



काशी हिन्दू
विश्वविद्यालय



BANARAS HINDU
UNIVERSITY



BHU

capital of knowledge

राजीव गान्धी दक्षिणी परिसर
Rajiv Gandhi South Campus (Barkachha, Mirzapur (UP), India)

1st INTERNATIONAL CONFERENCE & INTEGRATED MEETING
ON
**“PROSPECTIVE OF MEDICAL, FOOD, PHARMA & AGRO TECHNOLOGY:
FROM HEALTH TO WEALTH & FUTURE CHALLENGES”**

19th – 20th, FEBRUARY, 2018



VENUE
LT COMPLEX,
RAJIV GANDHI SOUTH CAMPUS, BARKACHHA, MIRZAPUR

ORGANIZED BY
DEEN DAYAL UPADHYAY KAUSHAL KENDRA
BANARAS HINDU UNIVERSITY

Dedicated to

Vindhya Range of west-central India

oldest part of the world with diverse fauna and flora having

Goddess Vindhyachal temple Windom fall, Sirsi fall and Tanda fall and more



&



A Tribute to Prof. Lalji Singh- Father of Indian DNA Fingerprinting
(1947-2017)
Former Vice Chancelor, Banaras Hindu University, varansi



Ram Naik
Governor, Uttar Pradesh



Raj Bhavan
Lucknow - 226 027

31 January, 2018

Message

I am indeed happy to know that the Rajiv Gandhi South Campus, Mirzapur of Banaras Hindu University is organizing an International Conference on 'Prospective of Medical, Food, Pharma and Agro Technology : From Health to Wealth and Future Challenges' from 19th and 20th February, 2018. To mark the occasion a souvenir is also being published.

I extend my best wishes on the occasion.


(**Ram Naik**)

प्रकाश जावडेकर
Prakash Javadekar



मंत्री
मानव संसाधन विकास
भारत सरकार
MINISTER
HUMAN RESOURCE DEVELOPMENT
GOVERNMENT OF INDIA



MESSAGE

It's a matter of immense pleasure for me to learn that 1st International Conference and integrated meeting on "PROSPECTIVE OF MEDICAL, FOOD, PHARMA & AGRO TECHNOLOGY: FROM HEALTH TO WEALTH & FUTURE CHALLENGES" on 19th & 20th February 2018, being organized by DEEN DAYAL UPADHYAY KAUSHAL KENDRA, BANARAS HINDU UNIVERSITY at Barkachha, Mirzapur, Campus, which is one of the oldest part of the world with diverse fauna and flora known as Vindhyas Range of West-Central India

Deen Dayal Upadhyay Centres for Knowledge Acquisition and Upgradation of Skilled Human Abilities and Livelihood (DDU-KAUSHAL) Kendras are established to create skilled manpower for industry requirements and self-entrepreneurship. DDU-KAUSHAL Kendra, BHU is an excellent centre among all 100 Kendras running in country and successfully launches skill orientated courses of various disciplines at various levels including graduate, post graduate and doctoral research. This International Conference and integrated meeting will definitely help the people from various fields of Medical, Food, Pharmacy and Agriculture with sufficient understanding of different areas in which knowledge of technology may be utilized.

I am sure that with the strength of young researchers and wisdom of senior academic fraternity, INCON-MFPA Technology 2018 will achieve its goal of raising awareness and updating the knowledge on technology of upcoming decade. I would like to urge the distinguished faculty to focus more on technical aspect of Medical, Food, Pharmacy and Agriculture for better human health and wellness of society

I hope that all the delegates, national and international, in these areas they utilized this conference for sharing the knowledge and paving way for future research in various fields.

I congratulate the entire organizing committee of this conference on taking the task and extend my best wishes for a great success.

(PRAKASH JAVADEKAR)



अनुप्रीय पटेल
Anupriya Patel

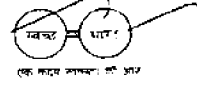


हस्तमं ३२०१

I/3135772/2018

स्वास्थ्य एवं परिवार कल्याण राज्य मंत्री
भारत सरकार

Minister of State For
Health & Family Welfare
Government of India



MESSAGE

I am happy to know that DDU Kaushal Kendra , Rajiv Gandhi South Campus, Barkacha, Mirzapur, Banaras Hindu University in association with Malviya Centre for Innovation ,Incubation and Entrepreneurship, IIT, BHU is organizing an International Conference & Integrated Meeting “ Prospective of Medical, Food, Pharma & Agro Technology; From Health to Wealth & Future Challenges” on 19th & 20 February,2018.

I commend the organizers for the initiative. Medical, Food, Pharma and Agro are important sectors acting as major contributor to India's economy. At present MFPA technologies has wider application in major areas including healthcare, crop production, agriculture, non food use of crops and environmental issues. We need innovative technologies suitable to Indian conditions.

I hope that the conference would provide an international forum to acamedeciens, scientists, researchers, entrepreneurs as also students to discuss critical issues and concerns relating to advanced and innovative technologies applied in the field of health, food, pharma and agriculture along with providing opportunities for networking and collaboration among researchers and industry.

