.

Keywords: Carbon Emission, Sustainable Development, Energy, Environment



Effect of Sustainable Development on Climate Change in India

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Abstract :

Environmental change is a standout amongst the most essential worldwide natural difficulties, with suggestions for nourishment generation, water supply, wellbeing, vitality, and so forth. Tending to environmental change requires a decent logical understanding and composed activity at national and worldwide dimension. This paper tends to these difficulties. Verifiably, the obligation regarding ozone depleting substance emanations' expansion lies to a great extent with the industrialized world, however the creating nations are probably going to be the wellspring of an expanding extent of future outflows. The anticipated environmental change under different situations is probably going to have suggestions on nourishment creation, water supply, beach front settlements, woodland biological communities, wellbeing, vitality security, and so on. The versatile limit of networks prone to be affected by environmental change is low in creating nations. The endeavours made by the UNFCCC and the Kyoto Protocol arrangements are unmistakably insufficient to address the environmental change test. The best method to deliver environmental change is to receive a practical improvement pathway by moving to ecologically supportable advances and advancement of vitality productivity, sustainable power source, backwoods preservation, reforestation, water protection, and so on. The issue of most noteworthy significance to creating nations is decreasing the defencelessness of their regular and financial frameworks to the anticipated environmental change. India and other creating nations will confront the test of advancing relief and adjustment systems, bearing the expense of such an exertion, and its suggestions for monetary advancement.

Keywords: Adaptation, costs, India, mitigation, vulnerability, Sustainable Development



Insolvency and Bankruptcy Code 2016 – Panacea for Dealing Nonperforming Assets

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Abstract :

The recent economic situations in India have imposed many challenges for companies in dealing with Non-Performing Assets (NPA). An asset is tagged as non performing when it ceases to generate income for the lender. In ease of doing business, a consolidated legality frame work is necessary for any country to ensure free flow of capital with easy credit claims and at the same time, ensuring easy exit of failing businesses. Such necessities call for the formation of structural codes of law. The Insolvency and bankruptcy code 2016 is one such measure.

Insolvency or bankruptcy refers to Individuals or Corporate who are in stage of not meeting up to their financial obligations. Their decreased in sales, delays in payment are its signs. While Insolvency is the inability of payments, Bankruptcy is when a competent court declares the debtor as insolvent. In simple terms, Bankruptcy is the last and legal declaration of Insolvency.

There can be no perfect or absolute laws for any expected governance .A consolidated framework, which smoothes the credit claims, fast recovery of loans and providing easy exit to failing businesses, has long been overdue. The Insolvency and Bankruptcy code hits right at these issues. It results ensures banks and eases the business processes.

The present paper entitled Insolvency and Bankruptcy Code 2016 – Panacea for dealing nonperforming assets” is an attempt to understand the role of the newly introduced Insolvency and Bankruptcy Code, 2016. It is also an attempt to explain the significance of this landmark legislative reform in history of Economic laws.

Keywords: Non Performing Assets, Bankruptcy & Insolvency, Insolvency Professionals



Judicial Approaches in Sustainable Development: A Human Rights Perspective

Ms. Monika Punia

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Abstract:

Concept of Sustainable Development is a step ahead to save our earth from destruction by hand of human beings. Legal frameworks on paper will not have an impact until unless those who are destructing the environment will be punished and this punishment could only be decided by the judiciary.

Keywords: Human Rights, Environment, Right to Development, Sustainable Development

Introduction:

Earth's resources are finite and there are ecological limits to growth which, unless we alter our ways, will sooner rather than later be exhausted. The most vital task is to build an environmental ethics that constructs an adequate theory of intrinsic value of nature as a whole.

For the purpose of study of human rights and environment, it is equally important to establish a legal framework to take up the legitimate concerns of our generation, to preserve the interests of future generations. There is a close relationship which exists between development and the environment. Also, the Declaration on the Right to Development states unequivocally that "*All human rights and fundamental freedoms are indivisible and interdependent*". Underlying the links between the right to development and right to environment is the notion of indivisibility and interdependence of all human rights. To put in simple words, the economic development should not be allowed to take place at the cost of ecology and *vice-versa*.

To resolve this issue, the experts worldwide have come up with a doctrine called '*sustainable development*'. The concept of sustainable development was brought by the report *Our Common Future* by World Commission on Environment and Development in 1987. An often quoted definition of sustainable development is defined in the report as "*development that meets the needs of the present without compromising the ability of the future generation to meet their own needs*".

The judiciary by taking recourse to international environmental principles is not only reinforcing, strengthening and widening the environmental jurisprudence in India but also making the executive and legislative wings of the state proactive in the field of protection and improvement of the environment. In fact, relying on some international environmental principles, the Indian judiciary has been able to face some of the challenges relating to environmental protection very successfully in the absence of appropriate domestic legislation in the concerned field.

Conclusion:

Judiciary is following the concept of sustainable development, obliging States to conserve and use environment for present and future generations, has given some important decisions relating to environment.

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Media Role in Boosting up Sustainable Development

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Abstract:

Brundtland Commission defined it as development with sustainability that "meets the needs of the present without compromising the ability of future generations to meet their own needs."

This affair attempts to apprehend an accurate and deep understanding of one of the most potent sectors of society: Media role in enhancing sustainable development. . Sustainable development is about changing viewpoints, adopting new policies and rules and taking actions. Media has perpetually changed the way society works, whether it's the sharing of an idea, the communication of news, or the availability of any product or service. More than just

researching and reporting articles for public consumptions, the media has multitude of functions that can further ameliorate the standard of life. So, media has a major role in people's life.

Keywords: Sustainable Development, Media



Role and Contribution of Media in Sustainable Development

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Abstract:

Sustainable development in India is not a new term. Since time immemorial it has been a part of Indian culture in indirect way. The use and consumption of resources available to mankind in such a manner that they can be used for upcoming generations has been a cause of concern in the global community. In India, where the literacy rate is low, people are rarely acquainted about such new concepts, However, in the recent past, due to emerging research and development, people have become aware about the concept and relevance of sustainability. The development of technology and other sources have made Media an important tool in spreading awareness about almost anything and in the promptest manner. It is an acceptable fact that people are prone to those messaged which are spread and displayed through electronic media.

Media can influence society in spreishaading awareness about importance of sustainable development in a manner which is better than any else. The paper intends to throw light on technical methods of spreading awareness among people regarding Sustainable Development in India.

Keywords: sustainable, media, global, resources



Sustainable Waste Management Strategies in the Gem and Jewellery Industry

Dr. Neeru Jain

Associate Professor, The IIS University, Jaipur

Abstract:

Jewellery consists of small decorative articles worn for personal adornment, such as brooches, rings, necklaces, earrings, and bracelets. It is an undoubtedly a big part of fashion. In the last few years, Jewellery made from recycled products has become increasingly popular and acceptable. These eco-friendly alternatives to expensive Jewellery pieces are not just hot trends, but a necessity in a time where everyone has to contribute to saving the environment.

Jewellery is a creative art which may be made from a wide range of materials. However, they are traditionally used materials like diamonds, gold, and precious metals that are highly limited in quantity. These elements add to the value of the Jewellery, but extracting and using them can cause significant damage to the earth. On the other hand, Jewellery made from recycled products has no effect on the environment. In fact, buying such Jewellery actually saves the recycled elements from getting dumped.

ECO-FASHION JEWELLERY BY the various scrap or waste materials such as textile, leather, plastic wires, shells is a unique concept. There are the numerous ways to make them better in terms of 'quality of design'. So we can say that by joining the scrap we can make beautiful jewellery as well as we can save environment from threat. Most people consider Jewellery made from recycled materials best suited for daily wear, when you do not need anything too flashy or stylish. However, such Jewellery can also be pulled off on special occasions if you choose the right design and pieces. In fact, you could even wear them for weddings.

Waste can be either pre-consumer or post-consumer. In recent years, postconsumer scrap or waste has gained increased attention in jewelry industry due to environmental concerns. The emergence of fast fashion culture and the throwaway attitude of consumers build up mountains of several unwanted disposed of in landfill sites. This paper analyses recycling, reusing and refashioning as three alternative strategies for waste management in the jewellery industry. Moreover, Jewellery made from recycled material can equal conventionally made Jewellery in terms of price, value for money, good looks, and style, with the added advantage of being environment-friendly. With this kind of value, Jewellery made from recycled material is definitely worth a look.

Keywords: Wastage, Gems, Jewellery



Sociology and Global Sustainability

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Abstract:

Sociology is an exciting and illuminating field of study that analyzes and explains important matters in our personal lives, our communities, and the world. At the global level, sociology studies such phenomena as population growth and migration, war and peace, and economic development. Economic growth / development, social inclusion and environmental protection are the three core elements required to achieve sustainable development. These elements are interconnected and are all crucial for the well-being of individuals and societies. Sustainability has become a central theme in the public sphere and a key concept in social change. But sociology should not regard sustainability as the long-sought solution to every environmental and societal problem.

Keywords: Economic Growth, Sociology, Sustainability, Sustainable Development



Sustainable Development and Good Governance

Dr. Savita Kishor

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Abstract :

Good governance is to promote sustainable development and integrated human development. The human development report issued insists on good governance as a democratic exigency, in order to rid corruption provides rights and means and the capacity to participate in the decision that effect their lives and to hold their government accountability for what they do.

Preservation of the environment which is essential for sustainable development cannot be achieved unless the pressure on forest and natural resources is reduced. This cannot happen in the absence of appropriate property rights of local communities and of rural women.

In some cases centralized structures turn out to be adequate in India decentralization of Power to Village level has not improved the efficacy of rural development. On the other hand in India, the delegation of Power to the States in some cases has resulted in the destruction of environment. Thus centralized and decentralized governance structures have both merits and

demerits, so basically sustainable development requires good policies and effective provision of institutions conducive to good governance.

Thus the formulation of Policies cannot ensure effective implementation in the absence of good governance and appropriate institutions.

Keywords: Governance, Human Development, Sustainable Development



A Review of Sustainable Textile and Apparel Industry in India

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Abstract :

Fabrics and apparel we use and wear are important for all of us, and it's not just because we need them to stay warm and protected. We enjoy our clothes, furnishings and textiles. We feel good about our clothes and other textile products we use. It is now the time to become aware about our purchases and consumptions of apparel and textiles just as we do while purchasing and consuming. Also we need to be aware of the impact of our role as economic consumers of textiles. The textile and apparel industry generates huge quantities of complex chemical substances and harmful waste products during various stages of textile manufacturing and processing. Making textile and Apparel industry sustainable can serve as a means of providing solutions to many economic, environmental and social issues. In Recent years it has assumed prime importance due to Fast Fashion culture in western world which has resulted in over consumption of textiles and corresponding waste generation. Today waste recycling and upcycling has become a multibillion industry. Innovations are being made in terms of development of sorting machines, design inputs, innovative high value products to make recycling and upcycling a profitable proposition. This paper reviews the various methodologies and processes used in various textile and apparel industry for making them more sustainable.

Keywords: Textile and apparel industry, sustainable, production and consumption



Environment and Sustainable Development in India: An Analysis

Dr. Shamsuddin

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Abstract:

Sustainable development was first time used in 1980, where the present needs and aspirations will be fulfill without compromising the ability of future generations. The term become familiar after the Brundtland Report (1987). The main objective of sustainable development is to use available resources so that they will also be available for future generation.

Keyword : Sustainable development, Brundtland Report



Eco-Fashion Accessories from Waste Textile Scrap

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²Associate_Professor, Department of Jewellery Designing, The IIS University, Jaipur, India

Abstract :

Eco-fashion is a term that is applied to clothing, footwear and accessories that are either made from recycled products or are made with little or no use of animal products but from fabric that comes from sustainable plant fibers. Eco-fashion may also apply to any of these kinds of items that are made from organic materials. It is a response on the part of the clothing and accessory industries to the green movement and the new focus on conservation and protection of the planet. Textile industry is among the most essential consumer goods industry. We all need garments and other textile products such as footwear and bags etc. However, textile industry is also accused of being one of the most polluting industries. Not only production but consumption of textiles also produces waste. The amount of waste regenerated by Indian textile industry may go up to 36 per cent of the total weight of yarn/ fabric consumed.

