

ICRABB – 18

*International Conference on Recent
Advances in Biosciences and
Bioengineering*

**Vadodara, Gujarat
08th – 10th March 2018**

**Published by:
Institute For Engineering Research and Publication
(IFERP)**

**Organized By:
Parul University
Vadodara, Gujarat**

From Director's Desk



Rudra Bhanu Satpathy.,

Director,
Institute For Engineering Research and Publication.

On behalf of *Institute For Engineering Research and Publications (IFERP)* and in association with *Parul University*, Vadodara, Gujarat. I am delighted to welcome all the delegates and participants around the globe to *Parul University, Vadodara* for the “*International conference on Recent Advances in Biosciences and Bioengineering (ICRABB-2018)*” Which will take place from *08th -10th March '18*

Transforming the importance of Engineering, the theme of this conference is “*International conference on Recent Advances in Biosciences and Bioengineering (ICRABB-2018)*”

It will be a great pleasure to join with Engineers, Research Scholars, academicians and students all around the globe. You are invited to be stimulated and enriched by the latest in engineering research and development while delving into presentations surrounding transformative advances provided by a variety of disciplines.

I congratulate the reviewing committee, coordinator (**IFERP & PU**) and all the people involved for their efforts in organizing the event and successfully conducting the International Conference and wish all the delegates and participants a very pleasant stay at *Vadodara, Gujarat.*

Sincerely,



Rudra Bhanu Satpathy

Preface

The *International conference on Recent Advances in Biosciences and Bioengineering (ICRABB-2018)* is being organized by *Parul University Vadodara, Gujarat, India* in association with *Institute For Engineering Research And Publication (IFERP)*.

Parul University Vadodara, Gujarat is a premier Institute established in the year 2004 under the patronage of PU educational society.

It is gratifying to know that *ICRABB -2018* was a notable event which brings academicians, researchers, engineers, industry experts and students together.

Covering broad range of topics in various domains the conference will be a perfect platform to share experience and foster collaborations across industry and academia to evaluate current and emerging trends across the globe.

The International Conference attracted over 59 submissions. Through rigorous peer reviews 44 high quality papers were recommended by the Committee. The Conference applied focus on the tools and techniques for the developments on current technology.

We are indebted to the efforts of all the reviewers who undoubtedly have raised the quality of the proceedings. We are earnestly thankful to all the authors who have contributed their research works to the conference. We thank our Management for their wholehearted support and encouragement. We thank our Principal for his continuous guidance. We thank all the members of our local organizing Committee, National and International Advisory Committees.

ICRABB - 2018



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Parul
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MESSAGE FROM THE PRESIDENT

It is heartening to learn that Faculty of Applied Sciences of Parul University is going to organize International Conference on "Recent Advances in Biosciences and Bioengineering" to be held on March 8-10, 2018 in association with Institute for Engineering Research and Publication. As the theme of the conference suggests, in recent years, research in the field of biosciences and bioengineering has helped the researchers and scientists develop innovative products which have contributed hugely towards medical sciences, agriculture etc....Advances in bioengineering have equipped the medical fraternity with advanced tools such as artificial organs and artificial devices which help in replacing damaged body parts and also in designing and developing latest medical equipments in diagnosing and treating various medical problems. Biosciences and its applications have contributed tremendously in the field of pathology, agriculture, entomology, marine biology etc....

I am confident that the presentations and lectures by renowned researchers/ academicians/ scientists etc...from the fields of Biosciences and Bioengineering during the International Conference will enhance the learning of our students and motivate them to take up research in these fields. Such a platform will also enable the teachers and students to interact with the noted personalities from the world of life sciences and benefit from their expertise. Participation of students in such conferences help them understand the nuances of the specializations to which they belong and the knowledge they receive by participating in such conferences help them in developing innovative ideas which can help the mankind in coping up with various challenges.

I wish the conference all success!!!

(Dr.Devanshi Patel)
President



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MESSAGE FROM PROVOST

World in general and Higher education in particular is undergoing a dramatic, drastic and interesting time. It offers better life quality and betterment of society. On one hand, it is heartening to note the plethora of higher education institution making education accessible to everybody; on the other hand it is dismal to note the plunging of education standards and quality of students.

In such a time, to keep the vision firm and to deliver pragmatic, groundbreaking and holistic programs in all domains so as to create global professionals with strong character and good values set apart the path leaders from the path followers.

We, at Parul University are the Path leaders and blazers.

We believe in interdisciplinary and multi disciplinary approach. To keep our said spirit alive we have brought together all disciplines of science for this conference. And offered Contemporary theme for our international conference. This is something unique and unparalleled.

I thank our partner institute for Engineering Research and Publication (IFERP) for joining hands with our young but scholastic science faculty.

I congratulate Dean, principal, faculty members and all those have contributed for the success of this event and wish them great success for the conference and also in their all future endeavours.

Dr. Ketan Kotecha
Provost, Parul University



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MESSAGE FROM REGISTRAR

I am happy to learn that under the faculty of Applied Sciences an International Conference on Recent Advances in Biosciences and Bioengineering is being organized in the University from March 8 to 10, 2018. It is also heartening to note that the Institute for Engineering Research and Publication (IFERP) is actively involved in this conference. The conference serves as a platform for scientists actively involved in present day research to exchange their findings as well as ideas in the field. Biosciences have progressed rapidly in the last two decades and have provided solutions to major issues facing health parameters in the society. Similarly, advances in bioengineering have helped in creation of advanced equipment for early and accurate diagnoses. These two combined have substantial impact in the way science is understood, learnt and delivered to the student community. I am confident the staff and students of science in the University will stand to benefit by exposure to the rich expertise of scientists making presentations.

I wish the conference a huge success.


Dr. H. S. Vijayakumar
Registrar



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CHIEF ADVISOR's MESSAGE

I am glad to know that faculty of Applied Science, Parul University is organizing first time an International conference on "Recent advances in Bio sciences and Bio engineering"(icra2b) in India on 8th - 10th March 2018. Congratulations for such effort to all team members.

This scientific event shall provide a momentum for the budding scientist to open and learn new horizons of clinical research and Applied Science branch of Bio sciences that determines safety and efficiency of research & related clinical trials, devices, diagnostic products as well as treatment regimens intended for human use. Its a time of more research in Applied Science. Hence I hope so this conference will promote and strengthen the spontaneous reporting amongst Applied Science / paramedicals and pharmacy professionals. The expert lectures will help the delegates to become conversant with the new career prospects and horizons in the profession. I am sure deliberation in conference will furnish good platform to participants, delegates and resource persons to get new heights in their area of specialization.

I wish best success of the conference.

Dr.M.N.Patel

Advisor of PU & former VC of GU.

P.O. Limda, Tal. Waghodia, Dist. Vadodara - 391760, Gujarat State, India.

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ORGANISING CHAIRPERSON'S MESSAGE

The International Conference on Recent Advances in Biosciences and Bioengineering - 2018 (ICRABB-18) organized by the Faculty of Applied Sciences under the aegis of Parul University in collaboration with Institute For Engineering Research and Publication (IFERP) is the first international conference organized by the Faculty of Applied Sciences. This is the first platform created to bring together scientists, researchers, policy makers, academicians, research scholars and students across various facets of Applied Sciences.

This conference created a platform to share knowledge, expertise and research insights amongst all the stakeholders and the participants of this conference. Today is an era of digital information. Research in the sciences has opened up widening horizons in basic and applied science. With this aspiration in mind, Parul University has established Faculty of Applied Sciences in the year 2015 to promote inter-disciplinary studies and research in sciences. Since the inception, the Faculty has been constantly striving in dissemination of advances in the field of sciences that point at the newer horizons of future. Our experiential programs provide opportunities for research, professional learning experience, and start-up entrepreneurship.

At this conference, the students, research scholars and academicians will get to listen the latest developments from the pioneers in the field. The opportunity to present paper and poster at this international conference will be advantageous for all the young aspirants of science. I hope that such a prestigious gathering will fuel in research temperament and trigger an attitude to do cutting edge research. Its also a good networking opportunity to grow in an individual capacity for all the stake holders.

I wish all the people all the luck in the successful conduct of this conference.

Prof. Dr. Ajit K. Gangawane
Dean & Deputy Registrar
Faculty of Pure and Applied Sciences
Parul University

Faculty of Applied Sciences
Parul Institute of Applied Sciences

P.O. Limda, Tal. Waghodia, Dist. Vadodara - 391760, Gujarat State, India.

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MESSAGE FROM CONVENOR

I am glad to share that Faculty of Applied Science, Parul University is organizing International Conference on "Recent advances in Biosciences and Bio engineering" (icra2b)." in collaboration with IFERP in Parul University, Waghodia, Vadodara, Gujarat-India during 8th to 10th March, 2018.

The theme of the conference is appropriate as it addresses the present status and future challenges in research areas of Biosciences and Bioengineering which would ultimately help the researchers to enrich their knowledge for their research and findings.

It is also praise worthy to know that this conference will give an opportunity to young researchers to make presentation about their innovative ideas and they would learn from experiences of renowned speakers in the field of Applied Sciences.

I hope the scientific presentations, discussions and other activities that are going to be held during the conference will definitely leave new milestones.

I wish this event a grand success.

Dr. Ritesh Vaidya

Convenor, ICRA2B

Principal, Parul Institute of Applied Sciences

Faculty of Applied Sciences
Parul Institute of Applied Sciences

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From The Desk Of Organizing Secretary

On behalf of the college of Parul Institute of Applied Sciences (PIAS), Parul University, Limda, Waghodia, Vadodara, I take this opportunity to welcome all the delegates to the three day International Conference with the theme **“The International conference on recent Advances in Biosciences and Bioengineering (ICRABB)”** being organised by us. This is the first in the series of International Level Conference being organised by this college. Over the years, these events have been attracting good participation from the academicians, researchers and students of Bioscience & Bio Engineering, Biomedicine, Genetic Engineering, Major branches of Biology, a branch of Applied Science from all over India & abroad.

We have planned the conference to cover current and important topics related to the conference theme and have been able to bring together renowned resource persons (invited speakers) from Universities, Industries, and Research Organisations. I am sure these invited experts will provide new insights to the attending participants who will further expand their domain knowledge and skills.

My colleagues at PIAS have not spared any effort in planning and putting together this event. I am sure all of you will find this sessions interesting and useful. I would also encourage you to use this opportunity for productive interactions with fellow delegates and resource persons.

With best wishes

Dr. Inampudi Sailaja
Organizing Secretary,
ICRABB
Parul University.