With Best Wishes

(Anupriya Patel)

कार्यालय : 652, 'ए' खण्ड, निर्माण भवन, नई दिल्ली-110 011. दूरभाष : 23063230 फैक्स : 23061238
Office : 652, 'A' Wing, Nirman Bhavan, New Delhi-110 011. Telephone : 23063230, Fax : 23061238
कैम्प कार्यालय, मिर्जापुर : भरुहना घौराहा (पुरानी हीरो हॉल एजेंसी के सामने), मिर्जापुर-231001 (उ.प्र.) फोन : 05442 -220133
आवासीय कार्यालय, दिल्ली : सी-1/16, पंडारा पार्क, नई दिल्ली-110 003 फोन : 011-23782610
E-mail: officeanupriyapatel@gmail.com



Yogi Adityanath



No - 0 - संदेश ACM-1/2018



Dated: ०८/०२/२०१८

Message

I am happy to know that Banaras Hindu University, Varanasi is organising an International Conference on 'Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges' on 19th & 20th February, 2018. A Souvenir will also be published on this occasion.

The theme of the Conference is very appropriate. We need all these sectors to be developed which will create an atmosphere conducive for growth and betterment of humanity. I hope that the deliberations during the Conference would be fruitful and the event would successfully achieve its objectives.

My best wishes for the entire endeavour.


(Yogi Adityanath)



सिद्धार्थ नाथ सिंह
मंत्री
चिकित्सा एवं स्वास्थ्य, उ० प्र०



कार्यालय : 0522-2238051
सी०एच० : 0522-2213261
63-बी एवं डी, मुख्य भवन
उ० प्र० सचिवालय,
लखनऊ-226001

Message

I am glad to know that your prestigious institution wants me to attend the first international conference & MFPA Technology Integrated Meeting titled "Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges" on 19th to 20th February-2018.

I will try to be a part of this program as it includes medical, food, pharmacy and agriculture experts to evaluate the present status of its technology and implication in various interdisciplinary as well as translational fields.

I convey my best wishes to the organizers and participants of the program.


(Sidharth Nath Singh)



An Institution of National Importance established by an Act of Parliament

Varanasi-221005

Phone: 91-542-2368938

Fax :91-542-2369100

E-mail: vc@bhu.ac.in

Website: www.bhu.ac.in

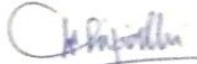
Dr. Neeraj Tripathi
Registrar In charge,
Vice-Chancellor

February 1st, 2018

I am happy to learn that a two day International Conference Integrated Meeting titled “**Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges**” is being organized during 19 - 20 February 2018 at DDU Kaushal Kendra, Rajiv Gandhi South Campus, BHU.

I hope that a large number of delegates across the world besides scholar from various institutions of the country are going to participate in the conference. I believe that the conference will provide an opportunity to scholars to interact with the renowned academicians and leaders of the field not only to discuss the recent advancements in the field of medical, food, pharma and agro-technology but also to share their views for futuristic developments in the field. I hope that the deliberations of the conference will be of immense benefit for the scholars. I expect that the conference will prove to be a productive endeavour.

I, on behalf of Banaras Hindu University, extend hearty welcome to the delegates and guests of the conference, congratulate everyone associated with organization of the event and extend best wishes for its successful organization.


(Neeraj Tripathi)



Marie Allen
Professor
Department of Immunology, Genetics and Pathology
Box 815
SE-751 08 Uppsala
Phone:+46 18 471 4803
www.igp.uu.se ,marie.allen@igp.uu.se



Dear participant,

Science has made remarkable progress in recent years within the areas of medical, food, pharma and agro technology. New discoveries and technologies have allowed better overall health, improved nutritional status, efficient pharmaceutical treatment as well as sustainable agriculture. In my research area, medical genetics and population diversity, the advancements are remarkable. Research here in India, by you and your colleagues, have contributed largely to the understanding of complex questions within these areas. These improvements would not have been possible without skilled, knowledgeable and dedicated researchers working in collaboration with industry. Let us now meet, interact, discuss research and collaborate in our common goal to contribute to science and our society.

Thank you for your participation, anticipated collaborations, and I wish you all success in your future research!

Yours sincerely,

Professor Marie Allen



OSUN STATE UNIVERSITY
Ebenezer Idowu O. AJAYI, Ph.D

Biochemistry Department
Faculty of Basic & Applied Science
College of Science, Engineering & Technology
P. M. B. 4494, Oke-Baale, Osogbo
www.uniosun.edu.ng
ebenezer.ajayi@uniosun.edu.ng
+234. 803. 729. 9521

7th February, 2018

The Convener
DDU Kaushal Kendra
(Banaras Hindu University, Varanasi)
RFSC, Barkachha, Mirzapur
India

Dear Sir,

GOODWILL MESSAGE

It gives me great joy to be a member of the International Organizing Committee for this International Conference MFPA, which has gathered erudite scholars and researchers from across all the continents of the world.

As someone who prides himself as a teacher and story teller, I am very enthused to welcome you to this epoch-making event, where we all have come to both tell and listen to the stories of our scientific endeavors and proud milestones.