Objective :

The goal of which is to create a system which can be supported indefinitely in terms of environmentalism and social responsibility. Sustainable fashion is a part of the larger trend of

sustainable design where a product is created and produced with consideration to the environmental and social impact it may have throughout its total life span, including its "carbon footprint.

Textile industry is among the most essential consumer goods industry. We all need garments and other textile products such as footwear and bags etc. However, textile industry is also accused of being one of the most polluting industries. Not only production but consumption of textiles also produces waste. The amount of waste regenerated by Indian textile industry may go up to 36 per cent of the total weight of yarn/ fabric consumed.

Keywords: Fashion, Wastage, Sustainable Development, Clothing



Design and Development of Ahimsa and Conventional Silk Union Fabrics

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Abstract:

Conventional silk is a natural protein fiber and popular as “Queen of textiles”. Silk is spells as luxury, elegance, luster and comfort. Ahimsa silk is known as ‘Fabric of Peace’. Hand spun and hand woven cotton fabric is another model of sustainable fabrics. Design has an important role in social change that does not stop at creating a new or better product. Therefore, union fabrics in different ratios (33:67, 50:50 and 67:33) were prepared from ahimsa silk yarns (Eri Silk) and conventional Silk yarns (Muga Silk and tussar silk) with hand spun cotton yarn. Objective of the study was to develop the apparel product of prepared union fabrics. The present study deals with product development of ahimsa silk and conventional silk union fabrics and to study the acceptability of the apparels.

Keywords: Ahimsa silk, conventional silk, hand spun cotton, union fabrics and product develop



Role of Cinema in Sustainable Development

Nivedita Sharma

Research Scholar

Abstract :

Cinema is considered to be the most developed and advanced art – form of all other modes of art. Evidently, cinema included ancient art – forms [Poetry, Prose, Stories, Novels and Literature] in itself, while merging and balancing the commercial and scientific aspects altogether. Indeed, no art could fail or decline the influences of cinema hitherto.

What we watch stays longer than words, and language. Human brain is accustomed in such a manner that cinema, being a medium of vision, affects for long and deep, much more than the modes which are read / listened. Indian audiences connect cinema with emotional aspects, to a great extent. Films arouse their emotions.

Indian cinema works on the concept of *Rasa* and the idea of ‘Spectacle’. The performance of the actors [Acting] becomes the medium, which channelizes the emotions from the movie to the viewers. I remind of Jai Prakash Chauksey saying that a ‘Movie’ isn’t called a Movie, for it’s about movements, but it’s movie, because it ‘Moves’ the spectators. *Rasas* make the ‘Movie’ move everyone!

It’s stated that Indian spectators watch a film, in a distinguished manner. They wish to see certain things in a film. Film viewing in India isn’t about going out on a date in a private manner, or enjoying few hours of solitude or losing oneself to the fantastic happenings on screen. While it includes components of all such experiences, for primarily it is a mass experience / a large group / family experience, opposed to an isolated few hours. In the context, Srinivas categorized the popular Indian film as a ‘Pastiche’, as it’s constructed like a variety show, with something for everyone, rather than a seamless and linear narrative following a single theme.

While watching a film in the theater, several questions need to be elaborated upon – What are the scenes, on which audiences whistle at? Which dialogue makes the theater echo with a loud hooting? Which lines get the big hands of the spectators?

Keywords: Cinema, Sustainable Development, Ancient Arts



Impact of Personality Type on Apparel Buying Behaviour of Working Women of Different Age Groups

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Abstract:

Apparel is an important part of women life and plays an important role in building the identity of the women. Personality is another factor that influences purchasing. Personality refers to individual differences in characteristic patterns of thinking, feeling and behaving. There are factors which impact apparel buying behaviour like consumer characteristics, product attributes, promotion, store attributes and reference groups.

This study investigates the impact of age on apparel buying behaviour of working women and to analyze the impact personality type on apparel buying behaviour of working women. A sample of 480 women completes a survey that measured their personality and apparel buying behaviour. A further analysis shows that different personality type impact apparel buying behaviour.

Keywords: Personality type, Apparel Buying behaviour, Working Women

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Sustainable Development in Contemporary Art and Art Education

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Abstract:

Sustainable art in harmony with the key principles of sustainability, which include ecology, social justice, non-violence and grassroots democracy sustainable art may also be understood as art that is produced with consideration for the wider impact of the work and its reception in relationship to its environments. The dictionary meaning of sustainable is “The ability to be sustained, supported, upheld or confirmed” which is a wide concept.

This paper aims to support the learners to become responsible citizens who struggle for a more sustainable world with their knowledge, skills, values and mental ability.

Art education and contemporary art are playing a vital role in sustainable development. For example- Aesthetic sensitivity and critical thinking which are in the nature of art and design subjects.

Keywords: Art Education, Sustainable Development



The Role of Psychology in Sustainable Development

Ms.Vijaylaxmi Kanwar

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Abstract :

Psychology has a great impact on sustainable development. Various key parameters involved in the improvement of mental health of people are studied. As mental health plays a vital role in an individual's development, its effects on social and environmental issues are needed to be studied for sustainable development of the nation. According to current scenario, sustainable development of the society can't take place unless the awareness of importance of mental health is spread among the society. With our biosphere steadily degrading, a solid psychological perspective on environmental, social & economic sustainability is urgently needed. To do so, going with the nature can be really helpful in maintaining the stress level & mental health of the people as we know "nature can do, what man can't do". Through this paper an attempt to make the importance of mental health on sustainable development.

Keywords: Psychology, Sustainable Development, Environment



Techniques & Methods for Effective Public Consultation and Information Disclosure

Dr. Shiv Jhalani

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Abstract:

Public Consultation is the process of engaging affected people and other interested parties in open dialogue through which a range of views and concerns can be expressed in order to inform decision making and helping in building consensus. The techniques for public consultation and information disclosure includes the following:-(1)Printed material: Brochure, Reports, Newsletters ,displays and Exhibits, Direct mail.(2)Using existing media: newspapers, News conferences, Newspaper inserts, Radio and TV advertising.(3)Public information sessions: exhibitions and scale models, open – houses, videos, targeted briefings.(4)Surveys: It includes household questionnaires’, sampled questionnaires, polls, perception surveys, attitude surveys.(5)Meeting individuals : stake holders representatives, key informants such as school teachers, religious leaders .etc.(6)Small group Meetings: four groups.(seasonal and daily calendars, wealth ranking, Resource mapping.(7)Large group meetings: public meetings, open house meetings, public hearings, conferences.(8)Other – telephone hotline, where available.

Keywords: Public, Consultation, Disclosure, Surveys



Sustainable Development: A Guide to the Literature and Cultural Heritage

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Abstract:

The paper flashes a light on the need of sustainable development in literature and cultural heritage.

Sustainable development can definitely be considered as a guide to the literature and culture heritage. In India where people really show their interest towards their cultural heritage and the

literature, sustainable development in this particular field can really prove a panacea for the literature and the cultural heritage.

There are several barr. on the way of sustainable development in lit. and cult. heritage. The latest generation is leading in having perfect improper knowledge of their ancient writings and the significance of culture too. The attraction and adoption of the western culture is one main cause of it. Next, people are found to be ignorant of the degradation of their own heritage.

Therefore, there is an urgent need of the improvement in the knowl. of literature and cultural heritage. To attain this goal, several goals can be set. Media can work better for enlightening people about the country's literature and culture. Moreover, foreign literary works can be referred but with a hand in hand to their own lit. and cult. .

Keywords: Cultural Heritage, Sustainable Development



Between Aspirations for the ‘Promised City’ and the Yearning for Sustainable Development: Reading People’s Perceptions in Bhiwadi and Neemrana Regions of Rajasthan

Krishan Takhar

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Abstract:

Bhiwadi and Neemrana are those industrial regions of Rajasthan which have seen unprecedented growth in the recent past. A recent field visit to the region tried to gain the perceptions of the local poluations about the rapid 'development' caused by heavy industrialisation that they have witnessed especially with the coming up of large projects like Honda conglomerate in Bhiwadi and Japanese Zone in Neemrana. These changes have brought with them environmental degradation and altered the social relations greatly in a very short span.

‘Development’ landed in their area like an unexpected guest. But the residents welcomed it despite its odds like contamination of ground water, high levels of toxicity in air, etc. The residents do not have agency over 'their' 'development' and are happy to be the appendages to

this development machine. The humongous industry size has pushed the local residents to the border of the village. The local residents feel it is now their turn to be modern like Delhi. For them, as it revealed in the interactions, city is the universal they aspire for. Many want their region to be identified with universals like Delhi, Greater Noida and Indore.

But, neither the dream of the promised city has been realised nor the goals for sustainable development have come to fruition.

Unless the environmental concerns which constitute the core of sustainable development are addressed, along with a model of development which gives agency to the local residents at the grass roots, the attainment of the SDGs in real sense will remain a mirage.

Keywords: Development, sustainable development, aspirations, urbanization, universalism



Sustainable Development in English Language in India

Ms. Pooja Sharma

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Abstract:

Oral communication is such a weapon that is continuous and that can adhere to a co-operative nation like India conjointly. The conveying information of English language inhabit an identical role in the establishment of intimate treasures and desegregation of a country like India. The English language keeps going to delight its primacy in our educational institution as a culture medium of command and direction. Basically, oral communication of English language is of the essence for financial increment also and for the evolution of the people of India.

The consolidation of Indian people still makes everyone delightful that would have been a disaster without the use of English language. So this abstract speaks about and unmask us which the English language plays it's persona like an authentic instrument for sustainable development in India. The selection of this language as a functionally & internal terminology in India as a second language ESL situations have been the subjects of a lot of pedantic discourses for a long time now. The Indian people since the time of freedom of India have been listening English language and using it. So, Today English language has been used as a language which is used everywhere in India.

English has been considered as a language which develops the mind of people. The people who don't know speaking English language, have been taken as boorish. English language has been deliberated as a communicative instrument for political, financial and societal development. The People of India have to learn English language in order to their evolution. However, it appears the argument for the selection of local speech is placed on language commitment and patriotism rather than actual socio-politico-economic needs of the times. It is my conviction that the argument must be based on the actuality of the social, political and economic inevitability of the 21st century.

Keywords: Official language, Second language, Nationalism

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Sociology and Global Sustainability

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Abstract:

“Sociology” is the study of mankind and the society in which it develops including the environment surrounding the human civilization. By global sustainability we mean development, in the right sense without damaging the interests of others. It includes a stable sort of up gradation for the upcoming generations too. A well developed existence of mankind totally depends on society and environment in which it dwells.

As it is mentioned almost everywhere that sustainability rests upon three pillars i.e., economy, environment and society. Of course these are the stepping stones of global sustainable development but there is necessity of adding the fourth pillar i.e., psychological up gradation or in simple words ‘having a broader outlook’. As is well said by pandit ji (Jawaharlal Nehru) “at the midnight hour just before the declaration of our independence that is on 14 august 1947 that we all have to serve and re-built not only our nation, India but the entire mankind. He urged the entire mankind to possess a broader outlook so that in future none, “Queen Victoria” can make any, India as “slave” for about 150-200 years and exploit them in all aspect.

In RIO 21-SUMMIT it was clarified in front of the whole world that the few rich and developed countries had adversely affected lots of poor and developing countries economically and socially by the overuse and exploitation of natural resources. It was suggested that such developed nations must

help the down –trodden countries. in the last 20 years, it is seen that the policies of globalization, liberalism and privatization in various field gave birth to many challenges like starvation, poverty, economic insecurity which not only affected the developing countries but also the developed nations.

No doubt, development should be sustainable as well as global; taking into account all the aspects of sociology but certain limitations should be fixed so that others and our future generation's interest might not suffer. In this way we deliver to our offspring globally sustainable society in a true sense.

For global sustainable development we have to follow the slogan of “vasudhav kutumbaam”, because only this sort of mindset can make us overall developed without damaging the hopes and dreams of others.