Faculty of Applied Sciences
Parul Institute of Applied Sciences

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*International conference on Recent
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(ICRABB-2018)*



Keynote Speakers



Professor Asis Datta

Distinguished Emeritus Scientist, Formerly:
Founder Director and Professor of Eminence, National Institute of Plant Genome Research and Vice Chancellor, Jawaharlal Nehru University, New Delhi) National Institute of Plant Genome Research (NIPGR)
Aruna Asaf Ali Marg, JNU Campus, New Delhi- 110067

BIOGRAPHY

Prof. Asis Datta (Ph.D., D.Sc., FNA, FASc., FNASc, FTWAS) is the Professor of Distinguished Scientist at National Institute of Plant Genome Research, New Delhi, India. He has been Vice-Chancellor of Jawaharlal Nehru University (JNU), Professor of Eminence and Founder Director of National Institute of Plant Genome Research (2002-2008). Professor Asis Datta has done pioneering work in the field of molecular biology. His individual and group achievements in the field of molecular biology and genetic engineering have been spectacular and have secured for him a unique position in several areas of frontier research. Professor Datta is known for his work on the pathogenic yeast, *Candida albicans* as a model system, which opened up the possibility of designing a therapy to combat candidiasis. In addition, the scientific/research contributions have been vital in areas of food/nutritional security and Use of genetically modified food. His group is known for pioneering contributions in molecular biology and identification and manipulation of novel genes leading to the production of transgenics of high societal value. Professor Asis Datta has researched and taught at many internationally respected institutions. He has been making contributions in basic and applied Biochemistry and Molecular Biology for more than three decades with several publications in international journals and with Indian and US patents. In fact, in India first time genes were patented in US by his group. Professor Datta and his team linked New Biology with agriculture, medicine, science, industry and society to make a global partner in biotechnology. His relentless effort throughout has established a vibrant school of research on “structure –function-application” of eukaryotic genes, which led to the establishment of the National Institute Plant Genome Research, India’s first and only one research centre of its kind.

Career

Government of India Fellow Bose Institute, Calcutta, (1964-1968)
Research Associate, Public Health Research Institute New York, USA (1968-1971)
Assistant Virologist, University of California Los Angeles, USA (1971-1973)
Visiting Scientist, Roche Institute of Molecular Biology, NY USA (1976-1977, 1980- 1981)
Associate Professor, School of Life Sciences, JNU (1975-1978)
Professor, School of Life Sciences, JNU (1978 – 2008)
Dean & Professor, School of Life Sciences, JNU (1983-1985)
Rector & Professor, JNU (1993-1996)
Vice-Chancellor (1996-2002) & Chairman, National Institute of Plant Genome Research, (1998-2002)
Founder Director, National Institute of Plant Genome Research (June 2002- 2008)
Professor of Eminence, National Institute of Plant Genome Research (2008 – February 28, 2013)
Distinguished Scientist, National Institute of Plant Genome Research (March 1, 2013 –till date)

(ASIS DATTA)



HEMRAZ PALAWAN

Chartered Biologist (UK), Certified Andrologist (Canada) and Certified Medical Laboratory Professional (Canada).

BIOGRAPHY

Riyadh, Kingdom of Saudi Arabia (and previously in Canada). I am involved in various aspects of assisted reproductive techniques, assisting infertile couples to conceive. Associated duties encompass teaching, ensuring quality assurance and safety, updating policies and protocols as per latest research and developments in the field of ART. In addition, I work on projects innovating and improving patient care.

I have been a Medical Lecturer at SSR Medical College, University of Mauritius teaching medical and dental students.

Forensic Scientist in the Prime Minister's Office of Mauritius, was another responsible position which I held, working in close relation with the law enforcement authorities and judiciary of the country, resolving various criminal issues and public safety concerns.

Education and Training

1. Master of Science (Medical) - Clinical Biochemistry 2002
(University of Pune, India) accredited as equivalent, ICAS, Canada
 2. Bachelor of Science-Zoology 1998
(University of Pune, India) accredited as equivalent, ICAS, Canada
 3. Medical Laboratory Diploma (Hons) 2008
(Everest College) - Canada
 4. Analytical Chemistry (Clinical Instrumentation) 2012
(SAIT Polytechnic)-Canada
 5. Specialist Training-Human Reproduction 2018
(University of Athens, Greece) thics Courses
-
1. Law and Medical Ethics 2016
(Edinburgh Law School)

2. Philosophy and Critical Thinking 2016
(The University of Queensland)
3. Ethics in Life Sciences and Healthcare 2017
(Kyoto University)
4. Introduction to Bioethics 2017
(Georgetown University)

Certification

Certified Andrologist, Canadian Fertility and Andrology Society, Canada

Chartered Biologist, Royal Society of Biology, UK

Nationally Certified Medical Laboratory Professional, Canadian Society for Medical Laboratory Science, Canada

Professional Affiliations

Canadian Society of Medical Laboratory Science - Canada

Royal Society of Biology – UK

Canadian Fertility and Andrology Society- Canada

Association of Biomedical Andrologists – UK

American Association of Bioanalysts - USA

British Andrology Society - UK

Publication/Presentation

Mitochondrial Transfer and Invitro-fertilization: Editorial

International Journal of Education and Research in Health Sciences,

Persistent Mullerian Duct Syndrome Type II: A Case Report and Fertility Dilemma.

Poster Presentation, Assisted Reproduction Conference, KMC, Mangalore, India, 2016

Successful reversal of necrozoospermia with course of antibiotic.

South Indian Journal of Biological Sciences 2016, 2(2); 302-305)

Study of LDH Isoenzyme subunit in the differential diagnosis of cerebrovascular disease and brain tumour.

Pharmacie Globale (IJCP) 2012, 3 (04)

Study of lipid peroxidation and serum ascorbic acid levels as indices of oxidative stress in various lung disorders.

International Journal of Bioassays, 2012, 01 (07), 1–3

Extensively drug resistant tuberculosis (XDR-TB): A potential threat

Journal of Basic and Clinical Pharmacy, 2011

HEMRAZ PALAWAN



Dr. Ramesh Babu Boga

President and Managing Director

BogaR Laboratories LLC, Suwanee (GA), USA

BogaR Laboratories, Peddapuram (A.P.), INDIA

MESSAGE

It is an excellent pride and platform to organize the “International Conference on Recent Advances in Bio-Science and Bio-Engineering (ICRA2B-18)” held at Parul University, Parul Institute of Applied Sciences, Vadodara (Gujarat, India) with Institute for Engineering and Research Publication (IFERP) on March 8th -10th 2018, and I am very delighted to learn that several keynote speakers including me covering various topics in the conference. I am delivering an exciting topic of “Drug Discovery based on Chemical and Bio-molecular Approaches”, and hope India leads in new drug discovery and biotechnology innovations in 21st century. This conference will provide an opportunity to interact with various experts and learn frontier technologies in Bio-Science and Bio-Engineering. Further, the conference sets themes of science and engineering in bio-based industries where the science and Business is interwoven and needed together. I congratulate the organizing committee for bringing the conference together with excellent program and best wishes to all participants from India and across the globe.

BIOGRAPHY

Dr. Ramesh Babu Boga is the President and Managing Director of BogaR Laboratories in USA and India, and he is an Adjunct Professor in VIT University, Vellore (Tamil Nadu) and Shri Vishnu College of Pharmacy, Bhimavaram (Andhra Pradesh). In that past, he was adjunct faculty in Department of Pharmacology at Emory University School of Medicine, Atlanta (USA). Dr. Boga received his Ph.D., (1990) from Indian Institute of Technology (IIT-Madras), Chennai (India) and had his pre-doctoral and postdoctoral experience at Kyoto University (Japan) and University of Michigan Medical School (Ann Arbor, USA). He was appointed as Research Assistant Professor in Department of Biochemistry at Medical college of Wisconsin (Milwaukee, USA), and later he took several industry positions in pharma and diagnostic companies before starting his own company, BogaR Laboratories in 2007.

Dr. Boga is a diversified scientist and entrepreneur, and his contributions are significant in organic chemistry, biochemistry, medicinal chemistry, clinical chemistry, and food chemistry. He has published 22 research articles, and obtained over 23 US patents and filed 6 Indian patents. His research contributions are significant in developing Nitric Oxide Synthase (NOS) inhibitors, selective neuronal NOS inhibitor of Vinyl-L-NIO, and also other inhibitors for kinases, food mycotoxins, and TB. In the area of sensors and diagnostics, he has contributed several patented technologies for hormonal and bone-resorption biomarkers, bacterial vaginosis, H. Pylori infection, and ovulation. He is the member of American Chemical Society (ACS) and American Society for Biochemistry and Molecular Biology (ASBMB). His current focuses are promotion of science and its importance to younger generation in India by visiting various universities/institutions and also involving more of the industry-academic collaborations.

(Dr. Rameshbabu Boga)



Dr. Latika Bhatia

Assistant Professor,
Department of Microbiology & Bioinformatics,
Bilaspur University, Bilaspur

MESSAGE

I am delighted to know that the IFERP-Institute for Engineering Research and Publication along with Parul University is organizing “International Conference on Recent Advances in Bio-Science and Bio-Engineering (ICRA2B -18)” which is about to be held at Parul University, Parul Institute of Applied Science, Vadodara, Gujarat on 08th-10th March '18.

The subject of this conference is very timely in view of the increasing demand of new challenges in the area of Life Sciences and Bio-Engineering. Several diversified areas for rapid industrialization and for the continuing need of economic and reliable solutions have happened in the last few years. Under this pace, conference is an initiative to involve all interdisciplinary and midterm scientists to get updated with new approaches in Life Sciences and Bio-Engineering. I am sure that in the present conference such challenges can be conserved. This is a premier international level event that provides a platform for students, faculties, professional, scientists to exchange their views through presentations and discussions. It is expected the delegates of the conference will share their conceptual ideas in the conference and increase the core value of the conference. I am sure that during this programme new areas of research shall be explored for its diversified applications.

I heartily extend my best wishes to the members of the organizing committee who have contributed for the conference and congratulate the convener for his relentless efforts in making this dream happen. I also congratulate each member who have been the part of organization of this International Conference on Recent Advances in Bio-Science and Bio-Engineerings”, and convey my best wishes to all the academicians, scientists, delegates and participants for the success of academic discussions and deliberations during this event. I congratulate the team for their organization and wish them all the best in their venture. I entirely urge all stakeholders to take full advantage of this opportunity, and thus, make this conference a spectacular success.