I see that our participants have submitted the best of their current research findings to the abstracts (for publication in the book of abstracts), full length papers (for publication in selected journals), and chapter contributions (for publication in our proposed book)

This conference promises a very rich opportunity for the cross-fertilization of ideas, for networking, collaboration, future opportunities for training, education and research with other promising groups. So, I want to request you all to enjoy every bit of the inaugural lecture, the plenary and parallel sessions.

Therefore, feel free to contribute, ask questions, interact, meet new associates, make friends and find ways to grow our science communities beyond borders.

Once again, I warmly welcome you to the INCON-MFPA, and to Mirzapur. Enjoy the splendor and serenity of the conference location, and of the religious city of Varanasi. Our international participants should also enjoy the hospitality of India, my delightful second country

Wishing you all fruitful deliberations and a memorable conference:

Ebenezer Idowu O. AJAYI, Ph.D
Chairperson Inaugural Session, INCON-MFPA '18
Assistant Professor
Biochemistry Department
(Diabetes & Neglected /Other Infectious Diseases Group)
Sub-Dean Student Affairs, College of SET



Prof. Neelam Yadav
Director

Institute of Professional Studies

University of Allahabad

Allahabad-211002

Ph: 0532-2460289, email: apsau@gnail.com

Message



I am indeed very happy to note that the DEEN DAYAL UPADHYAY, KAUSHAL KENDRA, BANARAS HINDU UNIVERSITY is organising 1st INTERNATIONAL CONFERENCE & INTEGRATED MEETING titled "PROSPECTIVE OF MEDICAL, FOOD, PHARMA & AGRO TECHNOLOGY: FROM HEALTH TO WEALTH & FUTURE CHALLENGES" on 19th to 20th February – 2018.

Conference of such nature provides a great opportunity to fraternity, not only to update knowledge and keep abreast with latest developmental scenario in the respective fields of Medical, Food, Pharma & Agro, but also an occasion for the resource persons / delegates / observers to exchange ideas and interact with each other.

Evidence based education system is an imperative part of any profession. Achievements and profession can gained only through researchable minds. It is extremely relevant and need of the hour that the outcome of such academic exercise be disseminated to various stakeholders, organizations and policy makers for the welfare of society.

I am sure that this conference would provide opportunities to the delegates to exchange their ideas, research and would come up with concrete recommendations in the field of Medical, Food, Pharma & Agro. I extend my best wishes to the organizers of the conference.

I profoundly wish every success to the conference.


(NeelamYadav)



Pro Chancellor (Addl),
Glocal University,
Delhi-Yamunotri Rd, State Highway 57,
Saharanpur-247122 (UP)
<http://www.glocaluniversity.edu.in/>

Prof O. K. Harsh

MESSAGE

It is a great credit to be part of international conference & integrated meeting titled "PROSPECTIVE OF MEDICAL, FOOD, PHARMA & AGRO TECHNOLOGY: FROM HEALTH TO WEALTH & FUTURE CHALLENGES" scheduled to be held on 27th to 28th February, 2018 at DDU KAUSHAL KENDRA, RAJIV GANDHI SOUTH CAMPUS (BARKACHHA, MIRZAPUR) BANARAS HINDU UNIVERSITY.

It is astonishing that we are organizing such high level conference with great skills and with the market value which would make our students to be able to compete internationally. Interdisciplinary research has led to revolutionary innovations in the modern times. To coalesce pharma, food and agro industries is a step forward for researchers. India has seen a phenomenal growth of pharmaceutical products and it hasn't stayed limited to generic drug products, it is building up its own research and so are food and agriculture industries.

Overtime India has reached that stage when a majority of its population is well-fed and might transition into the obesity zone. This is a crucial stage and we have to be careful. I hope that combining expertise from pharma and agriculture to produce sustainable foods which shall be nourishing but free from fat content shall be a wonderful achievement.

I would like to express my profound support to all of its participants. New visions are overdue. Our presently living generation carries more responsibility than any generation alive on planet Earth before. And you, the participants of this conference, are at the forefront.

I know that the success of the conference depends ultimately on the many people who have worked with us in planning and organizing both the technical program and supporting social arrangements.

I hope that the intellectual churning that takes place at this conference shall be foundational for the years to come.

With regards,

O. K. Harsh



BANARAS HINDU UNIVERSITY
Institute of Agricultural Sciences
Varanasi-221005



0542-2369931(O); 0542-2575558 (R); 0542-2369036 (F); +91-9415201135 (M); Residence : New P-3, Jodhpur Colony, BHU, Varanasi-221005
vaishampayan_geneticist@paukva.ac.in / director.ias.bhu@gmail.com

Professor A. Vaishampayan
Director (निदेशक, कृषि विज्ञान संस्थान)

Ref. No. IAS/2017-18/1401

Saturday, January 20, 2018



Message

I feel so happy to note that an International Conference & Integrated Meeting on "Prospective of Medical, Food, Pharma & Agro-Technology : From Health to Wealth & Future Challenge" is being organized at the DDU Kaushal Kendra, RGSC, Barkachha, Banaras Hindu University on February 19-20, 2018. Certainly, it's a welcome forum to have a holistic approach of inter-disciplinary, multi-disciplinary and trans-disciplinary knowledge jewels to contribute towards elevating the quality of plant, animal and human life, that's a kind of complete stewardship for science & community, mankind & humanity, the grass-root level society and the predominant integrated knowledge dependent National Growth, where such meetings have to play a major supportive role with meaningful objectivities.