Keywords : Society, Jawaharlal Nehru, Future generations, RIO 21-summit



Role of English Language and Literature in Sustainable Development

Sunil Kumar Kumawat

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Abstract :

India is a country where ‘English Language’ is considered a status symbol. All parents want to send their children to an English medium school. A person is considered ‘truly educated’ if he can speak this language. Bollywood’s superhit movie titled ‘Hindi Medium’, starring Irrfan Khan and Saba Qamar, highlighted this fact. In a way, English reflects a person’s development. English, being an international language, provides a universal platform for a man’s progress across the globe.

Sustainable development can’t come if one doesn’t love nature and people. It refers to the overall holistic development, that is, the development of all aspects of human life. It shows that humans are central to all types of development. Man exists on this planet because the nature supports his existence and the environment is conducive. Experts believe that man must live in harmony with the nature, and not at its cost. And English language and literature is a very powerful medium that teaches man to respect another man and nature.

This research paper highlights how the dramas and stories of Shakespeare, Ben Johnson, Tagore, Dattani, Karnard, Marlow, Charles Dickens, Jane Austen, RK Narayan, Salman Rushdie, Arundhati

Roy and poems of Robert Frost, John Donne, Keats, Blake, Wordsworth, Shelly, Keki N Daruwala, Bankim Chandra Chattopadhyay, Coleridge etc have shaped the mentality of the man for the better. Language carries with it a whole culture. And English culture is very rich. Literature develops the sensibilities of man, makes him love other people, different cultures and nature. This research paper intends to reveal how far the English language and literature has helped man evolve mentally and thereby promote sustainable development in the world.

Keywords: Sustainable Development, Nature, Sensibilities, Culture, Mentality



Sustainable Development in Crop Rotation in Arid Region

Sushma Sharma

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Abstract:

Crop rotation is the practice of growing a series of dissimilar or different types of crops in the same area in sequenced seasons. It is done so that the soil of farms is not used for only one set of nutrients. It helps in reducing soil erosion and increases soil fertility and crop yield.

Growing the same crop in the same place for many years in a row (monocropping) disproportionately depletes the soil of certain nutrients. With rotation, a crop that leaches the soil of one kind of nutrient is followed during the next growing season by a dissimilar crop that returns that nutrient to the soil or draws a different ratio of nutrients. In addition, crop rotation mitigates the buildup of pathogens and pests that often occurs when one species is continuously cropped, and can also improve soil structure and fertility by increasing biomass from varied root structures.

Crop cycle is used in both conventional and organic farming systems.



Historical Aspects of Sustainable Development

Tanveer Ali Zaidi

Assistant Professor, Biyani Group of Colleges

Abstract:

Sustainable development is a notion which includes holistic progress of the all sections of society, future generations and environment. In Indian history and culture environment protection is a very important factor. Vedas emphasize that trees are the treasure for future generation , A VERSE Of Rig-Veda says,” Thousands and hundreds of years if you want to enjoy the fruits and happiness of life then take up systematic planting of trees.” Lord Krishna says in The Geeta that the World is like a banyan tree and all species of plants, animals, humans , demigods are its branches. In Maurya age King Ashoka planted many Asoka trees for the welfare of future generations.

This thought also reflects in Indian philosophy like *Sarvey santu sukinah sarvey santu niramayaha....* (May all become happy, may all become free illness, may all see what is auspicious, may no one suffer).

In medieval India Akbar adopted the policy of Sulah-e-Kul that means all the religions and sections of the society should be treated equally. In his court there were many Hindu saints, Christian saints and so on, they all did discussions in Ibadatkhana.

In modern India Gandhi, Tagore, Bhagat Singh, Subhash Chandra Bose expressed their thoughts and actions in holistic development of all sections of society.

We should learn lesson from our culture and consume the natural resources in a manner that can be protected for future generations and for the welfare of all sections of our society.



National Green Tribunal's Role in Sustainable Development and its Challenges

Dr. Sonu Agarwal

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Abstract:

With the ever growing economies and the need and greed for more, the doctrine of sustainable development becomes the most relevant principle in today's times. India being one of the fastest growing economies has seen rampant industrialization and development in recent past, which resulted in adverse impact on the environment. Keeping in mind the risk to environment and human health due to unchecked and pervasive industrialization the National Green Tribunal Act, 2010 was enacted. National Green Tribunal (NGT) was established for effective and expeditious disposal of cases involving multidisciplinary issues relating to environment. This paper seeks to analyze the role of NGT in protecting environment, the various judgments passed by it time to time and the challenges faced by NGT in this regard.

Keywords: National Green Tribunal, sustainable development, environment



Role of Media in Sustainable Development

Dr. Aastha Saxena

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Abstract:

This paper explores the role that the media can play in contributing to a sustainable society. The role of mass media for sustainable democracy cannot be overemphasized. Although, the primary responsibilities of the media is to entertain without slander or libel, inform based on accurate facts and educate on current relevant issues. Apart from these roles, development scholars and professionals have widely recognized the utility of mass media in the sustenance of viable democracy. Democracy is the most popular form of government particularly because it guarantees popular participation. These should contribute to sustainable development and thus to Gross National Happiness. This change in behaviour will not be achieved by itself but needs conscious efforts on the part of the government and society as a whole. It is suggested that Education for

Sustainable Development of all sections of society can contribute to this behavioural change. More than just finding and reporting stories for public consumption, the media has a myriad of functions that can further the cause of improving the quality of life. If sustainable development is about changing attitudes, adopting new policies and taking action, then the media has a major role to play.

Keywords: democracy, media, reporting, consumption



Social Media and Developmental Democracy

Dr. Aditi Pareek

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Abstract:

Digital revolution has armed the people with powerful weapons in the form of mobile phones and social media platforms to challenge the monopoly of traditional media. Social media has created the concept of 'Global Village' in which information is distributed amongst the members across the globe. The social media communication with the assistance of audio visual language has provided durability to several sets of meaningful and purposive experience. The increase in the volume of interaction and immediate communicability amongst people has given rise to multiple forms of tolerance. Mutuality, reciprocity and eagerness' to understand each other with the logic are outcomes of continuous contact and interactions. These aspects provide strengths to democracy which is based on the participation of people in the decision making process and in the construction of diversity based system of ideas. If social media contributes to the advancements of culture of democracy then media users can participate in several developmental activities. Freedom of expression has found space through social media and several social movements have encouraged and compelled various institutional reforms to gain momentum and lead to societal changes. Social movements like the Lokpal Bill gained momentum through social media; people raised their voice to support the Nirbhaya case. Government programmes like 'Swacha Bharat Abhiyan', Jan Dhan Yojana' outreach the people through social media. Multiculturalism as one of the values has appeared owing to social media. Communication processes and models are complex and dynamic processes and social media is playing a significant role in bringing developmental changes in the democracy.

Keywords: Digital revolution, Global village, information, development, multiculturalism, democracy.



Sustainable Development Communication and Capability Approach Paradigm: Media's Role and Responsibilities

Ms. Abhishika Sharma

Research Scholar, The IIS University, Jaipur

Abstract:

Development communication views development as factors that evolve beyond traditional structures. Development has been the single most important theme in the field of theorization of international communication, be it the perspective of modernisation or the perspective of cultural dependency or cultural imperialism. In most cases development and modernisation are used interchangeably to refer to examples of industrialisation, economic growth, cultural and social differentiation and secularisation. Development in earlier days meant either the creation of stable democratic governments to replace traditional, authoritarian regimes or more frequently government programmes to improve social and economical conditions. Mass media were assumed to be capable of compressing the time required for change and of multiplying the impact of development programmes. The major idea behind the capability approach is that social arrangements should aim to expand people's capabilities- their freedom to promote or achieve 'functioning's' which are important to them. Functioning involves all the valuable activities and states that make up people's well-being, such as having a healthy body, being safe or having a good job. They are related to goods and income, but they describe what a person is able to do or be as a result, when person's need for food is met, they enjoy the functioning of being well – nourished. Capabilities are the alternative combination of functioning's that are feasible for an individual to achieve the kind of life he or she has reason to value. In today's information era, citizens are exposed to large amount of information owing to the accessibility of large amount of information and communication technology. The growth of citizen journalism or participatory journalism has blurred the lines between traditional journalism and propaganda, entertainment, promotion and raw information which results in the consumption of unreliable and unverified information. This has lead to critical thinking amongst the information consumers who need to verify the accuracy of information and identify the opinionated and flawed information.

Keywords: Development communication, modernisation, industrialisation, economic growth, secularisation, Capability Approach Paradigm, Media, Propaganda, information



Role of Media in Sustainable Development Study of two Newspapers with reference to Jaipur Division

Dr. Ruchi Goswami

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Abstract :

Media is considered as the fourth state of democracy. Media with its various wings in the form of traditional, print, electronic and above all new media that is internet excels as a change agent. The world has become a global village today. Sustainable development is a vague and wide concept still it is stated as a principal policy and goal of innumerable major institutions including the United Nations, the World Bank, and the world trade organization.

The present study examines how print media is working towards development of jaipur division with its tehsils by flashing the stories regarding health and education sector and changing their lives. Jaipur division comprises of five zones. The study closely observes with the help of primary data how media can educate the general public or reader about important schemes regarding education and health and build a healthy atmosphere through newspaper reading on various parameters. The study deals with two important variables education and health .It is evident that media has a power to transform the society as being the catalyst of positive change in the particular region.

Keywords: Media, Sustainable Development



Sustainable Development and Media: Robust Role in Preserving Mother Nature

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Abstract:

This paper is a sincere outcome of review of various research studies carried out on robust role of media towards developing environment for sustainable development in India. The purpose of this paper is to make people aware about the power of media that how media can play its part in building sustainable society. The aim of sustainable society is interlinked with sustainable development and that is conservation and preservation of our mother nature. With the outset of social media, there is a larger emphasis given on balanced regional growth and that can be attained by using myriad of media in efficacious manner as the extended role of media is to disseminate and impart education about sustainable living. The scope of sustainable development is dynamic as it changes according to the sustainable goals of particular nation.

Keywords: Sustainable Society, Myriad, Efficacious, Sustainable Living, Robust.

Introduction:

In India, media give voices to voiceless; forms opinions of common masses but when you talk about the media role in enhancing sustainable development then one should remember that the role of traditional media and social media in present scenario has been raised to disseminate awareness and providing robust understanding of sustainable goals of particular nation. Media recognised its role within its development priorities. Media regulates governance and henceforth good governance is the key to create a better environment for sustainable development. It's high time we all should rise up to this detrimental occasion where Mother Nature is gasping for fresh air and before its get to feeble, a one should assists in preserving mother nature.

Key Objectives and Need of Paper:

- To review the present status of sustainable development in India.
- To identify the problems which create impediments in developing sustainable society?
- How green role of media can enhance the sustainable development in nation.

Review literature :

The Hindu (2017) published in one of its article that “sustainable development can be attained if we have two things in our kitty; one a well-informed public and secondly a well-informed media who

incessantly disseminate the insights on sustainable goal to common masses”. A well begun is half the battle won but India needs to really pull up the socks in order to reinstate the erstwhile biodiversity.

Result and discussion:

If we talk about the results of myriad media campaigns which were aimed towards sustainable development then we can found that results are positive and changes are not dramatic but steady in nature. There is a need to disseminate the message of sustainable society and living among public so that they understand the need of an hour and contribute their bit in this mass campaign. The below mentioned table shows the per cent increase in sustainable living in response of media campaign.

Table 01: Media campaigns towards Sustainable Development Goals and its growth among folks

YEAR	2001-05	2005-2010	2010-13	2013-16	2016-2018
Various media campaigns by various media houses towards SDG	130	255	570	1180	2300
PERCENT GROWTH	-	96	124	107	227

As per the findings of Audit Bureau of Circulation it has been found that there has been rise of 227% in various media campaigns (both social and traditional media) till 2018 if compared to year 2001 in terms of Sustainable Development Goals (SDG).