BIOGRAPHY

Dr. Latika Bhatia is an Assistant Professor in Department Of Microbiology and Bioinformatics in Bilaspur University, Bilaspur, CG, India. She is responsible for academic and administrative responsibilities being member of various committees like academic council, board of studies, co-ordinator of examination and various other. She has 16 years of teaching experience working in University, teaching graduates and post graduates of Microbiology and Biotechnology. She is CSIR/UGC NET qualified and did her PhD from ITM University, Gwalior, on Biofuels. She has published 25 articles in peer-reviewed journals of National and International repute, 05 book chapters and 03 monographs. Her primary research interest is to develop the sustainable process for bioconversion of lignocellulosics into renewable energy and biochemicals. Proactive research lead with an entrepreneurial mind-set, she brings hands-on strategic experience in research projects and start-up of piloting to full commercial scale operations. She has also convened and organized five National level conferences and workshops sponsored by various funding agencies of national repute like Department of Biotechnology, Department of Science and Technology and Indian Council of Medical research. She is a recipient of Indian Academy of Sciences - Bangalore, Indian National Science Academy - New Delhi, The National Academy of Sciences - Allahabad (IASc-INSA-NASI) Summer Research Fellowship which she availed in Indian Institute of Science Education & Research

(I.I.S.E.R), Pune. She has awards and honors in her credit. She has been invited to deliver a technical talk in All India Institute of Medical Sciences (AIIMS, New Delhi) and in many national and international conferences. She has attended and presented papers in more than 30 conferences, workshops of national and international repute in India. She has successfully completed many consultancy and research projects. She is the Life member of Association of Microbiologist Of India (AMI) and Indian Science Congress Association. She is Editorial Board Member & reviewer in few journals.

(LATIKA BHATIA)

ICRABB-18

International conference on Recent Advances in Biosciences and Bioengineering

Vadodara, Gujarat, 08th – 10th March 2018

Organizing Committee

Chief Patrons

Dr. Devanshu J. Patel, President, Parul University.

Patron

Dr. Parul Patel,

Member, Governing Body & Chairperson Admission Committee

Dr. Geetika Madan Patel

Member, Governing Body & Medical Director Parul Sevashram Hospital

Dr. Ketan Kotecha

Provost, Parul University

Organising Chairperson

Dr. Ajit Gangawane,

Dean & Deputy Registrar Parul Institute of
Applied Sciences Parul University

Convener & Conference Chair

Dr. Ritesh Vaidya

Principal, Parul Institute of Applied Sciences

Parul University

Co- Convener & Organizing Secretary

Dr. Inampudi Sailaja

Parul University

Organizing Members:

- ◆ *Bhumi Nath Tripathi*, Department of Biotechnology Indira Gandhi National Tribal University Madhya Pradesh
- ◆ *Dr. Tank S. K (professor & Head)*, Department of Biosciences Veer Narmad South Gujarat University Surat.
- ◆ *Dr. (Mrs.) Anupama P. Pathak*, Faculty of Science Maharaja Ganga Singh University Rajasthan.
- ◆ *Dr. Anil Kumar Chhangani*, Faculty of Science Maharaja Ganga Singh University Rajasthan.
- ◆ *Dr. Ashish Wadhvani*, Department of Pharmaceutical Biotechnology JSS College of Pharmacy Ooty.
- ◆ *Dr. Kamble Laxmikant Haribhau*, Biochemistry Swami Ramanand Teerth Marathwada University Nanded.
- ◆ *Dr. Lipika Patnaik*, Department of Zoology Ravenshaw University Odisha.
- ◆ *Dr. R. S. Sharma*, Div. of Reproductive Biology, Maternal and Child Health Indian Council of Medical Research New Delhi.
- ◆ *Dr. Seema Rai*, Department of Zoology Guru Ghasidas Vishwavidyalaya Bilaspur.
- ◆ *Dr. Biswajit Rath*, Dept. of Biotechnology North Orissa University Orissa.
- ◆ *Prof. (Dr.) K. R. DESAI*, Department of Chemistry UKATARSADIA University Gujarat.
- ◆ *Professor Ashok D B Vaidya*, Clinical Pharmacology BSES Hospital & Global Research Centre Mumbai.
- ◆ *Professor Asis Datta*, Molecular biology Jawaharlal Nehru University New Delhi.
- ◆ *T. V. Ramana Rao*, Department of Biosciences Sardar Patel University Gujarat.
- ◆ *Dr. Anurag Srivastava*, Nano Material IITM.
- ◆ *Dr. Bhushan L.* Microbial Biotechnology North Maharashtra University Jalgaon.
- ◆ *Dr. Prafulla Kumar Mohanty*, Department of Zoology Utkal University Odisha.
- ◆ *Dr. Krishnamurthy Bhat*, Department of Pharmaceutical Quality Assurance Manipal College of Pharmaceutical Sciences.
- ◆ *Dr. Srinivasan Tantravahi*, Dept. of Botany Indira Gandhi National Tribal University Madhyapradesh.
- ◆ *Prof. Shalini Rajkumar*, specialisation- Molecular Microbial Physiology Institute of Science, Nirma University Gujarat

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08th – 10th March 2018**

ABSTRACTS

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Psychological Burden Faced by Vitiligo Patients: a Comparative Study in Kerala and Punjab

Ameetha G., Post Graduate, Molecular Medicine

Dr. Harish Chander., Assistant Professor, Centre for Human Genetics and Molecular Medicine, Central University of Punjab

Abstract:--

Background and Objective: Vitiligo is a common chronic skin disease having unknown aetiology, which causes a disfigurement and variable amount of skin and hair depigmentation and may affect a patient's quality of life. It affects about 2-5% of Indian population and a massive 50 million people worldwide. To assess the psychological burden and epidemiologic profile of various age groups of patients affected by vitiligo in the southernmost district of the coastal state of Kerala and southern part of Punjab.

Methods: All were investigated in a door- to- door survey. Vitiligo patients were marked in the questionnaire and they were subjected to complete the well-prepared questionnaire. The questionnaire consisted of two sections, including psychological burden and their epidemiologic profile of various age groups. The questionnaire assigned contained questions about vitiligo characteristics such as the body surface area affected, skin tone, affected by genital vitiligo or not, marriage life and their sexual relationship, stigmatised conditions facing, whether or not affected areas were covered by dresses.

Results: The ratio of males and females were comparable. 40% of males and 60 % of females were affected by vitiligo in Kerala but in Punjab males were more affected than females i.e. 60% and 40% respectively. In Kerala 92% of vitiligo patients were generalised in cases and 80% in Punjab. Focal vitiligo was rarely seen and more affected in males than females in both Kerala and Punjab. The present study revealed that in Kerala and Punjab 25% of vitiligo patients were reported within the age group of 51-60 years and 20% within the age group of 21-30 years. More than 25% patients in Kerala and Punjab were fully affected with the vitiligo and the quality of life was impaired more in those patients and to a greater extent in women is more seen. About 76% of patients admitted of feeling self-conscious about their skin in Kerala whereas in Punjab 24% were affected. Only 36% of the total vitiligo patients considered that their treatment were effective.

Conclusion: Vitiligo patients show significant distress which are related to certain types of social encounters and emotional disturbances. It may result in the poor quality of life

Keywords:--

Clinical information, questionnaire, epidemiologic profile, psychological stress, vitiligo.

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Role of Probiotics in Amelioration of Genotoxic Effects Caused by Anticancer drugs

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Mitesh Dwivedi., Campus, Gopal Vidyanagar, Bardoli-Mahuva Road, Tarsadi-394350, Bardoli, Dist. Surat, Gujarat, India.

Abstract:--

A genotoxic compound is a chemical or agent that can cause DNA or chromosomal damage. Such damage in a germ cell has the potential to cause a heritable altered trait, whereas DNA damage in a somatic cell may result in a somatic mutation, which may lead to malignant transformation (cancer). Probiotics is defined as; live microorganisms which when administered in adequate amounts confer a health benefit on the host. Most of the probiotic products currently available contain lactic acid bacteria (LAB). Probiotics could be responsible for reduction of genotoxicity caused by compounds such as, nitroarenes, nitrosamines, aflatoxins, heterocyclic aromatic amines etc. Cyclophosphamide (CP) is an alkylating agent that has an effective anticancer activity and almost all type of cancers are treated with CP. Unfortunately, CP has side effects and found to be as class III genotoxic compound. CP and its metabolites can bind DNA, causing damage that may result in chromosome breaks, micronucleus formation and cell death. The present study will review the previous reports on the effects of different probiotics on genotoxicity caused by anticancer drugs such as CP. In addition, the study will also explain the probiotic mechanisms to confer protection against cancer, reducing mutagenicity, diminishing the genotoxicity of carcinogens by mitigating xenobiotic metabolism, regulating apoptosis and suppressing tumor proliferation.

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Association between Serum Ferritin Levels and Risk of the Metabolic Syndrome in Rural Area of Waghodia, District Vadodara

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DR. Inampudi. Sailaja., .Assistant professor, Parul institute of applied science, Vadodara, Gujarat

Abstract:--

Ferritin is one of the key proteins regulating iron homeostasis and is a widely available clinical biomarker of iron status. Elevated Serum Ferritin (SF) levels have been reported to be associated with several metabolic Disorders (metS). Individual with highest SF were more likely to consume high amount of animal protein, betel nuts and lower amount of carbohydrates, compared with individual with lowest amount of SF. In conclusion, results will highlight the crucial role of serum Ferritin level in health of people in Vadodara.

Keywords:--

Serum Ferritin (SF), metabolic Disorders (metS), iron homeostasis, biomarker.

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Screening of Biological and Physico-Chemical Parameters of Ground Water around Vadodara City

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Abstract:--

Contaminated groundwater is common problem in drinking water systems. Water system are required safe and purified for drinking water coliform bacteria are organisms commonly found in water, soil and plants. Due to poorly constructed as cracked wells coliform bacteria can enter in groundwater and it can contaminate drinking water sources. Generally coliform bacteria are not harmful to human being but can cause serious waterborne diseases like diarrhea, stomachache, vomiting, etc. The absence of coliform bacteria leads to the assumption that water is microbiologically safe to drink. In rural areas ground water supplied by hand pumps or by bore wells. Thus water get contaminated due to various sources. Initially Six water samples of ground water were collected from different areas of Vadodara. In these Six samples two samples were higher MPN number. The MPN test may be used for screening method to detect coliform contamination. The primary water quality analysis for physico -chemical parameters indicate variation of samples. All samples pH values are varying between 6.28 to 8.71 which signifies the basic range of pH. The turbidity values of water sample were between 0.7 NTU to 2.4 NTU. Maximum turbidity was observed in sample no.6 in O.P.ROAD area assures more particulate matter in drinking water. Total dissolved solids concentration observed in between 112 mg/liter to 522 mg/liter. Here also sample no.6 shows higher concentration than the permissible limit of drinking water, 500mg/liter. Water sample analysis shows the concentration of methods. Such as Mn, pb, Zn, Cr, cd,f-, ,No3-,Cl-,so4-, were below the permissible limit but the water sample concentration of Fe and Cu were higher than the permissible limit. Therefore the primary indication was threatful in case of drinking water quality.