I have every reason to believe how the delegates will absorb the fragrance, and imbibed the elixir of important deliberations to shape their academic interest & career at par with the rapidly advancing world of sciences in the national and global scenario with a higher special resolution. I wish the teachers, students and all other categories of delegates to share, discuss and assimilate the grandeur of the outcome of these deliberations with the concerned fraternity in order to build-up and maintain a chain of real success story with a long-term impact.

I wish for a grand success of this global meet at the hands of able, expert and devoted organizers !!!

A. Vaishampayan
20.01.2018

DIRECTOR

Director
Institute of Agricultural Sciences
Banaras Hindu University
Varanasi-221005



Prof. Dr. R. K. Khandal
President R&D and Business
Development



INDIA GLYCOLS LIMITED

Message

It is a great pleasure and honour for me to write this souvenir message for the International Conference on Prospective of Medical Food Pharma and Agro Technology. I must commend Deen Dayal Upadhyay Kaushal Kendra, Banaras Hindu University for organizing this Conference to cover nearly all aspects of Food. It is noteworthy that the utilization of Functional Foods and Nutraceuticals towards consumer well-being are given special attention in the Conference program, and key topics like Food Processing, Food Safety, Sustainable Agriculture, and Post-Harvest Technology among others are planned to be addressed. I am sure that experts from all over the world will bring their expertise and voluntarily share it with the local stakeholders. This will also be a fantastic opportunity for research scholars and faculty to interact with top innovators in different fields of Food Science and Technology. While complimenting the organizers for organizing this Conference on a topical subject of National importance, I wish them huge success in all their endeavours.

RKkhandal

Prof Dr R K Khandal
Former Vice Chancellor, UPTU



Prof. Hari S. Shukla, MS, FRCSEd, PhD, D. Sc (Hons), FAMS
Professor Emeritus, Banaras Hindu University
President WFSOS (2006-08)
Founder Head, Department of Surgical Oncology
Former Dean, Faculty of Medicine
Institute of Medical Sciences
Banaras Hindu University, Varanasi - 221005, U.P.

February 10, 2018

Message

The 1st International Conference Integrated Meeting of **DDU, KAUSHAL Kendra, Banaras Hindu University** on “**Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges**” during 19th and 20th February 2018 at **Rajiv Gandhi South Campus, Barkachha, Mirzapur** is helpful in promotion of scientific research and idea through interdisciplinary platform.

The theme of the Conference “**From Health to Wealth & Future Challenges**” will underpin the need for collaboration and cooperation of individuals from a wide range of professional backgrounds.

South campus, Banaras Hindu University is an exceptional location for the assembly. It is renowned as one of the world’s oldest part, with the sparkling river, ghat and mountains providing a unique spiritual atmosphere. The INCON – MFPA Technology 2018, Conference will provide a wonderful forum to refresh knowledge and explore the innovations in science and technology. The Conference will strive to offer plenty of networking opportunities, interaction with the leading scientists and researchers.

With best wishes,

Hari S. Shukla



Office of the DEAN
Faculty of Arts
Banaras Hindu University
Varanasi 221005

February 10, 2018

Prof. Kumar Pankaj

MESSAGE

I am happy to know that **DDU, KAUSHAL Kendra, Banaras Hindu University** is organizing the 1st International Conference and integrated meeting on “**Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges**” during 19th and 20th February 2018 at **Rajeev Gandhi South Campus, Barkachha, Mirzapur.**

DDU Kaushal Kendra, Rajiv Gandhi South Campus, BHU had been established under Faculty of Arts with the objective to create skilled manpower for industry requirements at various levels. To provide for vertical mobility from short term certificate courses to degree programme. To provide supplementary modular training programmes according to job roles at NSQF Level 5 onwards by conducting assessment and certification with respective Sector Skill Councils (SSCs), so that a learner, irrespective of his/her training background, is made job ready with necessary work skills (soft, communication, ICT skills etc) and fill the gaps in the domain skills measured against QPs/NOS. To provide judicious mix of skills and appropriate content of general education specific to a profession. To provide flexibility to the students by means of pre-defined entry and multiple exit points. To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.

I am sure this international conference will concentrate on the above objective. I Welcome all the participants from the core of my heart to this great seat of learning and wish the conference a great success.

Prof. Kumar Pankaj



Dean
Faculty of Education
Banaras Hindu University
Varanasi 221005

February 06, 2018

Prof. R. P. Shukla

MESSAGE

I am delighted to know that **DDU, KAUSHAL Kendra, Banaras Hindu University, Rajeev Gandhi South Campus, Barkachha, Mirzapur** is organizing the 1st International Conference and integrated meeting on **“Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges”** on 19th and 20th February 2018.

DDU Kaushal Kendra, Rajiv Gandhi South Campus, BHU equipped with Bachelor of Vocation and Master of Vocation skill orientated courses included Medical Laboratory Technology, Food Processing and Management, Retail and Logistics and Management and Hospitality and Tourism and Management. The theme of the conference is very relevant to the vision of DDU KAUSHAL Kendra. In this context, BHU is front runner & leader and archives excellence.