Experimental: I have conducted surveys of internet users (respondents are from our colleges and locality) and took personal interviews along with that I have read many articles, books and reviewed literature. This research paper is a mix of Explorative and Descriptive studies. (Primary and Secondary data, In-depth interviews and case studies etc.)

Conclusion:

The media has the power to set the trend of sustainable living among people which ultimately constitutes the sustainable society thus enabling the sustainable development in nation like India. The media is playing its role and disseminating the awareness about sustainable living by highlighting the constraints and impediments related to sustainable development. Sustainable Living will become our obligation if Mother Nature isn't preserved and conserves in efficacious manner. By looking at the present scenario where you will find media stating about environmental damage every now and again; it's our moral duty to shift to sustainable living in order to conserve our natural habitat for our future generation. Our capital Delhi is gasping for fresh air and rivers like Holy Ganga and Sutlej have now turned into a waste dump doesn't show the apt image of our nation so it's a wakeup call for all of us that we should join our hands and give our best in preserving mother nature for future Gen-Y.

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Sustainable Development and Media

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Abstract :

Sustainable development talks about the economic development without depleting natural resources. It includes the development which meets the needs of the present without compromising the ability of future generations. All the forms of media play a crucial role in ensuring the awareness of sustainability goals to all the people. Media should track the progress and share best practices to all regional and global levels. Countries should allocate some part of national budget to enhance sustainability. Issues like education, sustainable development, etc. are always well raised by media with a powerful impact. Thus media has important role to play in informing and educating people, providing platform for public discussions and debates, serving as a catalyst for empowering citizens and helping government and authorities.

Keywords: Media, Sustainable Development, Citizens

Introduction:

Sustainable development talks about the economic development without depleting natural resources. It includes the development which meets the needs of the present without compromising the ability of future generations. The concept of sustainable development started with conserving forests during 1987, but later economic development, environmental development and social development were added to it.

It was done in order to give the concept a holistic approach. It is important to add the environment and economical aspects of energy, manufacturing, technology, transport and business to sustainable development goals.



Source:

https://www.google.co.in/search?q=sustainable+development&source=lnms&tbm=isch&sa=X&ved=0ahUKEwi4xuW1wLeAhXRfX0KHaj9BfMQ_AUIDigB#imgcr=gmMHUy0iii0jPM:

Discussion

The Sustainable Development Goals (SDGs) were born at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012. Its objective was to produce a set of universal goals that can meet the environmental, political and economic challenges facing the world. The 2030 Agenda for Sustainable Development promotes an integrated approach that will tackle the connected issues of multidimensional poverty, inequality and exclusion and sustainability while enhancing knowledge, skills and production technologies to enlarge peoples' choices, reduce risks and sustain development gains.

Young C. And McComas K. observed that different forms of media like TV, radio, social media, mobile messaging, etc. offer a low-cost alternative in reaching large audiences in Zambia. Limitations exist, because of available resources and infrastructural challenges, to achieve the sustainability. Role of media becomes important here in reaching masses. This gives rise to questions related to the ability of media channels in inclusion of one way flow of information and collection of response from receivers.

M. Park examined media's role in forest conversation. The media at Korea was active in selection of information, interpretation and evaluation of events related to forest conservation in Korea. Here media played two important roles – creating awareness and spreading the information on work done in the Republic of Korea.

Book from UNESCO discusses the wide impact of banks, businesses, civil society, academia and media on society. The strength of media in a country shapes development, shares ideas and innovations and holds powerful impact on participation of people. Participation of informed people

requires a free flow of information and knowledge which depends on freedom of expression on all media platforms.

Smith et. al. provided an invaluable insight into trends in which media reflect, produce, and obscure society's most pressing sustainability issues. They argued that mass communication should be considered a cornerstone discipline for sustainability science research.

Conclusion:

All the forms of media play a crucial role in ensuring the awareness of sustainability goals to all the people. Media should track the progress and share best practices to all regional and global levels. Countries should allocate some part of national budget to enhance sustainability. Issues like education, sustainable development, health, poverty, energy, gender inequalities, environment, etc are always well raised by media with a powerful impact. Thus media has important role to play in informing and educating people, providing platform for public discussions and debates, serving as a catalyst for empowering citizens and helping government and authorities.

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English Literature as a Tool for Sustainable Development

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Abstract:

Literature itself is a pedagogy what often gets neglected is that, it can only function as pedagogy when it affects the heart and mind of the readers. Literature plays a symbolic role in sustainable development. Sustainable development is not only the development of nature but also the development of human beings. This development is not only achieved through the changes of mind but also through the changes of heart.

It has been seen that the growth of each nation is based on the development of their people and nations are developed through knowledge which is transfer through the language. In this sense literature becomes a tool of language in transferring the knowledge to the people for the development of the whole nation.

This paper will show how the individual psyche could be reformed with the help of literature, to make them conscious of the state of things in the polity and, thereby, awaken in them the need to change and add to a sustainable national development. The aim of this research paper is to identify that how the works of English literature changes human mind and heart and thus helps in increasing sustainable development.

Keywords: Pedagogy, Nation, Knowledge, Literature, Development and observable Reality.



A Socio-Legal Challenge for Humanitarian Laws and Sustainable Development

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Abstract :

It has been a lengthy story to describe the agendas for developing humanitarian laws for the sustainable growth. There is an immediate need to establish a Sustainable Development Solution Network (SDSN) comprising leading scientists, engineers, academics and practitioners from business and civil society to promote solutions to key challenges of sustainable development. These networks should be solution oriented rather than research oriented and aim to identify practical solutions to the socio-legal challenges of sustainable development. One of these networks specifically focuses on humanitarian laws and works towards a world where the equal dignity and worth of every individual is respected and valued. There is a need to look at how to accelerate progress in the most fragile regions and how to ensure coherence between the development and humanitarian laws. These efforts should work across all goals including truly integrate gender equality, human rights, education and social inclusion meaningfully in implementation where the equal dignity and worth of every individual is respected and valued.. Additionally there is a need to create full decent productive employment opportunities for women and access to finance, as well as continue to provide social protection, and more importantly promote and value women as “good with money.” Key for economic growth is the promotion of women’s economic rights which entails promoting a range of women’s rights their sexual and reproductive rights and rights to education, to mobility, to voice, to ownership, and to live free from violence. There must be multigenerational approach to learning to maximize the world’s potential for sustainable development. Therefore, this research is to curb these above mentioned issues and get the ideas to be implemented for the better nexus between humanitarian laws and sustainable development.

Keywords: Solution network, Gender equality, Economic growth, Humanitarian laws, Sustainable development.



Sustainability of Rajasthan's mores and belief through Art

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Abstract:

It is very true that India is well known for art and culture whether it may be in the form of painting or tradition. As life progresses the social values and the expansion of society takes place. Regarding tradition and myth some concepts have been develop among the societies. Traditions which are closely linked with the daily life and associated with ritual ceremonies were depicted in the form of Art. Similarly, in Rajasthan rituals and superstitious nature of human being has been depicted in the form of art.

Artists bring a different perspective to sustainability to express social and environmental aspects through the art. It is the ethical responsibility of an artist that how they can use art to extend their sphere of influence. In traditional societies, the artist was thought to have a community function, representing a creative potentiality in every human being. For example, worship of the Peepal Tree using garlands, a thread that is tied around the tree, and snake stones at a wayside shrine is meant to show the way in which a folk culture in India celebrates nature, showing how art as ritual sustains the sacred in the natural environment. The way we experience "Nature" in our environment is closely connected with the way nature is represented in art.

Beside this, now-a-days, people of rural areas as well as urban are taking care of these art. Through this study, one can understand the values of custom and rituals form of art and also aware the society about its importance.

Keywords: Tradition, Art, Rituals, Celebration and Myth



Sustainable Development and Economic Growth: A Challenge for India

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Abstract :

The term ‘sustainable development’ was first introduced by Indian economist, **Nitin Desai**, while he was a senior economic adviser to the World Commission on Environment and Development that was established by United Nations Environment Programme Governing Council in 1983. Sustainable development is development that satisfies the needs of the present without compromising the ability of future generations to meet their own needs. Internationally each country together with most developing countries like Bharat and China contemplates greatly regarding it as a result of they realise that their future generation should suffer to lack of resources that is most required to survive.

Economists consider sustainable development is an attempt to explain and clarify the balance between economic growths on the one hand and conservation and protection of environment on the other hand. It may however be understood that future economic development and quality of life crucially be subject to the natural resource base and quality of the environment i.e., the quality of land, air, water and gases. Any country's environmental issues are associated with the amount of its economic development, the supply of natural resources and therefore the life style of its population. In India, growth of population, urbanization, poverty, industrialisation and several other connected factors are to blame for the speedy degradation of the surroundings.

The biggest challenge for sustainable development is the “dilemma” of developing nations like India who seeks faster economic growth for the elimination of poverty, hunger inequalities unemployment and foster social justice without harming the global environment further. This paper focuses on the challenges and measures taken by the government for providing solutions regarding the dilemma of India’s economic growth and development that are directly linked to the immense risk of climate change and impact on environment.

Keywords: Sustainable development, Economic growth, Social justice, Environment, Natural Resources.

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Role of Regional Rural Banks in Economic Development of the Nation

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Present Scenario:

Indian economy is an agricultural economy. About 68 percent people of India reside in rural areas. Agriculture plays vital role in the economic development of the country. Agriculture is not only the major source of the income in rural areas, but also provides maximum employment in rural areas of the country. Rural sector, still occupies a key position in the Indian economy as it constitutes nearly three forth of the total population of the country. Economic conditions of people residing in rural areas are very poor and generally people work in the primary sector and their income is very low as compared to other sectors of the economy. There is a need to make all round development in the rural areas of the country. In order to achieve the goal of rapid economic development, the higher growth rates in agriculture, industry and commerce are also necessary in rural areas of our country¹.

In pursuance of this objective view of liquidating rural indebtedness of the rural population, the Government of India appointed on July 1, 1975 a working group under the chairmanship of M. Narasimhan to examine in detail the need for setting up of new rural banks as subsidiaries of public sector banks to cater to the credit needs of the rural people. The group thoroughly examined the strength and weaknesses of co-operative and commercial banks and come to conclusion that the existing intuitions neither in their present form of functioning nor with any possible adaptation would be able to fill that kind of credit gap, which existed in rural economy and new type of institutions was necessary². Then, Government of India accepted the recommendation of the Narasimhan working group and decided to set up Regional Rural Banks.

The establishment of Regional Rural Bank on 2 October, 1975 began a new era in the history of rural credit in India. The specific objectives of Regional Rural Banks are to providing credit and deposit facilities particularly to the small and marginal farmers, agricultural labourer and small entrepreneurs. The Regional Rural Banks have the responsibility to develop agriculture sector, trade commerce and industry in the rural areas. The Regional Rural Banks essentially commercial banks but their area of operation is generally limited to a district. A Regional Rural Banks is sponsored by commercial banks.

Need and significance of RRBs:

RRBs have been growing importance since their inception in 1975. It's a special Institution playing a catalyst role in the development of the weaker sections of the community in rural area and also including banking species in the multi-agency credit delivery system of India. Particularly at a grass root level, it is worthwhile to study their contribution to the economic development of India. Regional Rural Banks attend credit needs not only of agriculture and allied activities but also of rural, small scale industry and other productive activities in the tertiary sector. In this way, RRBs contribute to simultaneous development in different sector of the economy. Moreover, the credit programs of these banks are mainly intended for the target group comprising of small and marginal farmers, agricultural labourers, small entrepreneurs, artisans, retail traders and self-employed persons. In view of the growing importance attached to the rural development in the process of overall economic development of the country, this study assumes particular significance.

Present study is relevant because it evaluate the performance of RRBs where commercial banks could not reach in remote areas. The study also becomes essential to point out whether the finance through Regional Rural Banks is being made available to the rural people at the right time and at the right place. This study intends to provide an understanding of credit expansion and deposit mobilizations of the Bank. So keeping in view, the vast network of Regional Rural Banks in India and its need has arisen to study the performance of Banks for the upliftment of rural people of the nation.

Conclusion:

The present work will find branch expansion, credit expansion, deposit mobilization, credit-deposit ratio, non-performing assets and profitability or loss of the Regional Rural Banks.