Keywords:--

Ground Water, MPN, Physico –Chemical Parameters, TDS, Turbidity, pH

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Exploration of economic biovalorization potential of rice husk for bioethanol production

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Abstract:--

Rice husk, which represent 20% dry weight of the harvested rice, can serve as a low cost abundant feedstock for production of fuel. Rice husk is a source of lignocellulosic biomass that may be utilized as raw material for ethanol manufacturing. Ethanol is a desirable fuel additive because it allows fuel to burn more cleanly and lowers greenhouse gas emissions. It is cost-effective to blend ethanol into gasoline in view of high crude oil prices in recent years. . It was observed that alkaline and acid pretreatment resulted in the weight loss of the rice husk, and maximum weight loss of 61% followed by 51.5% of substrate was found when it was separately pretreated with 10% and 8% of NaOH under microwave and steam explosion respectively. Maximum amount of total carbohydrate viz. 25.42 mg/ml and 22.31 mg/ml was liberated in hydrolysate of respective 10% HNO₃ and 6% NaOH pretreated substrate under steam explosion. Highest level of reducing sugar (i.e.0.23 mg/ml) was released from substrate when it was pretreated with 2% NaOH under microwave, followed by its pretreatment with 6% NaOH under steam explosion with the release of 0.157 mg/ml. FTIR spectroscopy was used as an analytical tool to qualitatively determine the chemical changes in the surface of steam explosion pretreated rice husk separately with 2% and 10% v/v each with HNO₃ and NaOH, to complement and understand microscopic investigations. Two interesting features can be seen. First that the carbonyl band at 1735 cm⁻¹, which has been ascribed to hemicelluloses is reduced for all pretreated rice husk. Second, lignin bands at approximately in 1510 cm⁻¹ (aromatic ring stretch) are strongly enhanced in 10% NaOH pretreated samples of rice husk compared with that of native one, where these peaks are reduced. The CI of native substrate is very high (0.94cm⁻¹) while that of 2% NaOH is 0.01, 10% NaOH is 1.02, 2% HNO₃ is -0.277, 10% HNO₃ is -0.34 cm⁻¹. This shows high difference. SEM technology was used to study the morphology of both raw rice husk and modified rice husk, in order to give a visualized insight. The organized structure commonly present in native lignocellulosic biomass was absent, signifying that the structure of the 2% HNO₃ treated rice husk was more amorphous. The overall or fibrillar structure of the individual fibres seems to show large structural changes such as the rupture of fibres and a visible increase of porosity, which are believed to be associated with thermal pretreatments. Holes or cracks were seen in the fibres after 10% HNO₃ pretreatments. We also found surprising results with native substrate that it could release 1.30 mg/ml and 1.22 mg/ml glucose (maximum) when respectively treated with cellulase produced by unknown micro-organisms B and C. We had taken *Trichoderma reesei* NCIM 1052 as a standard organism to compare the efficiency of cellulase production by fungi B and C. We found the fungi B has highest FPU of 0.98 mg/ml followed by FPU of *Trichoderma reesei* (0.92mg/ml) and fungi C (0.87mg/ml).

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Potential Probiotics from Human Breast Milk and In Vitro Assessment of Their Biosafety Aspects

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Abstract:--

Probiotics are live bacteria which when consumed in adequate amount confers health benefits. Human milk constitutes an interesting source for obtaining new and specific probiotics strains for neonates, aiming for a proper development of the gut microbiota and the immune development in infants. The aim of the study was to isolate and characterize potential probiotic strains from human breast milk and in vitro assessment of their biosafety aspects. The study isolated seven potential probiotic bacteria on the basis of different probiotic properties such as acid tolerance, bile tolerance, antimicrobial activity and antibiotic susceptibility. The probiotic properties of these isolates were also compared with respect to standard probiotic strain- *L. plantarum*. However, mere assessment of probiotic properties of such bacteria is not adequate to comply them as probiotics. Hence, these isolates were scrutinized for biosafety aspects such as antibiotic resistance, production of biogenic amines, mucin degradation, hemolytic activity, gelatinase production, bile salt deconjugation, etc. These isolates were found to be safe on the basis of the above said assessments for biosafety. The molecular identification of these isolates is being carried out. However, the biochemical characterization suggests that these isolates belong to genera: *Lactobacillus*, *Pediococcus* and *Leuconostoc*. The present study suggests that these probiotic bacteria may be useful and can be employed for human consumption after the in vivo assessment of biosafety aspects.

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Isolation and Characterization of Root Associated Bacteria from Curcuma Longa Plant.

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Abstract:--

Those microorganisms which grow in, on or around plant root and influence healthy plant growth and yield are known as plant growth promoting rhizobacteria (PGPR). These microorganisms can act and parasitize on other harmful condition or microorganisms populations by antagonistic behavior. Curcuma longa commonly known as turmeric is traditionally used as a spice in Indian food has a wide range of biological activities. Curcumin, the active ingredient of turmeric, is known for its antioxidant, anti-inflammatory, anti-fatigue, antiparasitic, antiallergic, anti-microbial, anti-mutagenic and anticancer properties. It exhibits wide therapeutic potential due to the multi targeting nature against variety of different cancers. Microbes are also associated with medicinal plant roots which have antimicrobial activity. This study involves isolation and characterizations of root associated bacteria with their applications in therapeutics and used of this potential novel isolate for potential PGPR activities. Rhizome root and soil samples were collected from mature, immature plants and their rhizosphere. After bacterial isolation, primary screening was done by observing inhibition against four different well known pathogens (E. coli, S. aureus, B. cereus, and P. aeruginosa). Secondary screening was done by agar well diffusion method and observed zone of inhibition.

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Standard Quantification of Gene Expression in Viral Infected Plant by Using Real Time PCR

Krupali. N. Damania Urbi Kundu., Bsc Biotechnology, Parul institute of applied science, Vadodara, Gujarat

Abstract:--

Real time PCR is currently considered as the gold standard method for detection of plant pathogen. Real time PCR aiming at quantifying the level of plant infection by viral pathogens are becoming more and important within microbiology. Real time PCR is frequently used in gene expression studies as it fits perfectly with its wide dynamic range, sensitivity, and ease of automation possibilities. This technique allows the monitoring of the reaction during the amplification process by using of a fluorescent signal that increases proportionally to number of amplicons generated and to the number of target present in the samples. Real time PCR is the reliable and high throughput quantification of target viral pathogens DNA in various environmental samples, including hosts tissues, soil, and air. Real time PCR has versatile practical application in diagnostic of plant disease. Disease in a plants cause major production and economic losses in agricultural industry worldwide. Monitoring of health and detection of diseases in plants is critical for sustainable agricultural. Recently 85% of viral disease till now have been diagnosed in viral infectious plants. Real time PCR. Generally Real time PCR technique increasing opportunities and a significant role in better understanding of the dynamic of plant pathogenic microbes and thereby allow better management of diseases.

Key words:--

Diagnostics, Real time PCR, viral pathogens, Quantification, fluorescent..

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Gut Microflora Modulation by Colonic Delivery of Drugs Offers Safe Reversal of Diabetic Characteristics

Dr. Sriram Seshadri, Institute of Science, Nirma University

Abstract:--

Enteric coated antibiotic delivery of microspheres can deliver the drug at the target site with the appropriate dose to enhance the maximum therapeutic efficacy and minimalistic toxicity, while formulations also enhance their bioavailability. Enteric coated antibiotics microspheres had shown higher efficiency in altering the microbial population of HSD as compared with crude antibiotics.

Cefdinir (gram negative specific) had exhibited interesting diabetic preventive properties in HSD induced diabetic rats. Cefdinir prevented the progression of insulin resistance through reverting the HSD mediated gut microflora dysbiosis. This leads to the activation of the Insulin receptor signalling (IRS) by decreasing the expression of the pro-inflammatory cytokines. It had further increased the amount of the major fermentative bacteria in the gut i.e Bifidobacteria and Clostridia, which had enhanced the amount of butyrate in the colon. Cefdinir had prevented downregulation of the SCFAs receptor expression. Downstream signaling pathways of the GPCRs induced the release of incretins, which had increased the insulin sensitivity. Colon targeted cefdinir administration have shown higher efficiency for the prevention of the HSD induced insulin resistance as compared to SI targeted drug delivery. Colonic microflora can be modulated using antibiotics, prebiotics and probiotics for the prevention of the diet induced metabolic disorders.

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Role of Heterogeneous Catalyst in Green Chemistry

Devaiya Ambrish jayantilal., St.Xavier's college

Desai Vishvkumar., St.Xavier's college

Arvindkumar., St.Xavier's college

Abstract:--

Nowadays catalysis plays a very important role in the new green chemical industry. Catalysis can reduce the environmental impact of processes and therefore can reduce the costs of these processes. Application of new catalysts and catalytic systems aim to achieve both environmental protection and economical benefits. It provides many compelling benefits, primarily related to the cost reduction of organic manufacture chemicals and secondly because it prevent the environmental pollution. The discovery and investigation of novel and efficient pathways for the conversion of biomass into fuel and chemicals are among the big challenges facing heterogeneous catalysis nowadays. However, not all experience gained in the transformation of hydrocarbon over the last 100 years can directly be transferred to biomass conversion.

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Isolation of Exopolysaccharide (EPS) Producing Bacteria and Study on Extracted EPSs' Antibacterial Activity

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Abstract:--

Exopolysaccharides (EPSs) are high molecular-weight polymers that are composed of sugar residues and can be secreted by microorganisms. EPSs are reported to possess unique physiological activities including anti-tumor, anti-microbial and anti-inflammatory. The antimicrobial activities of EPS could be used as a potential source for the development of antimicrobial drugs and may have various industrial, pharmaceutical and medical applications. The competing interest has developed among researchers to isolate such novel EPS from efficient bacteria. The present study was aimed to isolate efficient EPS producing bacteria from sugarcane field soil sample and to evaluate the antibacterial activity of the EPS. Total 9 EPS producing isolates were obtained out of which, KPEP3 and KPEP4 were found to be higher producers of EPS. The isolates were able to grow at different pH but EPS production was higher at pH 6. The maximum carbohydrate content was found in KPEP3 and the qualitative tests for carbohydrates in EPS suggested for the presence of different sugars such as arabinose, xylose, glucose, galactose and sucrose. The evaluation of antibacterial activity of EPS suggested that all 4 test microorganisms showed sensitivity against EPS but the sensitivity varied from one microorganism to another. The KPEP3 and KPEP4 EPSs were found to exert higher antibacterial activity on the diverse test organisms. The EPSs concentration of 7.5 mg/ml was found to be effective for antibacterial activity. The molecular identification of these isolates is being done; however, the biochemical characterization suggests that these isolates belong to genera: Bacillus and Pseudomonas. Further research is necessary to elucidate the composition of the EPSs, their medicinal and other useful properties.