I am sure that this conference will address many important issues related to medical technology, food technology, pharmacotechnology and agrotechnology will be a rewarding experience for all the delegates.

I on behalf of all the members of organizing committee welcome the guest speakers as well as delegates to the holy place of Vindhyachal. I am sure that the organizers have made good arrangements for the delegates to feel comfortable during their stay inside south campus and the seat of learning.

I congratulate the organizers of this conference on taking of task and extend my best wishes for successful deliberations of the conference.

Prof. R. P. Shukla



Prof. S. Kushwaha,
Professor In-charge
Mob. No. 9546863462
E-mail ID – pic.rgsc@bhu.ac.in



RAJIV GANDHI SOUTH
CAMPUS
BARKACHHA, MIRZAPUR

February 06, 2018

MESSAGE

I am very much delighted to know that the **DDU, KAUSHAL Kendra, Banaras Hindu University** is organizing their first ever international conference and integrated meeting on “**Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges**” (INCON –MFWA Technology 2018)” during 19th and 20th February 2018 at our **Rajiv Gandhi South Campus, Barkachha, Mirzapur**, which is unique techno scientific academic fest of this region.

DDU-KAUSHAL, Kendra BHU is running at this campus with objective to develop skills for employment and entrepreneurship orientated studies. In near future center, it will also a unique job provider under various courses such as medical technology, food technology, hospitality and retails. The conference will definitely help the scientists from these various disciplines with sufficient understanding of different areas in which knowledge of technology may be utilize. I am sure that with the strength of young academician and wisdom of senior faculty fraternity, INCON-MFWA Technology 2018 will achieve its goal of raising awareness. I would like to urge the distinguished faculty to focus more on technical aspect of these fields for better health and care facilities. As the outcome of this academic exercise, we release special issue of International peer reviewed journal International Journal of Academic Research and Development (IJARD) and series of books which will published by Bharti Publication New Delhi.

I hope that you all will have a great time during this academic feast and take back home pleasant memories of South Campus, BHU and Vindhychal along with the enrichment in your knowledge, skills and professional relationships that you will fostered during this event.

On the behalf of organizing committee and as protector of South Campus, I welcome all the participants, speakers, academician and industrialist from the core of my heart to this great seat of learning and wish the conference a great success.

Saket Kushwaha



**Officer on Special Duty,
RGSC, Barkschha
Banaras Hindu University
Varanasi 221005**

February 05, 2018

**Prof. O. P. Singh,
Institute of Medical Sciences**

MESSAGE

It is a great pleasure and an honor to extend to all a warm welcome to attend the 1st International conference and integrated meeting on **“Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges”**(INCON –MFPA Technology 2018)” during 19th and 20th February 2018 at **DDU, KAUSHAL Kendra, Rajiv Gandhi South Campus, Barkachha, Mirzapur ,Banaras Hindu University.**

The INCON –MFPA Technology 2018 will provide a wonderful forum for you to refresh your knowledge base and explore the innovations in Inter-disciplinary Science. The conference will strive to offer plenty of networking opportunities, providing you with the opportunity to meet and interact with the leading scientists and researchers, friends and colleagues as well as sponsors and exhibitors.

We hope you will join us for a symphony of outstanding science, and take a little extra time to enjoy the spectacular and unique beauty of this region.

Prof. O. P. Singh



Professor Department of Microbiology
Institute of Medical Sciences Banaras Hindu University
Varanasi 221 005, India
<http://www.bhu.ac.in/>
<https://scholar.google.co.in/citations?hl=en&user=rIDNNU4AAAAJ>

February 10, 2018

Dr. Gopal Nath
M.D., Ph.D., F.A.M.S.

MESSAGE

It gives me great pleasure to extend my sincere and hearty congratulation to the organizers and participants of the 1st international conference and integrated meeting of **DDU, KAUSHAL Kendra, Rajiv Gandhi South Campus, Barkachha, Banaras Hindu University** on “**Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges**” (INCON –MFPA Technology 2018)” during 19th and 20th February 2018.

I want to with the organizers INCON –MFPA Technology 2018 who have put this conference together for the purpose of dissemination of scientific knowledge based on verified information. The abstracts are rich and vividly show the ingenuity of the contributors. I wish you all fruitful deliberations, and a great time of sharing and networking
With Best Wishes

Gopal Nath



Prof. (Dr.) Amita Verma



Professor
Department of Pharmaceutical Sciences
Shalom Institute of Health & Allied Sciences, SHUATS,
Allahabad

MESSAGE

I am indeed happy to know that DDU Kaushal Kendra, BHU, Varanasi is organizing two days International conference & Integrated meeting on “Prospective of Medical, Food, Pharma & Agro technology: from Health to Wealth & Future Challenges” on 19-20 Feb, 2018.

The theme of the conference is very appropriate. I am happy to know that a large number of eminent experts will be participating in this event and discuss their valuable research findings and experiences in various disciplines of medical, food, pharma and agriculture technology. It is praiseworthy to know that this event will provide opportunity for young researcher to present their innovative ideas. I hope that this conference would provide valuable, useful and informative ideas to the participant students, researchers and other experts.