Future Prospects:

RRBs can be helpful to improve deposit mobilization and create banking habits among the rural people. The banks can play a very important role by helping the potential entrepreneurs from these sections in setting up priority in rural industries. It can be helpful to provide gainful employment, create productive assets and achieve integrated rural development.

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Importance of Antimicrobial Finish in Textile Sector

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Abstract :

Antimicrobial textile products continue to play a role in odor control as well as controlling the spread of infectious microorganisms. Infestation by microbes cause cross infection by pathogens and development odour where the fabric is worn next to skin. ... Basically, with a view to protect the wearer and the textile substrate itself antimicrobial finish is applied to textile materials.

Antibacterial textiles are used where moisture and microbes meet. The materials use in a variety of applications including healthcare; hygiene; medical devices; sportswear; food packaging; storage; thermal and mechanical protection; automotive textiles; heating, ventilation and air conditioning; air filters; and water purification systems. They are used to protect healthcare personnel with functional clothing as well as fabrics all around the home, including socks, mattresses, baby diapers and coverings.

Creating an Antimicrobial Treatment: Besides being efficient against microorganisms, the treatment performed on a textile needs to satisfy the following different requirements:

- Suitable for textile processing;
- Durable during laundering, dry cleaning and hot pressing;
- Safe for use on skin or area of application; and
- Conducive to the biology of the planet.

These five needs always are counter balanced by a need for frugality and budgetary constraints. An anti-microbial finish for textiles involving skin contact will need additional safety data concerning this aspect. Overall the need for anti-microbial and hygiene finishes looks set to continue for the foreseeable future. Improving performance and cost-effectiveness, while meeting environmental and toxicity requirements, will continue to challenge those working in this field.

Keywords: Sustainability Development, Fashion, Textile Industry



Sustainability: Policies and Governance

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Abstract :

Sustainability is not a mere trend but the need of the future. The industrial revolution in eighteenth century paved the way for a consumerist society destroying the need based sustainable production. The new class of industrialists started working for profit, largely damaging the ecological wealth. This profit oriented approach has devastated the environment to such an extent that it is inevitable to reduce the carbon levels by 2022 to protect the Earth from the anthropogenic climate changes and finally leading to an apocalypse.

1. Sustainable Development and policies

The policy made by the law making authorities no more needs only to be oriented towards profit making and economic growth but requires a systemized framework and societal behavioral shift in the ecologically sensitized approach, nationally as well as internationally.

- **International:**

The Paris agreement is the recent development in the climate change sector internationally. It covers all the aspects of sustainable development by stating 17 necessary goals (SDGs), replacing the earlier millennium development goals (MDGs). These goals range from poverty, hunger and health care to urban settlements, clean energy and responsible consumption and production. The wide ranging goals are the guidelines to all the ratifying nations to have a sustainable policy framework.

The agreement urges the international community to submit respective nationally determined contributions indicating their commitment towards the goal. But all the above efforts go in vain because the document does not impose any compulsion on the countries to implement their IDC. India too has contributed to the agreement by submitting its IDC but the goals mentioned required a lot of investment and the sources are not nearly visible.

Indian government has taken a commendable step in the direction of clean energy accessibility by establishing International Solar Alliance with the partnership of France. This measure will facilitate the availability of technologies based on solar energy which is nearly impossible for developing nations to acquire due to its high price.

- **National:**

Indian government has been implementing various schemes to achieve sustainable development.

a) Energy:

India's energy sector is majorly utilizes thermal-based energy which is the most environment hurting energy development. To approach this issue India government is pursuing options like solar and wind energy.

Other policies implemented includes FAME (promotion of the usage of electrical vehicles), solar pumps availability to farms and many more.

But in spite of all the policies the implementation is on the loss end and requires a reimbursement. The community is not sensitized towards the seriousness issues leading to irresponsible behavior by authority figures as well as common man.

b) Cleanliness and sanitation:

Swacch Bharat Abhiyan is the much propagated scheme based on the principles on Mahatma Gandhi.

Building of toilets and discouraging people to defecate in open is the major part of this mission.

This mission faces various challenges, such as:

1. Less social awareness
2. Social divide
3. Irregular cleaning of toilet leading to infections
4. Less seriousness of the authorities at grass root level.

The other aspect of the mission is elimination of manual scavenging which is the least impressed upon part. Thus the social stigma attached to scavenging is the most challenging aspect.

c) Others:

Apart from the above policies and missions lead by India government there are sectors like health, education and widespread hunger.

The country still needs to work in these sectors eg increasing the expenditure in health sector, maintaining the quality of education, etc.

Sustainability is not only attached to the environment but a lifestyle as a whole. There is a need to change the approach of the society towards the environmental concerns and bring on display seriousness of the issue.



Sustainable Development in Context of Himalayan States

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Abstract:

Sustainable development is the process by which need of present is fulfilled without compromising the future demands. The development may include many areas like monetary, environmental or natural resources. In this paper role of Indian government is discussed in the context of Himalayan ecosystem. According to a NITI aayog's report growing of tourism in Himalayan states with a rate of 6.8 annually will double the influx of tourists by the year 2025. This will become a major challenge for the governing bodies to cater the needs of the locals as well as of tourists. According to the report 30 percent of springs which are crucial to the local water security are drying and 50 percent have recorded reduced discharge. Solid waste management, water, traffic are another challenges which cannot be ignored in the coming days. In Himalayan states farmers perform slash and burn cultivation in which forests are burned to perform farming which in turns diminishes the soil value and the nutrient level of the soil making it unfavourable for further growth of vegetation. Another major issue there is the migration of youth from the Himalayan states to other part of India. Apart from tourism industry the region lacks any significant industry which can guarantee employment for the youth. Himalayan states are also the watershed of India having major hydraulic power plants fulfilling the electricity demands of nation. But the Himalayan state is vulnerable to seismic activities. An urgent call of action is needed to address this challenge. Ban on plastics, use of energy efficient technologies, use of alternative modes of motilities like ropeways, waterways are suggested. Water discharge mapping by satellite is being done to control the water discharge and to avoid flood like situations. Cottage industries, dairy and farming should be promoted to stop migration and also to use the local's recourse in optimum way.

Keywords: Sustainable Development, Waste Management, Himalayan States, Migration, Tourism industry

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An Analytical Study of the Pedagogical Requirements of ELT in RTU affiliated Engineering Colleges of Rajasthan

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Abstract:

Human Expression needs language and in modern era the accepted language is English language. No wonder there are many challenges faced by both the teachers and the students in learning English language. This paper will throw light on my teaching learning experience and will try to bring out some of the basic requirements for those who want to take their career in English teaching learning process and also help them to explore the common challenges that they will be facing in teaching English language. With the current scenario of fast growing educational institutes there has been a up gradation of the technologies and designing techniques that can cater to different professional and academic level courses to serve a common objective based on result oriented approach.

Keywords: Teaching, Learning, Technique, Engineering Colleges

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Global Sustainability: A Marxian approach to explore competing interests

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Abstract :

The progress of human race is on a roller coaster as we have expanded our ambit to seek opportunities to develop and extracted maximum out of the natural resource to make human survival comfortable. But as it goes; there is a start and there is an end and that's where the world is moving to .We are undoubtedly strengthening resources for human existence and what are are we doing about the costs that are being incurred .We have reached a stage where we need to meet the growing demands of human masses in terms of basic necessities but at the same time it is the human lives being pushed towards greater vulnerability. The Kundankulam

Nuclear Power Plant is an example where people showed resistance to something that may satisfy the increasing energy demands but at the same time putting masses to the risks associated with nuclear power plants mattered more but the environmentalists have not been heard. The government justifies its actions and so does the society. We see Marxian categorization of "haves" and "have nots". Today the struggle is for the global sustainability. Our progress is unable to solve the problems of competing interests emerging. There are a lot of questions left unanswered. My research paper through secondary approach will explore the relevance of sociological theoretical framework pertaining to Karl Marx to understand the competing interests, the reasons and whether development could be in tandem with global sustainability by resolving competing interests.

Keywords: Competing interests, global sustainability, sociological framework



Indian Mining Sector Vis-A-Vis Sustainable Development

Samiksha Mathur

'If we remove metals from the service of man, all methods of protecting and sustaining health and more carefully preserving the course of life are done away with. If there were no metals, men would pass a horrible and wretched existence in the midst of wild beasts...'

Georgius Agricola, 1556

Introduction:

Mineral in any country plays an important role in upgrading the economy for any Sovereign estate and especially for a developing country like India. The energy sector does need special attention so that the minerals are utilized to the greatest good to the greatest numbers and not exploited for personal selfish needs and desire. Minerals play a significant role in the economic development of a state. Therefore the state has a larger role in regulating the extraction of minerals, which is particularly important for growth of a nation.

Mining is a growing industry in the developing countries. But unregulated mining can lead to fatal damages to environment and people. The Indian government has come up with progressive approach by way of sustainable development framework to ensure development in

this sector keeping future needs in mind. Sustainability in mining regime impacts various contours and requires urgent attention. The article has highlighted various concerns appertaining to mining regime in the country.

Keywords: Mining Sector, Energy, Sustainable Development



Indian Judiciary: Real Preserver and Promoter of Sustainable Development in India

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Abstract:

Indian constitution guarantees to all its citizens the right to live in a healthy environment under Article 21 in order to implement this right many laws such as The National Green Tribunal Act 2010; The Air (Prevention and Control of Pollution) Act, 1981; The Water (Prevention and Control of Pollution) Act, 1974; The Environment Protection Act, 1986; The Hazardous Waste Management Regulations etc. have been successfully enacted by Indian legislature and successfully implemented by the Indian judiciary. India stands among the very few countries in the world with elaborate legal frame work for environment protection along with all round development both as the two sides of the same coin. Most of the environmental cases are put before the honorable court through PIL (public interest litigation) either under Art.32 or Art.226 of Indian constitution. It was in the historic case of Vellore Citizen Welfare Forum vs. Union of India where the theory of sustainable development was applied. The supreme court of India has recently recognized in historic case of *M.C. Mehta (Taj Trapezium Matter) v. Union of India* that future generations must be benefited from the policies and laws which advocate environmental protection as well as development goals for which a new concept of sustainable development laws are evolving at the intersection of three basic fields of laws : international economic law, international environmental law and international social law which is a method to focus on resource utilization in reducing our collective carbon footprint and pollution levels. *T Damodar Rao v Special Officer, Municipal Corporation of Hyderabad* is a land mark case to prove the responsibility in specific and concrete decision making. The Indian judiciary is playing pivotal role in interpreting the environmental laws to suit the doctrine of 'sustainable development and successfully follow the principles of Rio Declaration 1992 and make India a developed nation

with healthy environment. In this paper the researcher would analyze the views of the honorable Supreme Court through the recent judgments.

Keywords: Indian Constitution, PIL (public interest litigation), Environment protection, Rio Declaration, Sustainable Development



Sociology & Global Sustainability

Isha

Abstract:

In 1972, the spell Designing Emissary of India, Mrs. Indira Gandhi emphasized, at the UN Meeting on Mundane Ambience at Stockholm, go off at tangent the reasoning of exiguosness is an sound affinity of the direction of an environmental strategy for the world. The concepts of interrelatedness, of a proverbial mother earth, of huge clan, and of 'spaceship earth' cannot be private to environmental issues alone. They run uniformly to the frequent and inter-cognate responsibilities of environmental protection and human aid. Explanation has led to enormous inequalities, flight almost three-fourths of the world's relative crawling in less developed countries and one-fifth below the Sparsity line. The everlasting onus of primordial industrialization, con job and environmental disparage cannot be wished away. It is toute seule pertinent go wool- gathering forward in this far-out century be placidity more conscious of its long-term impact. The coerce are occupied and the choices difficult. Our normal doom foot without equal be achieved helter-skelter a improve acquaintance of our habituated concerns and shared responsibilities. Poverty and a bottom atmosphere are exactly inter-related, tax veer kinsmen dangle for their livelihoods primarily on the equalize resources base of their immediate environment. Replace uncomplicated systems and exaltation natural resource furnishing orthodoxy at the grassroots equalize are central to a strategy to eliminate poverty. Prevalent enlarge get gift, purposeless lassitude linked to argument ridden consumerism is stressing the resource base of developing countries further. It is burgee to monitor this flip savoir faire and public awareness. The blending of agribusiness on every side get and plain conduct, and in the matter of environment safe keeping is defoliate for both environmental sustainability and agricultural production. An environmental range maintain warn the review of far advance projects, convention the proprietorship of natural resources in native livelihoods. This allowance require be knowledgeable by a fortnight acquaintance of the perceptions and opinions of aboriginal kith and kin everywhere their stakes in the resource base. Globalization

as it is inviting assignment modern is snowball it distribute between the liberal and the poor. It has to be steered hence stray it serves yell unique poster interests but also the social needs of the Catholic incident thrives on, and history encourages and imposes, overweening levels of homogeneity in consumer preferences. On the backup waive, for improve to be locally make allowance and applicable, it secure be guided by local considerations which forming in cultural conversion and traditions. Tale owning at the propensity level, of the give of the diversity, and the knock up a appeal to nurse it, is an standard necessity for resonances development.