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Isolation and Characterization of Root Associated Actinomycetes from *Enicostemma Littorale* Blume Plant

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Abstract:--

Enicostemma littorale Blume is a glabrous herb and it is traditionally used to treat inflammatory and painful condition like arthritis, back pain, diabetes mellitus and to regulate bowel functions. Actinomycetes are best known for their ability to produce antibiotics and are gram positive bacteria which comprise a group of branching unicellular microorganisms. This study deals with isolation of these bacteria from *E. littorale* Blume roots and is needed for the development of new antibiotics to overcome the problems associated with the existing antibiotics and used of this potential novel isolate for potential PGPR activity. The root and rhizosphere samples were collected from the *E. littorale* plant root and rhizosphere. Where root samples were collected from young and old plants separately while soil samples were collected from this plant roots rhizosphere. Isolation of actinomycetes was done by spread plate method using Glucose Yeast Extract (GYE) media. Preliminary screening was by observing zone of inhibition against four different pathogens (*E. coli*, *S. aureus*, *B. cereus* and *P. aeruginosa*). Secondary screening was done by agar well diffusion method against the said pathogens for inhibitory activity.

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Estimation of Chlorophyll From Aeromatic Medicinal Plants Used As Potent Therapeutitic Agents In Anaemic Patients

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Dr. Inampudi Sailaja., Assistant professor, Parul institute of applied science, Vadodara,Gujarat

Abstract:--

Chlorophyll is a green pigment, which is structurally similar to porphyrin pigments such as heme and it is produced through the same metabolic pathway. Chlorophyll benefits the body in a unique and distinctive ways. It helps to cleans harmful toxins from the body and it is also used to fight infection. Chlorophyll antiviral effects make it a strong skin protector. A recommended and regular intake of chlorophyll can keep the circulatory and digestive system much healthier. The present study contains, the chlorophyll was extracted from the different medicinal and aeromatic plants, and it is characterized by Uv-visible spectroscopy. These plant juices contain rich of chlorophyll (whose structure is similar to hemoglobin except the central moiety), amino acids, minerals (like iron), vitamins (like B12) and active enzymes are present. These juiceses used as therapeutic agents for treatment of various problems including anemia, thalassemia, etc.

Keywords:--

Chlorophyll, Medicinal plant, Aeromatic plant, Therapeutic use, UV-visible spectroscopy.

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Microbial Examination of Purified Water and Non-Sterile Pharmaceutical Products of Cadila Pharmaceutical, Dholka through Microbial Limit Test

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Abstract:--

This study is conducted to estimate the presence of microbial contaminants in samples of non-sterile pharmaceutical products and purified water. These pharmaceutical products and purified water can be contaminated with pathogens that may include fungi, bacteria, yeast or mold. These all are very harmful for human being, so it should be absent. This microbial contamination may initiate from the raw material, during production, storage and use. The most frequent reason for the contamination of pharmaceutical products includes microbial contamination of the water used in product development. Present study use to check microbial limit of 2 different types of non-sterile pharmaceutical products and purified water. These can be done by microbial limit test. For purified water, membrane filtration method is used for total microbial count test. For non-sterile pharmaceutical products plate count method is used for total microbial count test. Purified water sample and non-sterile pharmaceutical products both are tested for the presence or absence of the microorganisms such as E.coli, Salmonella, Staphylococcus aureus and Pseudomonas aeruginosa. For purified water and pharmaceutical products, we can interpret that the pathogens should be absent and the growth of the aerobic microbes should be within the limit as per USP. If not, then the product will be failed to export in market.

Keywords:—

Microbial limit test, Non-sterile pharmaceutical products, Purified water, Microbial contamination, Pathogen

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Exploration of cellulase production potential of fungi by solid state fermentation (SSF)

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Abstract:--

Solid state fermentation (SSF) for the production of cellulase is rapidly gaining interest as a cost effective technology for the production of enzyme. Cellulase production from fungi is advantageous as the enzyme production rate is higher compared to other microorganisms. The cellulase enzyme produced by fungus under SSF may be advantageous for different industrial purposes, namely: in respect to energy saving with improved quality of pulp and paper production. However, the high enzyme cost limits the industrial use of enzymes for producing soluble sugars, which makes economical enzyme production key to developing enzyme-based bio refinery from lignocellulosic biomass. Taking all the above aspects into the consideration, the aim of this work is to produce cellulase by fungus by solid state fermentation. After the filter paper assay, native and various pretreated substrates were individually treated by cellulase produced by all the organisms. Glucose was estimated at regular interval of 20 Hrs. It was found that when 2% NaOH pretreated substrate treated with cellulase from *Trichoderma reesei* and organism B, the maximum release of glucose was about 0.68 mg/ml and 1.09 mg/ml respectively, after 20 hrs, which was the maximum value of glucose released. It can be presumed that that the best incubation time for all these substrates is 60 hrs. We also found surprising results with native substrate that it could release 1.30 mg/ml and 1.22 mg/ml glucose (maximum) when respectively treated with cellulase produced by unknown micro-organisms B and C. We have taken *Trichoderma reesei* NCIM 1052 as an standard organism to compare the efficiency of cellulase production by fungi B and C. We found the fungi B has highest FPU of 0.98 mg/ml followed by FPU of *Trichoderma reesei* (0.92mg/ml) and fungi C (0.87mg/ml).

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Larvicidal Activities of Different Bacteria against Mosquitoes

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Abstract:--

The zoonotic diseases have been harassing human population since time immemorial and one of the oldest known carriers of diseases in animals and plants have been insects. Hence the insect is on the crossroads for the development of human society and economy. In recent years, the search for biopesticides have been on the rise. In present work, we are studying some of the known mosquito larvicidal bacteria with respect to a new member of the category. Larviciding is a general term for killing immature mosquitoes by applying agents, collectively called larvicides. Entomopathogenic bacteria, namely *Bacillus thuringiensis* (Bt), is well known for this activity, which produces kind of protein which is toxic to different species of mosquitoes. In this work we have studied different *Bacillus* sp. for their ability to function as larvicidal agents.

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Polyhydroxyalkanoates (Pha) Extraction From Biowaste

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Abstract:--

Contaminated environments have a large number of bacteria which can accumulate PHA as their energy reserves. Molasses, whey, crumbs hydrolysate and palm oil can be checked as inexpensive carbon sources. Molasses alone could supply the required nutrients for growth and PHA production. Biodegradable plastic or PHA (Polyhydroxyalkanoates) are linear polyesters synthesized by many wild type natural bacterial isolates. These polyester compound as an alternative to plastic as they are biodegradable, renewable, biocompatible and ecofriendly. Several different pathways for fermentative production of PHA have been evolved in nature each best suitable for them according to their natural habitat. The PHA producing bacteria are generally found at various location particularly contaminated sites have large diversity of them. Recent investigations underline the fact that PHA production from pure substrates can be considered as optimized to a higher degree. The overall production cost of biodegradable polymer (PHA) production depends greatly on the cost of the carbon source. Hence it is required to enhance economics of PHA production by substituting pure substrates by cheaper and inexpensive carbon sources. The production of PHA in wild type natural bacteria is based on agro industrial by products ranging from inexpensive, waste effluents to plant oils, fatty acid and simple carbohydrates. Agro industrial by product have been used as an alternative to reduce the production cost. Various bacterial strains, either wild type or engineered have been exploited with a wide spectrum of utilizable carbon sources. There are almost 250 organisms known to produce PHA but only a few species can produce PHA at a high concentration .The best PHA accumulating bacterial species should have several properties like the high growth rate, capable of utilizing cheap inexpensive carbon source and have high accumulation percentage. The present research work aims the isolation of wild type PHA producing bacterial strains from contaminated environments, quantitative estimation of PHA on glucose and agro industrial based inexpensive carbon source and the optimization of the highest producers considering selected growth parameter.

Keywords:-Contaminated environment, PHA, Bacterial energy reserves, Biowaste, Biodegradable plastic.

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Optimization of xylanase production from Microbacterium hatanonis (HAX-5) using agriculture residues by Solid state Fermentation

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Samir C. Parikh, Department of Microbiology, Smt.S.M.Panchal Science College, Talod.

Abstract:--

Various Agriculture residues were used in different combination for optimization of xylanase production. The objectives of the present study was optimized medium composition and culture conditions for xylanase production using cheaper sources. The use of agricultural residues as major carbon and other nutritive source is cheapest in compare to brich wood xylan or oat spelt xylan. The maximum xylanase production 10.28 U/mg was found under optimized condition.the effect of time,temperature, subastrate concentration, different substrate combination and inoculum size was studied to optimized all paramenters. Thus, study concluded that the Actinomycetes strain Microbacterium hatanonis(HAX-5) is potential for large scale xylanase production by solid state fermentation.

Keywords: —

Microbacterium hatanonis HAX-5, Solid state fermentation Agriculture residues,Xylanase

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Study of Biofilm Formation Among Clinical Escherichia coli Isolates

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Abstract:--

Introduction: Biofilm forming microorganisms are related to chronic and recurrent human infections as well as are highly resistant to antimicrobial agents. Various methods have been used in laboratory for the detection of biofilm production which includes visual assessment by electron microscopy and polymerase chain reaction, whereas quantitative method like Tissue Culture Plate (TCP) method and two qualitative methods such as Tube Method (TM) and Congo Red Agar (CRA) method are also used in routine laboratories.

Objectives: different qualitative methods for the detection of biofilms and to see its relation with antimicrobial resistance to detect the prevalence of biofilm formation in Escherichia coli (E.coli), to evaluate.

Materials and Method: The study was conducted at Department of Microbiology and MLT, Arts, Science and Commerce College, Kholwad, Surat during the period January 2017 to December 2017. Standard microbiological procedure was done to identify the isolates. E.coli clinical isolates were subjected to qualitative biofilm detection methods. Biofilm detection was tested by TM and CRA. Kirby-Bauer disc diffusion technique was performed to do antibiotic susceptibility test of biofilm producing bacteria according to CLSI guidelines.

Results and Conclusion: Biofilm productions among E.coli were more than 63%. We have also observed higher antibiotic resistance in biofilm producing E.coli than non-biofilm producers. We can conclude from our study that the CRA method can be recommended as a general screening method in laboratories for detecting biofilm forming bacteria. Biofilm production is associated with persistent infections and antibiotic therapy failure thereby posing a major challenge for the physicians along with economic relevance as well. Hence, such problems can be prevented by detection of biofilm producers and appropriate antibiotic doses modification.

Keywords: -

Escherichia coli (E.coli), Antimicrobial resistance, Congo red agar method (CRA), Test tube method(TM).

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Response of Single, Binary and Ternary Heavy Metal on Growth and Metabolism of Garden Cress Seedlings

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Abstract:--

Medicinal plants have an important economic value in terms of food, drugs, herbal industry. Soil is main source of metal. Copper is one of the essential elements while Cadmium and Mercury are phytotoxic in nature. Garden cress is an important medicinal plant. It is cultivated from the seeds. Therefore seed germination and seedling growth are essential element for this plant. Earthen pots were filled with sterilized silica sand and sand was contaminated with single, binary and ternary mixture of CuCl₂, CdCl₂ and HgCl₂ (200 and 600 ppm each). The pots in which heavy metal were not added were the control. Seeds were sown, necessary watering was done. On completion of 10 days control and treated seedlings were studied for elongation, fresh weight and dry weight. The seedlings were also analyzed for invertase activity, reducing sugar, non-reducing sugar, protease activity, and protein and total amino acid. Copper shows partially alleviated effects of heavy metal.