I convey my best wishes for the grand success of this International conference.

Prof. (Dr.) Amita Verma



Dr. Anshuman Mishra



Editor in Chief: SciUn Research Journal (www.sciunrj.org)
Associate Editor: Fisheries and Aquatic Science
(<https://fas.biomedcentral.com/>)

February 10, 2018

MESSAGE

I am delighted to know that DDU, KAUSHAL Kendra, Banaras Hindu University is putting their first step towards academia very thoroughly by organizing the first is organizing the 1st international conference and integrated meeting **DDU, KAUSHAL Kendra, Rajiv Gandhi South Campus, Barkachha, Banaras Hindu University** on **“Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges”** during 19th and 20th February 2018 at Rajeev Gandhi South Campus, Barkachha, Mirzapur.

I have been in interaction with the team INCON – MFPA Technology 2018 since its inception and quite overwhelmed by their progress with short span of time. I am optimistic that INCON – MFPA Technology 2018 team will establish itself as a worldwide reference for the dissemination of high-quality research and publication in the field of science, and for fostering interaction and exchange of ideas though conference series.

I am enchanted to listen from the conference convener that the enormous submission of abstracts from different countries and continents. The high number of submissions provided an admirable opportunity for a high-quality program, but also demanding and laborious paper evaluation process by eminent reviewers. The success of the conference would not have been conceivable without the commitment and hard team work.

Thanks to all for joining us and making the conference successful. Hope to see you all along with other fellows in next conference.

Dr. Anshuman Mishra



Dr. Manoj Kumar Singh



Joint Organizing Secretary
Office of Dy. Proctor, Rajiv Gandhi South Campus
Barkachha, Mirzapur

February 10, 2018

MESSAGE

I am very happy to know that DDU, KAUSHAL Kendra, Banaras Hindu University is organizing the first international conference and integrated meeting **DDU, KAUSHAL Kendra, Rajiv Gandhi South Campus, Barkachha, Banaras Hindu University** on **“Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges”** during 19th and 20th February 2018 at Rajeev Gandhi South Campus, Barkachha, Mirzapur.

I am sure that this conference will address many important issues related to medical, food, pharmacy & agriculture and its technology and will be a rewarding experience for all the delegates.

I as Dy. Proctor of RGSC BHU and on behalf of all the members of organizing committee welcome the guest speakers as well as delegates and always ready for their help at any rate. I am sure that the arrangements for the delegates will be comfortable during their stay at this part of Vindhyachal. Our aim is to grand success of this conference which will be landmark.

Manoj Kumar Singh



Dr. R. S. Mishra



**Nodal Officer & Coordinator, Deen Dayal Upadhyay Kaushal
Kendra,
Rajiv Gandhi South Campus
Barkachha, Mirzapur**

February 06, 2018

From The Desk of Convener

I on behalf of organizing committee and Deen Dayal Upadhyay Kaushal Kendra, Banaras Hindu University, Varanasi, welcome the eminent speakers as well as delegates to the South Campus BHU. I am sure that, we have made good arrangements for the delegates to feel comfortable during their stay at this natural and greenest part of world and the seat of learning.

The theme of the conference is very relevant in the present era. In this context, DDU Kaushal Kendra, BHU can be front runner & leader in addressing important issues. Here we included medical, food, pharmacy, and agriculture experts to evaluate the present status of its technology, its implication in various interdisciplinary and translational fields because these are important sector that acts as major contributor to the Indian economy. We need innovative technologies suitable to India's conditions and newer ventures in various industries.

The International Conference & Integrated Meeting on “PROSPECTIVE OF MEDICAL, FOOD, PHARMA & AGRO TECHNOLOGY: FROM HEALTH TO WEALTH & FUTURE CHALLENGES” will provide an international forum to academicians, scientists, researchers, small entrepreneurs and students of undergraduate and postgraduate to discuss critical issues and concerns to advanced and innovative technologies applied in these fields This two days (19th& 20 February 2018) conference and integrated meeting will also provide opportunities for networking and collaboration amongst researchers and industry.

I am sure that this conference will address many important issues related to these fields and will be a rewarding experience for all the delegates.

I personally and as organizer welcome all the delegates invited guest and congratulate the young scientist awardees of **INCON-MFPA Technology 2018**.

Ratna Shankar Mishra



**Dr. Raghvendra
Raman Mishra**



Masters and Ph. D. Bio-Medical Technology
Assistant Professor, Medical Lab Technology
DDU KAUSHAL Kendra
Banaras Hindu University, Varanasi
<http://www.bhu.ac.in/>
<http://scholar.google.co.in/citations?user=8VjZxCoAAAAJ&hl=en>
<http://www.imsbhu.nic.in/hospital/units/microbiology/activities.htm>

February 10, 2018

FROM THE DESK OF ORGANIZING SECRETARY INCON-MFPA TECHNOLOGY 2018

It is my great pleasure and privilege to welcome you to join the INCON – MFPA Technology 2018, which will take place at **DDU, KAUSHAL Kendra, Rajiv Gandhi South Campus, Barkachha, Banaras Hindu University**. With the theme of “**Prospective of Medical, Food, Pharma & Agro Technology: From Health to Wealth & Future Challenges**” focus to cutting-edge research of interdisciplinary science and technologies for human up gradation. INCON –MFPA Technology, 2018, features a very strong technical program on breakthroughs in the basic research, new discovery, emerging areas for medicine, food, pharma, agro applications and robust technology development in engineering, cutting-edge biotechnology and social reforming via modern knowledge. INCON –MFPA Technology, 2018, aims to provide a platform for all experts from academia and industry to discuss latest hot researches and achievements.