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lkfgR; ,oa laLd`fr ds }kjk Irr~ fodkl

ekyrh IDISuk

lgk;d vkpk;Z] fc;kuh xYZ ch-,M- dkWyst] t;iqj

lkjka'k %

Irr~ fodkl ls gekjk vfHkizk; fodkl ds ,sls Lo:i ls gS tks gekjh Hkkoh ihf<+;ksa dh viuh vko';drkvksa dks iw.kZ djus dh {kerk dks izHkkfor fd, fcuk orZeku le; dh vko';drk,i iwjh djsaA Hkkjr ds lkaLd`frd fojklr dks latksus dh ,d ijEijk lnSo jgha gS blfy, Hkkjr ds OkU;thoksa vkSj izd`fr dk laj{k.k Åxk/k vkLFkk dh ckr gSA ;g gekjh ikSjfk.kd xkFkkvksa] /kekZas] dykvksa vkSj laLd`fr ds laj{k.k dk iz;kl fd;k x;k gSA

bfrgkl xokg gS fd le; ds lkFk fdruh laLd`fr;ksa dk vflrROk u"V gks x;k gS ij Hkkjrh; laLd`fr vkt Hkh fo'o iVY ij nSfnl;eku gks jgha gSA cnrys oS'ohdj.k esa gh lkaLd`frd {ks= esa rhoz ifjorZu gq, gSA mUgksaus lekt vkSj laLd`fr dh flFkjr dks fopfy fd;k gS] ftlds ifj.kkeLo:i gekjs lkfgR;d vkSj lkaLd`frd Irr~ fodkl esa deh vkbZ gSA gekjh izkphu yksddyk,i rFkk yksdlkfgR; vkt egt dqN lkaLd`frd egksRloksa rd lhfer jg x;k gSA

;wusLdks ls laj{k.k yksdu`R; tSlS dkycsfy;k] NÅ u`R; vkSj dsjy ds eqfM,V~Vw tks fd fo'o /kjkskj lwph esa lfEefyr gS] os vius gh ns'k esa misf{k.k gks jgs gSA Irr~ fodkl dh bl ;k=k esa Hkkjrh; yksd laLd`fr vkSj izkphu lkfgR; ds

iquZikB dh egrh vko';drk gSA gekjk iz;kl gksuk pkfg, fd ge yksd laLd`fr dks
mlds izkd`frd vkSj LokHkkfod Lo:i esa fodflr djus esa lgk;d cu ldsA

eq[; 'kCnkoyh % oS'ohdj.k] /kjksgj] ikSj kf.kd] yksdxkFkkvkksa

□□□

fons'k uhfr }kjk Hkkjr dk lRrk~ fodkl

MkW- vYdk R;kxh

lgk;d vkpk;kZ] dyk foHkkx] fc;kuh xYlZ dkWyst] t;iqj

'kks/k lkjka'k%

Hkkjr ,d foLr`r HkwHkkx vkSj fo'kky tula[;k okyk ns'k gS vr% bldh fons'k uhfr dk fo'o dh jktuhfr ij xgjk izHkko iMrk gSA Lora=rk ds iwoZ Hkkjr dh dksbZ fons'k uhfr ugh Fkh D;ksafd Hkkjr fczfV'k lUkk ds v/khu Fkka ijUrq fo'o ekeyksa esa Hkkjr dh ,d lqnh?kZ ijEijk jgh gS bldk lkaLd`frd vrhr vR;Ur xkSjoe; jgk gSA vkt Hkh vusd iMkslh ns'kksa ij mldh lkaLd`frd Nki Li"V fn[kkbZ iMrh gSA

Hkkjr dh fons'k uhfr dh :ijs[kk Li"V djrs gq, if.Mr usg: us flrEcj 1946 esa ,d izsl lEesyu esa dgk Fkk **oSnsf'kd laca/kksa ds {ks= esa Hkkjr ,d Lora= uhfr dk vuqlj.k djsxk Hkkjr dh fons'k uhfr ikjp fl)kUrks ij vk/kkfjr jgh gS 1- ,d nwljs dh izknsf'kd v[k.Mrk vkSj loksZPp lUkk ds fy, ikjLifjd lEeku dh Hkkouk] 2- vukØe.k] 3- ,d nwljs ds vkUrfjd ekeyksa esa gLr{ksi u djuk] 4- lekurk ,oa ikjLifjd ykHk] 5- 'kkfUr iw.kZ lgvfLrRo** if.Mr usg: us Li"V dgk Fkk ;fn bu fl)kUrks dks LkHkh ns'k ekU;rk nsa rks vk/kqfud fo'o dh vusd leL;kvksa dk funku fey tk,xkA vkt fons'k uhfr viukus ds dkj.k gh gekjs ns'k dk fujUrj lrr~ fodkl gks jgk gS vkSj vkt orZeku esa Qzkal ls pkj jQky Hkkjr esa ykus dk iwjk

Js; Hkkjr }kjk viuk;h xBZ fons'k uhfr dks gh fn;k tkrk gS D;ksafd fons'k uhfr ds viuk;s fcuk jQky dks Hkkjr esa ykuk vIEHko gh ugh cfYd ukeqefdu FkkA

eq[; fcUnq% fons'k uhfr] izknsf'kd v[k.Mrk] lqj{kk ,oa 'kkfUr

lanaHkZ xzUFk%

- 1- MkW- ch-,y- QfM+;k % vUrjkZ"Vªh; laca/k
- 2- MkW dqynhi QfM+;k
- 3- lkfgR; Hkou ifCyds'ku

□□□

laLd`fr o n`'; dykvksa }kjk uSfrd ewY;ksa dk fodkl % ,d

v/;;u

MkW- jekdkUr xkSre

lgk;d izkpk;Z] n`'; dyk foHkkx] fc;kuh xYlZ dkWyst] t;iqj

'kks/k lkjka'k%

laLd`fr vkSj dykvksa dk izk;kstu dY;k.kdkjh gh jgk gSA **\*\*laLd`fr**** iwjh rjg ls fodflr ekuo psruk dh vfHkO;fDr gS vkSj ****dyk**** dks lekt ,oa laLd`fr dk niZ.k dgk tkrk gSA dyk ds lHkh Lo:iksa esa lelkef;d lkaLd`frd] lkekftd i`"BHkwfe ,oa uSfrd ewY; Lik"V :lk ls fn[kkbZ nsrs gSaA mnkgj.kLo:lk Hkkjrh; fHkfr fp=ksa o y?kqfp=ksa ds fo"k; nk'kZfud] /kkfeZd] mins'kkRed rFkk dFkkRed jgsa gSa] ftudk ewy vk/kkj vke tu rd uSfrd ewY;ksa dh f'k{kk nsuk jgk gSA n`'; dyk;sa gekjh lgt vfHkO;fDr gksus ds dkj.k vf/kd izsj.kknk;h gSA if'peh dyk dk mnkgj.k ysa] rks ;wjksi esa nknkokn] ikWi vkVZ ,oa iqtukZxj.k dkyhu dyk;sa Hkh ml le; ds lkaLd`frd lanHkksZa dks izfrfcafr djrh gSA Hkkjrh;

laLd`fr esa ckS)] tSu rFkk fgUnq /keksZa dk izeq[k m̀s'; uSfrd ewY;ksa dk fodkl djuk jgk gS] ftldks gekjh n`'; dykvksa us vius fp=ksa] ewfrZ;ksa o vU; n`';kRed izn'kZuksa ds ek;/e ls vfHkO;Dr fd;k gSA ftuds fofHkUu mnkgj.k gesa eafnjksa] egyksa] fdyksa vkfn dh nhokjksa ij fHkfr fp= rFkk y?kqfp=ksa ds :lk esa iksFkh fp=ksa vkfn esa ns[kus dks feyrs gSaA fu"d"kZr% fdlh Hkh ns'k dh laLd`fr esa uSfrd ewY;ksa ds fodkl esa mldh n`'; dykvksa dk egRoiw.kZ ;ksxnku jgrk gSA

eq[; fcUnq% laLd`fr] n`'; dyk;sa] uSfrd ewY;

lanaHkZ xzUFk%

xqIRkk] '];keyk % vkVZ] C;wfV ,.M fØ,fVfoVh

prqosZnh] eerK % ledkyhu Hkkjrh; dyk

% ;wjksi dh vk/kqfud dyk

xksLokeh] izsepUnz % jktLFkku% laLd`fr] dyk ,oa lkfgR;

□□□

**ekmaV vkcw% lkekftd ,oa vkfFkZd fodkl esa i;ZVu dh
Hkwfedk**

fojsUnz dgekj

lgk;d izkpk;Z ¼Hkwxksy½] fc;kuh xYIZ dkWyst] t;iqj

'kks/klkj %

i;ZVu ,d izdkj ls laxfBr O;olk; ,oa vkfFkZd lzksr dk vk/kkj cu pqdk gS] i;ZVdksa ds vkus ls fons'kh eqnzkd dh tgtkj izkfIr gksrh gS] ogh ns'kh dykRed

oLrqvksa ds O;olk; esa Hkh o`f) gksrh tk jgh gS] bls lFk gh i;ZVu ds ek/e
ls fofHkUu ns'kokfl;ksa ds fopkjksa ds vknku&iznku ds lFk gh lkaL—frd
vkSj O;olkf;d laca/kks esa Hkh o`f) gksrh gSA jktLFkku i;ZVu dh n`f"V ls
Hkkjr dk vxz.kh jkT; gSA lk;ZVdksa }kjk izR;{k o vizR;{k :lk ls viuh
vko';drkvksa o euksjatu gsrq fd;k x;k O;; LFkku fo'ks"k dh vFkZO;oLFkk esa
ykHk iagqprk gSA i;ZVu jkstxkj l`tu dk ,d l'kDr ek/e ekuk tkrk gSA ftlls {ks=
fo'ks"k esa jkstxkj ds voljksa esa o`f) gksxhA i;ZVu m|ksx eas jkstxkj o`f) dh
vn~Hkwr {kerk, gSA tSl& ifjogu lapkyu] VwfjLV xkbMksa] gLrf'kfYi;ksa]
dkjhjksa] cqudjksa gksVy ,oa Vwj&vkWijsVjksa bR;kfn dks jkstxkj miyC/k
gksrk gSA

ftlesa fljksgh ftys dk ekmV vkcw ¼Hkkjr dk f'keyk½ i;ZVdksa ds fy, vkd"k.kZ
dk eq[; dsUnz gSA fljksgh ftys esa fLFkr ekmaV vkcw jktLFkku esa ,dek=
igkM+h f'k[kj gSA bldk mPpre fcUnq ^xq: f'k[kj^ gS tks leqnz ry ls 1722
ehVj Åipk gSA o"kZ 2016 esa jkT; esa 414-95 yk[k Lons'kh ,oa 15-14 yk[k
i;ZVdksa lfgr dqy 430-09 yk[k i;ZVd Hkze.k ij vk;s ftlesa ekmaV vkcw esa
ns'kh i;ZVdksa dh la[k; 20-17 yk[k rFkk fons'kh i;ZVdksa dh la[k; 4015 jghA
ekmaV vkcw esa Lons'kh o fons'kh i;ZVdksa ds vkxeu esa mrkj&p<+ko jgk
gS fQj Hkh i;ZVdksa dh la[k; esa fujUrj o`f) gksrh tk jgh gSA i;ZVdksa ds
vkxeu ls ;gk ds vkfFkZd fodkl ds lFk gh ;gk ij jgus okys yksxksa ds jgu&lg
esa Hkh cnyko vk;k gS ftlls lekt dk lkekftd fodkl gqv gSA i;ZVu fodkl ls
i;kZoj.kh; leL;k, Hkh mRiUu gqbZ gSA D;ksafd ;gk ij isM+ks dks dkVdj
O;olkf;d izfr"Bku cuk;sa tk jgs gS rFkk ;krk;kr ls ok;q iznq"k.k esa Hkh o`f)
ns[kh tk jgh gSA

eq[; 'kCn % LFkkiR; dyk] i;ZVd] O;olkf;d] l?ku ouLifr] lkaL—frd] iznw"k.k]
m|ksx bR;kfnA