Keywords:--

Medicinal Plants, Phytotoxic, Metabolism.

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Antibacterial Activity of Phycocyanin Extracted from Spirulina

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Abstract:--

Spirulina is a blue-green microalga which is explored for various bio-pigments and bioactive compounds used to cure microbial infections. The Bio-pigment Crude-phycoerythrin (C-pe) extracted from spirulina platensis has several antimicrobial activities and antioxidant effect due to rich content of protein, polysaccharide, lipid, essential amino acid and fatty acid, dietary minerals and vitamins. Phycocyanin is protein bound pigment. Phycocyanin was found to markedly inhibit the growth of drug resistance bacteria, Escherichia coli, klebsiella pneumoniae, pseudomonas aeruginosa & staphylococcus aureus. The research aims to cultivate Spirulina under controlled conditions followed by extraction and partial purification of C-Phycocyanin pigment protein. The antibacterial activity of the partially purified C-Phycocyanin against different bacterial pathogens will be assessed.

Keywords:--

Spirulina, C-phycoerythrin, Antibacterial activity, zarrouk medium, Mass cultivation, Clinical isolates, Disc diffusion, Bacterial pathogen, Positive control

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Exploration of a Novel Biocontrol Agent *Stenotrophomonas Acidominiphilia Rsc6* Isolated From Coc671 Sugarcane Rhizospheric Soil

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Pritesh Patel., C.G. Bhakata Institute of Biotechnology, Uka Tarsadia University, Bardoli, Gujarat, India

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Abstract:--

Our present study deals with the investigations of *Stenotrophomonas acidominiphilia* RSC6 isolated from CoC671 sugarcane rhizosphere soil to evaluate its antifungal activity against red rot pathogen *Colletotrichum falcatum* Went. Red rot of sugarcane caused by the fungus *Colletotrichum falcatum* Went is the most destructive and severe disease worldwide. *S. acidominiphilia* RSC6 identification was done by 16SrRNA gene sequencing and deposited in NCBI to obtain accession number. *S. acidominiphilia* has shown considerable inhibitions of *C. falcatum* in dual culture assay. Along with antifungal activity, strain has also shown plant growth promoting activity like IAA production, Siderophore production and Zinc Solubilization. Although *S. acidominiphilia* RSC6 showed biological control potential against *C. falcatum* and plant PGP activity in this study represents the important step towards the implementation of biocontrol at the practical level, further studies and information regarding antagonistic mechanisms of action, interaction, requirement and conditions for biological control should check in field condition.

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Fabrication and Characterization of Hair Keratin-Chitosan Based Porous Scaffolds for Biomedical Application

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Abstract:--

In the present research work, hair keratin-chitosan based porous scaffolds was fabricated via freeze extraction methods. Keratin extracted from the human hair were blended with chitosan in different ratio using different cross-linker (Glyoxal, 1-ethyl-3-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride (EDC.HCL) and diethylene glycol). Physico-chemical properties of the fabricated keratin-chitosan scaffolds with and without cross-linkers was studied. Porosity of scaffolds was confirmed by electron scanning microscopy (SEM). Water solubility were range from 44 -7.5 % and the least solubility showed by chitosan-keratin (1:1) scaffolds (7.5 %). Degradation study confirmed that the fabricate scaffolds were stable in aqueous medium without any significant weight loss. FTIR analysis were confirmed the amine/carboxyl groups of chitosan reacted with amine group of keratin in the presence of cross-linkers. Further, thermal analysis revealed that the cross-linked scaffold were more thermo stable than non-cross-linked scaffolds. It was observed that the glyoxal and EDC were good cross-linker for chitosan-keratin blend as compared to diethylene glycol, hence, would be suitable biomaterial for soft tissue engineering applications. Further, its biocompatibility, cell growth proliferation and differentiation study are under progress.

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Phytochemical and Antimicrobial Studies of Certain Aromatic Plants against Multidrug Resistant Human Pathogens

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Mrs. Sailaja Inampudi., Assistant professor, Parul institute of applied science, Vadodara, Gujarat

Abstract:--

The antimicrobial and phytochemical analysis of plant extracts like coriander, menthol(pudina) and eucalyptus will be studied. There are many researches done on the essential oils of the above aromatic plants but less work is conducted on the fresh juices of the above plants. My study will be based on the effects of the phytochemical extracts and antimicrobial analysis on the multi drug resistant human pathogens like Acinetobacter, Pseudomonas, Klebsiella, E. coli, Proteus and Enterococcus. The Soxhlet process(hot extraction method) will be preferred and an agar diffusion method will be used for the screening of Minimum Inhibition concentration.

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Hemoglobin Estimation by Invasive and Non- Invasive Methods: A Review

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Abstract:--

Hemoglobin is an imperative element in the human blood, the deficiency of which may lead to Anemia. Thus identifying the level of Hemoglobin in patients' blood is a vital investigation. In order to evade such a condition, there is a requirement for a regular blood test to detect the presence of Anemia in the blood. There are multiple techniques with different applications for estimation of hemoglobin; however, it is broadly categorized into two types namely: Invasive method and Non-Invasive method. In an Invasive method, there is a requisite of patients' blood sample whereas in Non- invasive technique there is no need to draw blood from the patients'. This review article focuses on an assortment of methods for estimating Hemoglobin. Direct cyanmethemoglobin method has been the gold standard for Hemoglobin estimation but other methods like Color scale, Sahli's technique; Tallquest, Hemocue, etc. are also available. The study, in addition, explores the frontier involving latest methods such as image processing techniques, pulse oximetry and occlusion spectroscopy which embraces the enhanced scope for the detection of Hemoglobin.

Key Words: -

Hemoglobin, Anemia, Invasive and Non- Invasive methods, Image Processing Techniques

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Genetic Association Study of ACE I/D Polymorphism with Susceptibility to Hyperthyroidism in South Gujarat Population

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Abstract:--

Hyperthyroidism is a clinical condition that occurs due to excessive production of thyroid hormone by the thyroid gland that can cause Grave's Disease, Multinodular Goitre, Toxic Adenoma. Angiotensin converting enzyme (ACE) has been found to be associated with several autoimmune disorders. ACE, a key enzyme in the renin-angiotensin (RAS) system, plays an important role in the physiology of the vasculature, blood pressure and inflammation. The insertion-deletion (I/D) polymorphism of the ACE gene accounts for the variability of serum ACE activity, D/D genotype having the highest and I/I genotype having the lowest ACE activity. It has also been hypothesized that the up-regulation of the RAS system in hyperthyroidism leads to increase in serum and tissue angiotensin II level which in turn can activate pro-inflammatory cytokines. However, there is no study till date carried out for ACE I/D polymorphism and hyperthyroidism in Indian population. The aim of the current study was to explore ACE intron 16 I/D polymorphism (AF118569) in patients with hyperthyroidism and healthy controls to evaluate its genetic association with hyperthyroidism susceptibility. Polymerase chain reaction (PCR) method was used for genotyping of the ACE I/D polymorphism in 50 patients and 50 healthy age-matched controls from South Gujarat population. The method identified three different genotypes for the polymorphism: homozygous I/I, heterozygous I/D and homozygous D/D genotypes. The analysis of the genotyping is being carried out and results will be shown during presentation. By involving larger sample size the study may lead to identification of hyperthyroid genetic marker which may be helpful in diagnosis and prevention of the disease in susceptible individuals.

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Paragon for a Common Person Concerning Cosmetic and Clinical Therapies

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Anupama Shrivastav., Assistant professor, Parul institute of applied science, Vadodara, Gujarat

Abstract:--

In today's extravagant time cosmetic and clinical surgeries prove to be unmanageable for a common person to which an ordinary simple drug such as Botox is achieving validity. Botox is one of the eight types of a drug name Botulinum toxin (BTX). It is extracted or its source is a bacteria name Clostridium botulinum and its related species. It is presently being used for around 20 medical conditions and is also permitted for various therapeutics usage. This article will provide you an insight of its usage ranging from cosmetic to clinical trials which involves Botox injections for prevention of face wrinkles to curing medical conditions such as headache, strabismus (crossed eyes) and drooling. It will also notify you regarding several ongoing researches going on for its value in psychological area such as to cure depression and its impact as off-label prescribed drug. Its outcome like results and side-effects of substituting it as cosmetic and therapeutic agent will also be discuss.

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Studies on the Antibacterial Potential of Selected Herbal Products against clinically isolated bacteria

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A. Sankaranarayanan., C.G. Bhakta Institute of Biotechnology Uka Tarsadia University, Gopal Vidhya Nagar – 394 350. Bardoli Taluka. Surat District. Gujarat state. INDIA

Abstract:--

The use of herbal medicine has always been part of human culture, as some plants possess important therapeutic properties, which can be used to cure human and other animal diseases. It has a great demand for primary health care because plant based medicines, health products, pharmaceuticals, food supplement, cosmetics, etc. As per report, 80% of the world population in developing countries primarily depended on herbal medicines for the health care needs. In the present study various herbal products like Amla churna, Triphala churna, Satawari churna and Aswagandha churna were obtained from local siddha products were tested against clinically isolated bacteria. The multi drug resistant bacteria were ensured by MAR index. Among the tested siddha products, triphala churna and Amla churna are effective against Staphylococcus, Pseudomonas sp, Salmonella sp and Salmonella sp and satavri and aswagandha churna showed less inhibitory against the clinical pathogens.

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Removal of Bacterial Pathogens from Artificially Contaminated Water Sample by Dielectrophoresis

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Abstract:--

Water borne pathogens have been the primary causative factor for high mortality and morbidity. The existing water treatment filter systems which utilise pores to trap the contaminant particles have the draw back of clogging and choking of particles which required frequent maintenance and leads to increased cost of operation. Dielectrophoresis (DEP) provides an alternative to conventional methods because of its ability to concentrate and separate microorganisms in a selective, rapid and reversible manner. The aim of the study was to investigate the removal of water borne pathogens (E. coli and S. aureus) using dielectrophoresis (DEP) filter which was energized by varying the frequency of the applied potential with different voltage levels. In this study we tested dielectrophoretic phenomena on removal of water borne pathogen using a DEP chip. Dielectrophoretic experiments was conducted in artificially contaminated water sample with Escherichia coli. The impact of signal frequency and voltages on dielectrophoresis based water treatment system has analysed statistically. The entrapment of bacterial pathogens are vary according to the different frequencies of voltages applied in different time interval at DEP.