With the participation of outstanding international experts, we hope productive discussions would stimulate new creative ideas to translate new discoveries into better practice and application. INCON –MFPA Technology, 2018, will continue to build upon the success of this years, offering a top- notch scientific program created by international experts in related fields.

The conference is supported by the Bharti Publication New Delhi for release of books of series with ISBN No. and special issue of International Journal of Academic Research and Development (IJARD) and SciUn Research Journal (<http://sciunrj.org>) towards publishing its proceedings.

The idea of bringing multi-disciplinary researchers together is a commendable effort to work towards promoting the Next-Gen Scientific and Technological innovations, which, otherwise cannot be achieved remaining segregated in a single domain. I believe the conference will attract high attention of the research communities all over the world and receive outstanding research works to present and publish.

I also believe that all the delegates (both speakers and participants) will have extremely wonderful two days of brainstorming sessions and exchange of productive ideas covering varied disciplines of science and technology.

Welcome all of you

Raghvendra Raman Mishra

ORGANIZING COMMITTEE FOR THE CONFERENCE AND INTEGRATED MEETING

Chief Patron	Dr. Neeraj Tripathi Vice-Chancellor, BANARAS HINDU UNIVERSITY, VARANASI
Patron	Prof. Saket Kushwaha , Professor - Institute of Agricultural Sciences Professor In-charge, RGSC, Banaras Hindu University, Varanasi & Prof. Kumar Pankaj Dean Faculty of Arts, Banaras Hindu University, Varanasi & Prof. R.P. Shukla , Dean Faculty of Education, Banaras Hindu University, Varanasi & Prof. O. P. Singh , Professor Kayachikitsa, Faculty of Ayurveda, Institute of Medical Sciences Officer on Special Duty , RGSC, Banaras Hindu University, Varanasi
Co-Patron	Prof. Gopal Nath , Professor Department of Microbiology Institute of Medical Sciences, Banaras Hindu University, Varanasi & Prof. P. K. Mishra , Coordinator-Malaviya Centre for Innovation, Incubation and Entrepreneurship, Indian Institute of Technology, Banaras Hindu University, Varanasi
Conference Chair	Dr. Marie Allen Professor, Uppsala University, Uppsala, Sweden
Co-chair	Dr. Asem Surindro Singh , Scientist, Department of Pathology, University of Mississippi Medical Center, USA Dr. Ebenezer Idowu O. Ajayi , Assistant Professor, Osun State University, Osogbo, Nigeria
Convener	Dr. R. S. Mishra , Assistant Professor Nodal Officer & Coordinator, Deen Dayal Upadhyay Kaushal Kendra, Banaras Hindu University, Varanasi
Organizing Secretary	Dr. Raghvendra Raman Mishra , Asst. Prof. Medical Lab. Technology DDU KAUSHAL Kendra, Banaras Hindu University, Varanasi
Secretary (International committee members)	Dr. Anshuman Mishra , Scientist PRF, Pukang National University, South Korea, Resource Person DDU KAUSHAL Kendra, BHU,
International Member	Dr. Parmit Kumar Singh , Scientists I, Dana-Farber Cancer Institute, Harvard Medical School, Boston, USA Dr. Akhilesh Kumar Chaurasia , Research Professor, Samsung Biomedical Research Institute, Sungkyunkwan University, Suwon, South Korea Dr. Manish Mishra , Associate Professor, Trinity School of Medicine, St. Vincent and the Gren, South America