IUnHkZ xzUFk lwph%

1- HkYyk] ,y] vkj- ¼2018½ % jktLFkku dk Hkwksy] dqynhi ifCyds'kUIA

- 2- Tkkixy] es?kijt ¼2014½ % djksyh ftys ds xzkeh.k {ks= esa lkekftd ,oa vkfFkZd fodkl & ,d HkkSxksfyd v/;;u] ih,p-Mh- Fkhfl jktLFkku fo'ofu |ky;] t;iqjA
- 3- VkWm] ts- ¼1829½ % ,ukYl ,.M ,UVhD;wVht vkWQ jktLFkku oksY;we&1] tkWtZ jksVyst ,.M lU] yanuA
- 4- uUn fd'kksj ¼1991½ % pxzkeh.k jktLFkku esa lkekftd vkfFkZd ifjorZu ds HkkSxksfyd vk/kkjß izdkf'kr ih,p-Mh- Fkhfl jktLFkku fo'ofu |ky;] t;iqjA
- 5- Jhfuokl] ,e- ,u- ¼1975½ % Þvk/kqfud Hkkjr esa lkekftd ifjorZuß jktLFkku izdk'ku] ubZ fnYyh
- 6- tula[k izfrosnu] Hkkjrh; tux.kuk foHkkx] t;iqjA
- 7- i;ZVu ,oa lkaL—frd foHkkx] t;iqjA
- 8- fljksgh ftyk n'kZu ¼if=dk½] ftyk lwpuk ,oa tu lEidZ dk;kZy;] fljksgh 2008 ls 2015-

□□□

Irr~ fodkl ,oa la;qDr jk"V^ala?k

MkW- inek eh.kk

lgk;d vkpk;Z ¼jktUkhfr foKku½] ,y-ch-,l- jktdh; egkfo |ky;] dksViwryh

lkjka'k%

fVdkÅ fodkl ;k Loiks"kh fodkl] fodkl dh og vo/kkj.kk gS ftlesa fodkl dh uhfr;kj cukus le; bl ckr dk /;ku j[kk tkrk gS fd ekuo dk u dsoy orZeku vko';drkvksa dh iwfrZ gks] oju] vuUr dky ekuo dh vko';drkvksa dh iwfrZ lqfu'pr gks ldsA blesa izkd'frd i;kZoj.k dh lqj[kk ij fo'ks"k cy fn;k tkrk gSA la;qDr jk"V^a la?k }kkj vk;ksfr oS'od f'k[kj lEesy 2005 nLrkost esa

LFkkfeRo fodkl dks vkfFkZd fodkl] lkekftd fodkl ,oa i;kZoj.k laj{k.k ls ikjLifjd :i ls tksM+dj ns[kk x;kA LFkk;h fodkl ds {ks= dks pkjlikeU; vk;keksa lkekftd] vkfFkZd i;kZoj.kh; vkSj laLFkkr esa foHkDr fd;k x;k gSA buesa ls izFke rhu vk;ke LFkk;kZRo ds izeq[k fl)kar gS] tcfd vafre laLFkkr uhfr vkSj {kerk fo"k;ksa ls lacaf/kr gSA LFkk;h fodkl nqfu;k Hkj esa cqf)thfo;ksa] ljdkjksa i;kZoj.kfonksa ds e/; i;kZoj.kh; vkSj vkfFkZd lkfgR; esa ppkZ dk fo"k; cuk gqvk gSA LFkk;kZfodkl ekuoleqnk; ds lkFk&lkFk i;kZoj.k ds vfLrRo ls tqMk+ gqvk gSA fodkl esa yEch vof/k rd {k; gksrk jgk gSA bl fLFkr esa ekuoh; thou vfLFkj gks tk,xk vkSj oSf'od Lrj ij laiw.kZ tSo ra= u"V gksus dh laHkkouk cyorh gksxhA

lgL=kf} fodkl y{; (Millennium Development Goals) 2015 esa leklr gks x;s Fks vr% bu fodkl y{;ksa ds LFkku ij lrr~ fodkl y{;ksa dks izklr djus gsrq la;qDr jk"Vª la?k f'k[kj lEesyu esa fu.kZ; fy;k x;kA

bl laca/k esa egklHkk dh cSBd U;w;kZd esa 25 ls 27 flrEcj 2015 esa vk;ksftr dh x;h Fkh blh cSBd esa vxs 15 lky ds fy, 17 y{; fu/kkZfjr fd;s x;s Fks ftudks 2016 ls 2030 dh vof/k esa gkafly djus dk fu.kZ; fy;k x;k Fkka bl cSBd esa 193 ns'kks us Hkkx fy;k Fkk] bl la;qDr jk"Vª f'k[kj lEesyu dh Fkhe (Transforming Our World: The 2050 Agenda For Sustainable Development) Fkha

lrr fodkl y{; ¼,I-Mh-th-½ ds oSf'od y{;ksa esa xjhch [kRe djuk] i;kZoj.k dh j{kk] Hkq[kejh dh fLFkr dks leklr djuk] vPNk LokLF; vkSj csgrj thou dh izkfIr] xq.koUkkiw.kZ f'k[kk] ySafx lekur] lkQ ikuh vkSj LoPNrk] lLrh vkSj LoPN mtkZ] vPNk dke vkSj vkfFkZd fodkl] vlekurk esa deh] fVdkm 'kgjh vkSj lkeqnkf;d fodkl] fEesnkjh ds lkFk miHkksx vkSj mRiknu] tyok;q ifjorZu ds [krjksa ls fuiVuk] 'kkafr vkSj U;k; ds fy, laLFkku LFkkfir djuk] y{; izkfIr esa lkewfgd lk>snkj lqfuf'pr djuk mi;qZDr fVdkÅ djuk] y{; ¼,IMhth½ ekuo thou ds yxHkx gj igyw dks doj dj jgsa gS] ;fn y{; fu/kkZfjr le; ds Hkhrj gkafly

dj fy;s tkrs gS rks ;g lqfu'pr gS fd nqfu;kHkj esa xjhcks dk thou vklku gksxk
vkSj mUgsa thus ds csgrj fodYi miyC/k gksaxsA

eq[; fcUnq% la;qDr jk"V^a la?k] Irr~ fodkl

IUnHkZ xzUFk%

Hkxoku] fo".kq % oMZ dULVhV;w'ku] , dEijsfVo LVMh] LVkfyZax
ifCyds'ku] ubZ fnYyh

Hkw"k.k] fo|k %

eksgyk] oUnuk %

□□□

mnwZ t+cku dk Irr fodkl

ijohu ckuks

'kks/kkFkhZ] jktLFkku fo'ofo|ky;] t;iqj

lkjka'k%

mnwZ tcku dh rkyhe gkfly dju] fy[kus] i<+us vkSj cksyus ls dÃ Qk;ns gksrs
gSa elyu mnwZ esa t+s] t+okn ,slh vkoktsa gSa tks Çgnh esa ugÈ gS mnwZ
vkSj Çgnh nksuksa us feydj tcku dks ijoku p<+k;k gS vnc 'kk;lrhx vkSj odkj ;g
mnwZ tcku ds lh[kus ds ckn gh vk;kA bldh 'ksjks 'kk;jh eSa cgqr ls fudkr bl
rjg is'k fd,] ftUgsa i<+dj bYe esa btkQk gksrk gS vkSj tcku esa f'kjh vkSj ykSp
Hkh vkrh gSA

nkx us dgk Fkk %

mnwZ ftls dgrs gSa ge gh tkurs gSa nkx

lkjs tgka esa èkwe gekjh tcku dh gS

vxj lkjs tgku esa ugÈ Hkh gks rks lkjs ÇgnqLrku bldh èkwe gSA mnwZ vkSj Çgnh lxh cgusa gSa vkSj budk tUe vkSj rjôh lkFk lkFk gqÃ gS ysfdu mnwZ esa [kkLrkSj ij tcku esa fu[kkj vkSj ykSp iSnk fd;kA Çgnh esa tks vkokts ugÈ Fkh mnwZ esa mu vkoktksa dks tcku esa 'kkfey dj ds u, vyQkt vkSj u, rjkdhc bl rjhds ls is'k fd;k gS fd ;g tcku cgqr gh mEnk cu xÃ elyu Çgnh esa t+ehj ugÈ fy[kk tk ldrk D;ksafd Tokn vkokt Çgnh esa ugÈ gksrh bl rjg ds ISdM+ksa vyQkt gS tks [kkLrkSj ls mnwZ tcku ds pjn vyQkt ls feydj cus gSaA

mnwZ dk vkxkt vkSj mldh rjDdh y'dj dh tcku ls ekuh tkrh gS ftlesa vjch esa Qkjlh ds vYQkt ÇgnqLrkuh tcku esa vk,A

□□□

dkSfVY; ds jktuhfrd fpUru dk orZeku 'kklu uhfr;ksa ij

izHkko

lqfHkrk ehy

'kks/kkFkhZ] jktuhfr 'kkL= foHkx] T;ksfr fo|kihB egkfo|ky;] t;iqj

izkphu Hkkjr esa dkSfVY; ls iwoZ Hkh jktuhfrd fopkjd gq, Fks ftUgksaus Hkh vFkZ'kkL= lfgr dbZ vU; jktuhfrd xzaFkkssa dks l`tu fd;k Fkk ijUrq dkSfVY; IS)kfUrd gksus ds lkFk&lkFk O;ogkfjd jktuhfrK Hkh Fks ftuds funsZ'ku esa

izFke ckj Hkkjr dk jk"V^a ds :i esa jktuhfrd ,dhdj.k gqvk vkSj orZeku esa Hkh muds jktuhfrd fopkj Hkkjr jk"V^a gsrq vf/kdka'k igyqvksa ds lanHkZ esa izklafxd fl) gq, gS A

21oha “krkCnh esa izFke o nwljs n'kd esa Hk"V^akpkj dk eqn~nk lcls vf/kd Nk;k jgk ftlds lanHkZ esa vUuk gtkjsa vkfn ds flfoy lkslk;Vh vkanksyu us Hkkjrh; jktuhfr dks uohu fn'kk iznku dh A d'ehj my>u ds dkj.k Hkkjr fujarj vkradokn ls xzflr jgk gS A orZeku esa Hkkjrh; turk ikVhZ ds usr`Ro esa Hkkjr iqu% ,d nyh; izHkqRooknh jktuhfr dh rjQ vxzlj gks jgk gSA bu lHkh ifjn`; dks ns[krs gq, dkSfVY; ds fopkj xqIrpj] 'kkM~xq.M] ijkk"V^a ek.My;~ fl)kUr dh vksj /;ku nsuk t:jh gS A

dkSfVY; ds vkn'kZ jktk ds O;fDrRo ls lE;rk j[kus okys dbZ jktusrk tSls iz/kkuea=h ujsUnz eksnh lfgr eerK cuthZ] vkfnR;ukFk ;ksxh vkfn Hkkjrh; jktuhfr esa dkSfVY; ds jktf"kZjktk dk iqu% iqu% Lej.k djokrs gSA dkSfVY; us jkT; ds jktk gsrq osnksa mifu'knksa lfgr vU; Kku ls ifjiw.kZ o f'kf{kr gksuk vko';d Fkk] mlh izdkj Hkkjr ds jkT;ksa us Hkh lh[k ysrS gq, iapk;rh jkt vf/kfu;e ikfjr ¼2014&2015½ djds ljiap in gsrq f'kf{kr ¼5oha] 8oha½ mRrh.kZ gksuk vfuok;Z dj fn;ka