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Pesticide Degrading Bacteria from a Gut Flora of Freshwater Fish of a South Gujarat River

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A. Sankaranarayanan., C.G. Bhakta Institute of Biotechnology Uka Tarsadia University, Gopal Vidhya Nagar – 394 350. Bardoli Taluka. Surat District. Gujarat state. INDIA

Abstract:--

Pesticide is used extensively in agriculture and cause severe public health and cause severe environmental problems. Hence, it has been banned in many countries because of its showed higher mammalian toxicity too. In the present study, bacteria from the gut flora of the fish was isolated, then the predominant isolate was checked against different concentration of pesticides, different temperature and pH. Among the tested parameters, the maximum degradation was observed at 7 µl concentration, 35°C and pH 7 showed maximum degradation at the specified time period. The findings of the present study gave a platform to analyze the enzymes involved in the degradation and provided information about the physicochemical parameters in the degradation of pesticide in a freshwater aquatic environment.

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Genetic Association Study of TSHR T/C SNP with Susceptibility to Hyperthyroidism in South Gujarat Population

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Abstract:--

Hyperthyroidism is a clinical condition where thyroid hormones are in excess in the circulation due to increased synthesis of hormone from a hyper active thyroid gland. The thyroid gland secretion and growth are regulated by the action of TSH, which exerts its role through binding to TSH receptor (TSHR). The disease is mediated by autoantibodies that bind to TSH receptor and stimulate thyroid hormone production. Polymorphisms in one or more genes involved in thyroid hormone metabolism may have subtle effects on thyroid hormone levels and thyroid hormone bioactivity throughout life. Earlier, an association between TSHR gene T/C SNP which is located in intron 1, and higher incidence of Graves' disease was found by two studies conducted by Dechairo et al. (2005) and Yin et al. (2008); however, there is no study reported for association of TSHR T/C polymorphism and hyperthyroidism in Indian population. The aim of the current study was to explore TSHR intron 1 T/C polymorphism (rs2268458) in patients with hyperthyroidism and healthy controls to evaluate its genetic association with hyperthyroidism susceptibility. Polymerase chain reaction - restriction fragment length polymorphism (PCR-RFLP) technique was used for genotyping of the TSHR T/C SNP in 50 patients and 50 healthy age-matched controls from South Gujarat population. The technique identified three different genotypes for the SNP: homozygous TT, heterozygous TC and homozygous CC genotypes. The analysis of the genotyping is being carried out and results will be shown during presentation. By involving larger sample size the study may lead to identification of hyperthyroid genetic marker which may be helpful in diagnosis and prevention of the disease in susceptible individuals.

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Bacterial Bio Cementation by *Bacillus pasteurii* to improve the Strength of Cement Mortar as well as Self-Healing Purpose.

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Christie Annieangel Oscar., M.Sc Microbiology, Uka Tarsadia University, Maliba campus, Bardoli Mahuva road, Dist: Surat.

Abstract:--

Bio concrete is process in which urolytic organisms used to construct cement mortar. It act as “healing agent” that become active when water gets in to cracks on its surface because of the presence of microorganisms. A reaction between the water and *Bacillus pasteurii*. bacteria in to a concrete mixture to give it self-healing properties under the right conditions & it is used to improve the mechanical strength of cement mortar. The aim of the present study was to analyse the self healing properties of bacteria used to make the bio concrete blocks used to construct buildings / homes to make more strength full. In the present study the different concentrations of fly ash was used to make concrete with *B. pasteurii*, then check its strength and self healing properties of Bio concrete. The results revealed, among the tested 10 % and 20 and 30 % fly ash contents, 10 % gave more strength. Regarding self healing, 2mm and 3mm cracks were made, *B. paseurii* healed both the cracks successfully. Based on the literature information, the earlier experiments conducted with 2mm cracks. But in the present study observed the healing of 3 mm cracks, a noteworthy information here.

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Evaluating The Anti-Cancer Properties of Ferula Asafoetida's Essential Oil

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Sanjay Joshi., National Foods, Waghodia GIDC, Vadodara

Abstract:--

Ferula asafoetida commonly known as “Hing” have shown promising therapeutic value due to the presence of various therapeutic phytoconstituents such as Terpenoids, Sulfide derivatives, Volatile Oil, Phenols, Minerals. The various pharmacological actions such as the antioxidant, antimicrobial, antifungal, anticancer, antidiabetic and various other activity have been studied (Iranshahy, M., & Iranshahi, M., 2011). The present study was designed to assess the in vitro cytotoxicity of volatile oil isolated from F. fetida on six mammalian cell lines namely Hep G2, SK-Hep1, SW620, CT26.WT, MIA PaCa2 and Capan2.

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Momordica Dioica Leaf Extract Attenuates Hyperglycemia and Improves the Liver Glycogen in Streptozotocin Induced Diabetic Rats

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V. Alagarswamy., Principal, MNR College of Pharmacy, Sangareddy, Telangana State, India.

Abstract:--

The present study was aimed to evaluate the effect of methanolic extract of *Momordica dioica* on anti-hyperglycemic activity and liver glycogen. It is commonly known as “Kakora” in Telugu, is used in the Indian traditional system of medicine for the treatment of diabetes. It belongs to the family cucurbitaceae. Methanolic extract of leaves of *Momordica dioica* (MEMD) was prepared by Soxhlet extraction. Wistar rats weighing (180-200 gms) were divided into 6 groups (n=6), and three doses (50 mg/kg, 100 mg/kg and 200 mg/kg) of extract were selected. Metformin (50 mg/kg, p.o) was used as a standard drug. Diabetes was induced by streptozotocin (30-60 mg/kg, i.p) in control group. The animals were pre-treated with the extracts at specified doses for a period of 21 days. On 21st day, the blood glucose levels were determined in all animals. The MEMD at 200 mg/kg body weight showed a significant reduction in blood glucose levels ($p < 0.01$) with the value of 139.6 mg/dl on 21st day as compared to the diabetic control. The extracts were evaluated for liver glycogen content, as it is considered as the best marker to assess the anti-hyperglycemic activity. Our study clearly indicated a significant increase in liver glycogen content ($p < 0.01$), with the dose of 200 mg/kg body weight as compared to the diabetic control rats. These results suggested that methanolic extract of *Momordica dioica* leaves at the dose of 200 mg/kg showed anti-hyperglycemic effect with a substantial evidence of increased content of liver glycogen as compared to the diabetic control.

Keywords:--

Methanol, Streptozotocin, Blood glucose, *Momordica dioica*, Glycogen content.

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Histological Studies on Hypocotyl of Selected Mangrove Species belonging to Rhizophoraceae family

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Abstract:--

Mangroves are a group of salt tolerant plant species which occur in the tropical and sub-tropical intertidal estuarine regions, sheltered coast-lines and creeks. They are having unique reproductive strategies in the plant world. Most of the mangrove species have viviparous and cryptoviviparous mode of reproductive mechanism. These mangrove species form propagules (hypocotyles) which have germinated seedlings along with stored food. Histological examination of the hypocotyl would provide useful insight about the structure and functions of various types of cells and tissues which comprise the hypocotyl. *Rhizophora mucronata* Lamk., *Ceriops tagal* (Perr.) C. B. Robinson and *Bruguiera cylindrica* (L.) Bl belonging to Rhizophoraceae family. The hypocotyl of all the mangrove species were found to have well developed epidermal region covered with thick cuticle, cortex, vascular bundles and pith. Vascular bundles were found to be more developed in *C. tagal* followed by *R. mucronata*, *B. cylindrica*. The sclerenchymatous cells viz. stone cells, fibers are more developed in *R. mucronata* followed by *C. tagal*, *B. cylindrica*. Intercellular spaces which provide buoyancy to the hypocotyl were the maximum in *R. mucronata* followed by *C. tagal*, *B. cylindrica*. Since the obligate dispersal period is longest in case of *R. mucronata* the intercellular spaces is also maximum in this species.

Keywords:-

Rhizophora mucronata, *Bruguiera cylindrical*, *Ceriops tagal* Mangroves, Vivipary, Propagule, Anatomy, Histology.

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Microbial Production of Polyhydroxyalkanoates (Pha) Utilising Agro-Industrial Waste As Carbon Source

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Abstract:--

Polyhydroxyalkanoates(PHA) is a biological polyester accumulated by wide range of bacteria. Bioplastic is a form of plastic made from renewable sources, which exhibit unique properties and can be produced from plants and crops wastes. Since there are many environmental concerns associated with the use of convenient plastics it is of immense importance to replace conventional plastics with bioplastics. And if the bioplastics are synthesized from agro-industrial wastes a dual benefit of utilising waste and simultaneously producing a valuable byproduct (PHA) can be obtained. This review presents the production of bioplastics and different uses of PHA, and source of bioplastics. Recycling of wastes from agro-industries for PHA production is important economically and commercially. Thus, the review includes production of PHA from agro-industrial wastes which is cost-effective. Also, the utilization of cheap and renewable sources can be explored.

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Medicinal Plant Orchis Latifolia Linn Attenuates Oxidative Stress In Diabetic Rats.

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Abstract:--

Medicinal plants have been used since ancient times for the management of diabetes mellitus in traditional systems. A medicinal plant Orchislatifolia Linn is a terrestrial herb commonly known as “Salap” in native language, is used for the treatment of diabetes. The aim of the study was to evaluate the anti-diabetic activity in vitro and in vivo with methanolic extract of O.latifolia roots (MEOL) in streptozotocin (STZ) induced diabetic rats. Male Wistar rats weighing about 180-250 gms were selected for the study. The Type II diabetes was induced in rats by a single intra peritoneal injection of streptozotocin with dose of 30 mg/kg body weight. The in vitro α -amylase inhibitory activity of the extract was done by spectrophotometric method. The Metformin (50 mg/kg body weight) was used as Standard oral hypoglycemic agent. The blood glucose levels were determined on 11th day and the levels of Malondialdehyde (MDA), Superoxide dismutase (SOD) and Catalase (CAT) were estimated in the liver tissue homogenate after 15 days of experimental period. MEOL showed significant inhibition of α -amylase activity and the IC₅₀ was found to be 54 μ g/ml. Oral administration of MEOL significantly reduced blood glucose levels ($p < 0.01$), decreased the MDA levels (28 μ g moles/mg of protein) and restored the depleted anti-oxidative enzymes SOD (38.33 μ g moles/mg of protein) and CAT (10.5 μ g moles/mg) to normalcy. These findings revealed that O.latifolia roots possess anti-hyperglycemic, anti-oxidant and anti-lipid peroxidative activity and thus mitigate STZ-induced oxidative damage. However, further studies related to mechanism of action are in progress..

Key words:-

Anti- oxidant property, Catalase, Orchislatifolia, Streptozotocin.

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Engineering 1-Deoxy-D-Xylulose-5-Phosphate (Dxp) Pathway of Bacillus Subtilis for the Production of Hemiterpene Based Alcohol, Isoprenol

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Abstract:--

Concerns like diminishing agricultural land, food security and threat to extinction of valued plant species, have driven global interest towards sustainable production of isoprenoid-based aromatics, flavors, pharmaceuticals and nutraceuticals from microbes. Soil bacterium, *Bacillus subtilis* is an excellent alternate due to its GRAS (generally Regarded as Safe), fast growth rate. In the present study, 1-deoxy-D-xylulose-5-phosphate (DXP) pathway of *B. subtilis* was engineered for the production of hemiterpene-based alcohol, isoprenol. The key DXP pathway enzymes *dxs* and *ispD* were over-expressed to enhance isopentenyl pyrophosphate (IPP) supply. An endogenous *nudF* enzyme was also over-expressed to convert excess IPP into isoprenol. Two-fold increase in isoprenol titer was observed in recombinant strain genetic modulation. Lowering incubation temperature to 25°C enhanced isoprenol titer another 1.4-fold in recombinant strain. Further, optimization of other culture conditions with fine-tuning multiple gene expression can improve production of commercially important isoprenoids-based flavors and pharmaceuticals in *B. subtilis*.

Key words:-

B. Subtilis, DXP pathway, hemiterpene, isoprenol, overexpression

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Genetically Modified Organisms for Bioremediation of Heavy Metals: A Review

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Abstract:--

A heavy metal according to many sources features on the basis of density, atomic number or weight, on chemical properties or in the terminology of toxicity. They showcase metallic properties. The heavy metal pollutants are due to the multiple technological application that is widely distributed by mankind. The hazardous metals such as lead (Pb), gold (Au), mercury (Hg), nickel (Ni), etc..have a high level of toxicity in the direction of terrestrial and aquatic environment. The high concentration of these heavy metals; over the time, towards the nature triggers carcinogenicity, genotoxicity causing transfiguration on stable molecular degree. Research introduced bioremediation that exhibit microorganisms having the potential to consume and breakdown organic and inorganic pollutants. The genetically engineered organisms for remediation in present, investigates the capabilities of wild organisms and plants in regards to tolerance. Remediation of specific pollutant heavy metals to non-toxic materials is possible by altering the metabolic pathway of the microorganism, which include bacteria, fungi, plants, etc. The mechanism to modify organisms opens the way to explore in future for any problems that cross the balance of nature.

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Insulinomimetic Effect of Citrullus Colocynthis Roots in STZ Challenged Rat Model

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Abstract:--

Diabetes mellitus is a metabolic disease characterized by hyperglycemia resulting from either defect in insulin secretion, insulin action, or both. Postprandial hyperglycemia is a prime characteristic of diabetes mellitus and has been a focus in the therapy for diabetes. One of the therapeutic approaches which involve decreasing hyperglycemia aims at lowering blood glucose by decreasing insulin resistance, raising insulin sensitivity at the tissues and inhibiting the carbohydrate absorbance in the intestine. Plants contain different chemical constituents with potential for insulin mimetic action, decrease in insulin resistance and of α -amylase inhibitory activity may be used as therapeutic agents in the treatment of diabetes mellitus. The present study investigates the hypoglycemic activity and insulinomimetic action of aqueous and ethanolic extracts of Citrullus colocynthis by invitro α -amylase enzyme inhibition and by histopathological studies in streptozotocin (STZ) induced diabetic rats. Male Wistar rats weighing about 180- 250g were taken and divided into fifteen groups. Diabetes was induced by giving streptozotocin (STZ) (30-50mg/kg) intraperitoneally. Rats that showed blood glucose levels > 250mg/dl were selected for the study. Metformin (45mg/kg) was given as standard oral hypoglycemic agent. The aqueous and ethanolic extracts of Citrullus colocynthis (AECC and EECC) at 100mg/kg, 200mg/kg and 300mg/kg were administered to the normal and diabetic rats. The invitro α – amylase inhibitory activity was done by spectrophotometric method. Blood glucose levels were measured by glucose oxidase method. Estimation of glycogen in the lever was carried out with anthrone method. Liver and pancreas were isolated and subjected to histopathological studies. Serum insulin was monitored through chemiluminescence assay. Oral administration of both extracts showed significant inhibition of α -amylase enzyme in-vitro and decrease in blood glucose also. Glycogen and Insulin levels too were found to increase in extract treated groups which attributed for its insulinomimetic activity. The findings revealed that Citrullus colocynthis possess a very strong anti-hyperglycemic potential justifying the use of the drug for the treatment of diabetes mellitus.

Keywords:-

Streptozotocin, Diabetes, Alpha-amylase, Insulin, Citrullus colocynthis, Metformin..

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Classification of subjects with Parkinson's Disease using Gait Data Analysis

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Abstract:--

Gait Analysis of Parkinson's Disease (PD) Patients and Control Objects has been analyzed to show differences in PD Patients and Control Objects. Using data provided by Phisonet's Gaitpdb database (in which 8 sensors have been applied to each foot of the subjects to calculate the Vertical Ground Reaction Forces (VGRF)), data compression has been performed using 7 statistical functions to get a representative image of the data. The statistical functions namely Minimum, Maximum, Mean, Median, Standard Deviation, Skewness, and Kurtosis have been used to compress over 3 million tuples into 310 tuples. Finally, various Machine Learning techniques have been applied to the transformed dataset to perform detection of Parkinson's Disease. The classification has been performed using Logistic Regression, Decision Trees, Random Forest, SVM (Linear Kernel), SVM (RBF Kernel), SVM (Poly Kernel) and k-Nearest Neighbours. Experiments with Principal Component Analysis for data compression have also been performed and their incompetence (with reasons) has been stated

Key words:-

Parkinson's Disease (PD), Control Objects (CO), Gait Analysis

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Screening of Bacteriophages against Multidrug Resistant Bacteria Isolated from Aquatic Sources

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Srivathsa Nallanchakravarthula., C.G.Bhakta Institute of Biotechnology, Maliba campus, Uka Tarsadia University, Gopal Vidyanagar, Bardoli-Mahuva road, Tarsadi, Surat (Dist) 394350, Gujarat, India i.

Abstract:--

Water bodies are being polluted due to anthropogenic activities. Indiscriminate antibiotic usage is being associated with the increase of multidrug resistant organisms, especially human pathogens that are generally present in water bodies. These bacteria are also known to be enteric in nature. A master's thesis project has been initiated to isolate multidrug resistant (MDR) bacteria from various aquatic sources of South Gujarat region and to test their susceptibility against bacteriophages. Water samples from various sources (marine and fresh water) were collected and MDR bacteria were isolated by cultivation based methods. Bacteria were screened for their antibiotic resistance on the basis of CLSS standards. Preliminary results indicated three morphologically different (based upon colony morphology) organisms. The isolated MDR will be screened against lytic bacteriophages isolated from various water samples from different environments (ponds, lakes, rivers and sea water). Successful isolates will be tested in animal models for their efficiency. Molecular identification of isolated bacteria is still in progress..

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Antifungal Activity of Essential Oils (EO's) Against Selected Food Borne Pathogens

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Abstract:--

Microbial activity is a primary mode of deterioration of many foods and is often responsible for the loss of quality and safety. A wide range of food products become contaminated with microorganisms. However the hygienic conditions of local marketed products leads to chances for harbouring of various pathogens including bacteria and fungi. In the present study, the fungal food borne pathogens were isolated from fish, bread and chicken and contact tools and the antifungal activity of selected essential oils (EO's) were checked. Among the tested EO's, clove, mint and basil oils showed efficient antifungal activity against the isolated food borne pathogens. Among the tested EO's, the efficient Clove oil was analyzed under GC-MS and the major components of that oil was reported.

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Exploration of economic biovalorization potential of rice husk for bioethanol production

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Abstract:--

Rice husk, which represent 20% dry weight of the harvested rice, can serve as a low cost abundant feedstock for production of fuel. Rice husk is a source of lignocellulosic biomass that may be utilized as raw material for ethanol manufacturing. Ethanol is a desirable fuel additive because it allows fuel to burn more cleanly and lowers greenhouse gas emissions. It is cost-effective to blend ethanol into gasoline in view of high crude oil prices in recent years. . It was observed that alkaline and acid pretreatment resulted in the weight loss of the rice husk, and maximum weight loss of 61% followed by 51.5% of substrate was found when it was separately pretreated with 10% and 8% of NaOH under microwave and steam explosion respectively. Maximum amount of total carbohydrate viz. 25.42 mg/ml and 22.31 mg/ml was liberated in hydrolysate of respective 10% HNO₃ and 6% NaOH pretreated substrate under steam explosion. Highest level of reducing sugar (i.e.0.23 mg/ml) was released from substrate when it was pretreated with 2% NaOH under microwave, followed by its pretreatment with 6% NaOH under steam explosion with the release of 0.157 mg/ml. FTIR spectroscopy was used as an analytical tool to qualitatively determine the chemical changes in the surface of steam explosion pretreated rice husk separately with 2% and 10% v/v each with HNO₃ and NaOH, to complement and understand microscopic investigations. Two interesting features can be seen. First that the carbonyl band at 1735 cm⁻¹, which has been ascribed to hemicelluloses is reduced for all pretreated rice husk. Second, lignin bands at approximately in 1510 cm⁻¹ (aromatic ring stretch) are strongly enhanced in 10% NaOH pretreated samples of rice husk compared with that of native one, where these peaks are reduced. The CI of native substrate is very high (0.94cm⁻¹) while that of 2% NaOH is 0.01, 10% NaOH is 1.02, 2% HNO₃ is -0.277, 10% HNO₃ is -0.34 cm⁻¹. This shows high difference. SEM technology was used to study the morphology of both raw rice husk and modified rice husk, in order to give a visualized insight. The organized structure commonly present in native lignocellulosic biomass was absent, signifying that the structure of the 2% HNO₃ treated rice husk was more amorphous. The overall or fibrillar structure of the individual fibres seems to show large structural changes such as the rupture of fibres and a visible increase of porosity, which are believed to be associated with thermal pretreatments. Holes or cracks were seen in the fibres after 10% HNO₃ pretreatments. We also found surprising results with native substrate that it could release 1.30 mg/ml and 1.22 mg/ml glucose (maximum) when respectively treated with cellulase produced by unknown micro-organisms B and C. We had taken *Trichoderma reesei* NCIM 1052 as a standard organism to compare the efficiency of cellulase production by fungi B and C. We found the fungi B has highest FPU of 0.98 mg/ml followed by FPU of *Trichoderma reesei* (0.92mg/ml) and fungi C (0.87mg/ml).

Keywords-

Biofuel, FTIR, SEM, cellulase, *Trichoderma reesei*, yeast, RSM, CCD.

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