20oha&21oha 'krkCnh bZa- esa Hkkjr ds okf'kZd vk; ctV esa vkfFkZd uhfr;ksa ds lanHkZ esa foRRkea=h;ksa }kjk fujarj dkSfVY; dk ekxZn'kZu ysrS gq, mudksa mn~/k`r fd;k x;k gSA blh izdkj dkSfVY; dk jkT; e.My fla)kUr orZeku Hkkjr ds fy; vUrZjk"V^ah; Lrj ij iM+kSlh jk'V^aksa fo'ks"kr% ikfdLrku] vQxkfuLrku vkSj phu] :l vkfn ns'kksa ls Hkh fons'k uhfr ds lanHkZ esa izklafxd gS A Li"V gS fd dkSfVY; ds jktuhfrd fpUru dk izHkko orZeku dh 21oha 'krkCnh esa Hkh izklafxd gS A

eq[; fcUnq % jktuhfrd fpUru] orZeku 'kklu] dkSfVY;

lanHkZ xzFk lwph %

- 1- xkck] vkseizdk'k % Hkkjrh; jktuhfrd fopkjd i`"B la 282&291
- 2- lgksrk] jkeukjk;.k % jktuhfr foKku] i`"V la- 10
- 3- izlkn] MkW- ef.k'kadj % dkSfVY; ds jktuhfrd ,ao lkekftd fopkj] i`-la- 15&27
- 4- tks'kh] vkj-ih- % iz'kklfud fopkjd] i`-l- 23
- 5- 'kekZ] nsodkUrK % dkSfVY; ds iz'kklfud fopkj] i`-la- 27

□□□

Hkz"Vkpj % ,d vfHk'kki

iou caly

fo|kFkÊ fc;kuh fofèk egkfo|ky;

lkjka'k%

Hkz"Vkpj vFkkZr Hkz"V \$ vkpkjA Hkz"V ;kuh cqjk ;k fcxM+k gqvk rFkk vkpkj dk eryl gS vkpj.kA vFkkZr Hkz"Vkpj dk 'kkfCnd vFkZ gS og vkpj.k tks fdlh Hkh çdkj ls vuSfrd vkSj vuqfpr gksA tc dksÃ O;fä U;k; O;oLFkk ds ekU; fu;eksa ds fo:) tkdj vius LokFkZ dh iwÆr ds fy, xyr vkpj.k djus yxrk gS rks og O;fä Hkz"Vkpj dgykrk gSA vkt Hkkjr tSlS lksus dh fpm+;k dgykus okys ns'k esa Hkz"Vkpj viuh tM+s QSyk jgk gSA

vkt Hkkjr esa ,sls dÃ O;fä ekStwn gSa tks Hkz"Vkpj gSA vkt iwjh nqfu;k esa Hkkjr Hkz"Vkpj ds ekeys esa 94osa LFkku ij gSA Hkz"Vkpj ds dÃ jax&i gS tSlS fjÜor] dkyk&cktkjh] tku&cw>dj nke c<+kuk] iSlk ysdj dke djuk] lLrk lkeku ykdj egaxk cspuk vkfnA

milagkj % Hkz"Vkp kj gekjs uSfrd thou ewY;ksa ij lcls cM+k çgkj gSA
Hkz"Vkp kj ls tqM+s yksx vius LokFkZ esa vaèks gksdj jk"V^a dk uke cnuke dj
jgs gSaA

cgqr ns fn;k Corruption dks Green Signal
vc bls Red Signal nsus dk oä vk x;k gS

□□□

Hkkjr dk vkÆFkd fodkl

vk—fr prqosZnh

fo / kFkhZ] fc;kuh fof/k egkfo / ky;] t;iqj

lkjka'k %

lkoZtfud {ks= esa foLrkj djus dh igys dh uhfr;ksa us lkoZtfud {ks= dks
vdq'ky cuk fn;k Fkk rFkk bl {ks= esa cgqr vfèkd gkfu gks jgh FkhA ykblsal
vkSj fu;a=.k ç.kkyh us futh {ks= }kjk fuos'k ij jksd yxk fn;k rFkk bls dkj.k
fons"kh fuos"kd Hkh grksRlkfgr gks jgs FksA vr% fodkl ds igys pkj n"kdksa
esa viukZb xZb vkÆFkd uhfr;ksa ds lacaèk esa fQj ls fopkj djus dh vko";drk
FkhA blh ds QyLo:i ljdkj us vkÆFkd lqèkkj dh 'kq:vr dhA bl bdkZb esa vki
vkÆFkd lqèkkj ds Lo:i vkSj mlds {ks= ds lacaèk esa i<+sxsaA vkÆFkd lqèkkj
ds dk;kZUo;u dh çxfr vkSj leL;kvksa ds lacaèk esa vè;;u fd;k tk,xk rFkk bl
uhfr dk fo'ys"k.k fd;k tk,xkA

eq[; 'kCnkoyh % fons'kh fuos'kd] ykblsal] vkfFkZd uhfrA

□□□

vkt dh ubZ dyk&iQksZesZUI dyk

MkW- d`".kk egkoj

vflLVs.V izksQslj ¼fp=dyk½] jktLFkku fo'ofa|ky;] t;iqj

lkjka'k %

vkt ge ftl mRrj vk/kqfud le; esa jg jgs g]S bl le; dh dyk 19 oha o 20 oha lnh ds dyk ds fcYdqy fHkUu gS A vkt dh uohu dyk 'kSfy;kj bu ikjEifjd ek;/eksa ls dgha vkxs fudy pqdh gS] ,slh gh dqN 'kSfy;kj gS%& laLFkkiu dyk] dyk e;/LFkrk,i (Interventions) vknku iznku djus okyh dyk;sa (Interactive Arts), iQksZesUI dyk] LFky fo'k"V dyk;sa] vkfVZLV bu&jsthMsUIh vkfnA ;s xSj&ikjEifjd 'kSfy;kj vkt can dejs ;k LVwfM;ks ls ckgj fudy yksxksa ds chp tkdj viuh dykRed xfrfof/k;ksa }kjk muds lkFk laokn LFkkfir djrh gSA vkSj ;s laokn cgqr l'kDr gksrk gSA

iQkZsesUI dyk ,d ,slh yfyr dyk 'kSyh gS ftls n'kZdksa ds lEEq[k is'k fd;k tkrk gSA ikjEifjd :i ls ;g vUrIZEc/kkRed ekuh tkrh FkhA ;g iQksZesUI fdlh flØIV ij Hkh vk/kkfjr gks ldrh gS ;k fcuk flØIV ds Hkh dh tk ldrh gSA ;g vfu;fer o vpkud ls Hkh fd;k tkrk gS ;k iwjh rS;kjh ds lkFk ;kstuc) rjhds ls Hkh fd;k tk ldrk gSA blesa n'kZdksa dh Hkkxhnhkj gks Hkh ldrh gS vkSj ugha HkhA bl rjg dh iQksZesUI n'kZdksa ds le{k ykbo Hkh dh tkrh gS ;k fQj ml iQksZesUI dks fdlh fofM;ks ek;/e ls iwoZ fjdksfMZax }kjk ckn esa Hkh n'kZdksa ds le{k izlkj.k fd;k tk ldrk gSA tks dykdkj iQkZsesUI dj jgk gksrk gS og mifLFkr Hkh gks ldrk gS vFkok vn`; Hkh jg ldrk gSA blesa dksbZ Hkh flFkfr;kj c;kj gks ldrh gS ijUrq pkj izeq[k rRo vko';d :i ls 'kkfey gksus pkfg, og gS & le;] LFkku] iQkZsesUI djus okys dykdkj dk 'kjhj vFkok mldh ¼dykdkj dh ½ ml ek;/e esa mifLFkfr o n'kZdksa rFkk iQksZesUI djus okys dykdkj dk laca/kA iQkZsesUI dgha ij Hkh dh tk ldrh gS] fdlh Hkh LFkku] le; ij o fdrusa Hkh le; ds fy;sa iQkZsesUI esa fdlh Hkh ,d dykdkj ;k lewg }kjk fdlh fo'ks"k LFkku o fo'ks"k le;

ij fd;k x;k d`R; gh mls vFkZiw.kZ cukrk gSA bl izdkj iQksZesUl vkVZ fdlh Hkh
vU; izn`kZudkj dykvksa ls fHkUu ,d yfyr dyk ek/;e gS

eq[; 'kCn% xSj&ikjEifjd 'kSfy;ki] iQkZsesZa'k dyk] dykd`frA

IUnHkZ xzUFk%

1- Qzsad ikWij % vkVZ] ,D'ku ,.M ikVhZflis'ku] U;w;kWdZ ;wfu- izsl] 1975

2- dkyZlu] ekfoZu % iQksZaesZa'k% , fØfVdy bUVªksMD'ku] yanu

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fofèk fo|kFkÊ] fc;kuh fofèk egkfo|ky;] t;iqj

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yM+dh dh 'kknh ds le; yM+dh ds ifjokj okyksa ds }kjk yM+ds ;k mlds ifjokj okyksa dks uxN ;k fdlh Hkh çdkj dh dherh pht+ fcuk ewY; esa nsus dks ngst+ dgk tkrk gSA ftldk vFkZ yM+ds dh ifjokj okyksa ds }kjk yM+ds dh ewY; Hkh le>k tk ldrk gSA ngst çFkk ,d lkekftd leL;k gSA ngst çFkk xSj dkuwuh gksus ds ckotwn Hkh ;s gekjs lekt esa [kqyh rkSj ij jkt+ djrh gSA ngst çFkk ,d lkekftd chekjh gS tks dh vkt dy lekt esa dkQh j¶+rkj idMs xfr dj jgk gSA ;s gekjs thou ds edln dks NksVk dj nsus okyh çFkk gSA ;s çFkk iwjh rjg bl lksp ij vkèkkfjr gS] fd lekt ds loZ Js"B O;fä iq#"k gh gSa vkSj ukjh dh gekjs lekt esa dksÄ egRo Hkh ugÈ gSA vkbZihlh dh /kkjk 492, ngst izFkk ds fo:) ,d l'kDr gfFk;kj gS tks fdlh Hkh fookfgr L=h dks ml ij gksus okys vR;kpkjksa ds fo:) laj{k.k iznku djrh gSA bl dkuwu esa 7 lky dh ltk rd dk izko/kku gSA

eq[; 'kCnkoyh % ngst] dkuwu] /kkjk] laj{k.k

□□□

Effect of Kyoto Protocol on Indian Economy

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Abstract:

With the incorporation of ‘flexibility mechanisms’ in the Kyoto Protocol (KP), namely, emissions trading, joint implementation (JI) and the Clean Development Mechanism (CDM), incentive-based (IB) policies are Being widely discussed in the context of greenhouse gas (GHG) abatement¹. This paper examines various aspects of these incentives-based approaches for India, particularly the linkages among them and issues related to their implementation.

It is clear, however, that these countries will be affected by any global architecture for GHG abatement that emerges. In this context, this paper reviews recent developments (Bonn and Marrakech and beyond) and the implications of these for India. Thus, it examines the market For KP flexibility mechanisms, particularly emissions trading and CDM. For instance, it has been argued In light of various concessions, the market for CDM projects will be small (compared to GHG emissions in Developing countries) and that it will be characterized by low demand and low prices (Haleness 2002, Jotzo and Michaelowa 2002).

Keywords: Kyoto Protocol, Climate Change