	Dr. Charles Adetunji Osun State University, Nigeria
National Members	Prof. Mallika Tiwari , Head, Department of Surgical Oncology, IMS, BHU Dr. J. P. Singh , Faculty of Ayurveda, Institute of Medical Sciences Banaras Hindu University, Varanasi Dr. Vijay Chandra Verma , Scientist C, Indian Council of Medical Research, New Delhi Dr. Shravan Kumar Singh , Scientist, Institute of Nuclear Medicine and Allied Sciences, Delhi Dr. Gyanendra Sonkar , Assistant Professor, King George's Medical University, Lucknow Dr. Aditya Nath Jha , Scientist, Sickle Cell Institute, Raipur, Chhattisgarh Prof. Dinesh Chandra Upadhyay , STL College, Bhopal, Madhya Pradesh Mr. Devarshi Upadhyay , Tata Chemicals Limited, Indore Dr. Anirudha Kumar , Assistant Professor, Indira Gandhi National Tribal University in Amarkantak, Madhya Pradesh, India Dr. Mohammed S. Mustak , Assistant Professor, Manglore University, Manglore Dr. Biswajit Roy , CSIR-Centre for cellular and Molecular Biology, Hydrabad
Medical Technology	Dr. Manoj Kumar Singh , Assistant Professor, Faculty of Ayurveda, BHU Dr. B. M. N. Kumar , Assistant Professor, Faculty of Ayurveda, BHU
Food Technology	Dr. Pragya Mishra , Centre of Food Technology, University of Allahabad, Resource Person, DDU Kaushal Kendra, BHU Dr. Manju Tiwari , Assistant Professor, DDU Kaushal Kendra, BHU
Pharmacotechnology	Dr. Parjanya Kr Shukla , Kirishnarpit Institute of Pharmacy, AKTU, Lucknow, Resource Person, DDU Kaushal Kendra, BHU, Mr. Vivek Mishra , Assistant Professor, DDU Kaushal Kendra, BHU
Agrotechnology	Dr. Ved Kumar Mishra , Naraina Vidya Peeth Engineering and Management Institute, Kanpur, Uttar Pradesh, India-208020. Resource Person, DDU Kaushal Kendra, BHU, Ms. Priyanka , Assistant Professor, DDU Kaushal Kendra, BHU
Assistant Joint Organizing Secretaries	Dr. Anil Kumar Singh , Assistant Professor, RGSC BHU Dr. Ashok Kumar Yadav , Assistant Professor, DDU KAUSHAL Kendra, BHU Dr. Satya Praksh , Scientist, CFNFTHM, Inst. of Med. Sc. BHU

Eminent Advisory	<p>Prof. H. S Shukla, Emeritus Professor, Former DEAN, Institute of Medical Sciences, BHU</p> <p>Prof. V.K. Shukla, Director, Institute of Medical Sciences, BHU</p> <p>Prof. A. Vaishampayan, Director, Institute of Agricultural Sciences, BHU</p> <p>Prof. Kavita Shah, Director, IESD, BHU</p> <p>Prof. Neelam Yadav, Director –Center of Food Technology, University of Allahabad, Allahabad</p> <p>Prof. Yamini B. Tripathi, Dean, Faculty of Ayurveda, IMS, BHU</p> <p>Prof. Nira Misra, School of Biomedical Technology, Indian Institute of Technology, BHU</p> <p>Prof. Amita Verma, Department of Pharmaceutical Sciences, Shalom Institute of Health & Allied Sciences, Sam Hingginbottom University of Agriculture, Technology and Science (SHUATS), Allahabad</p> <p>Dr. Prashant Ankur Jain, Department of Computational Biology and Bioinformatics, Jacob Institute of Biotechnology and Bioengineering, Sam Hingginbottom University of Agriculture, Technology and Science, Allahabad</p> <p>Dr. Shubha Dwivedi, Meerut Institute of Engineering and Technology Meerut</p> <p>Dr. Naveen Dwivedi, SD College of Engendering and Technology, Muzaffernagar</p> <p>Dr. Subodh Gupta, Babasaheb Bhimrao Ambedkar Central University, Raebareli Road, Lucknow-226025</p>
Treasurer	Dr. R.S. Mishra, Assistant Professor, OMCS, BHU
Scientific Committee Head	Dr. M.K. Nandi, Assistant Professor, Faculty of Ayurveda, BHU Dr. Sunil Kumar Rai, UC Davis, School of Medicine, California
Souvenir Committee Head	Mr. Krishna Kant, Assistant Professor, RGSC, BHU Dr. Narendra Kumar Singh, Assistant Professor, RGSC, BHU
Scientific presentation and Exhibition Committee Head	Dr. Rajani Srivastava, Asst. Prof. ,RGSC BHU Dr. Santosh Kumar Singh, Assistant Professor, IMS, BHU
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Registration Committee Head	Dr. Sana Fatima, Assistant Professor, RGSC, BHU Dr. Shilpi Raj, Assistant Professor, RGSC, BHU
Inauguration Committee Head	Dr. Manish Kumar Singh, Inf. Scientist, Central Library, BHU Ms. Priyanka, Assistant Professor, RGSC, BHU
Press and Publicity Committee Head	Mr. Naveen Kumar, Asst. Professor, RGSC, BHU Mr. Shihb Natha Jaiswal, Assistant Professor, RGSC, BHU
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Accommodation Committee Head	Dr. Ravindra Prasad, Assistant Professor, RGSC, BHU Dr. Irfan Ahmed Ansari, Assistant Professor, RGSC, BHU
Transport Committee Head	Dr. Ashwani Kushwaha, Assistant Professor, RGSC, BHU Dr. Javed Alam Sheikh, Assistant Professor, RGSC, BHU Mr. Kishor Kumar, Assistant Professor, RGSC, BHU
Cultural Committee Head	Dr. Ajay Kumar Singh, Assistant Professor, RGSC, BHU Dr. Kaustav Chatterjee, Assistant Professor, RGSC, BHU

**Members of Integrated Meeting of
International association of Medical, Food, Pharma & Agro Technology**

Name & Affiliation	Position
Prof. R. K. Khandal President RD, India Glycols, Noida Ex Vice Chancellor Uttar Pradesh Technical University	President
Prof. Marie Allen Professor, Uppsala University, Uppsala, Sweden	Vice President
Dr. R.S. Mishra Assistant Professor OMBC, Nodal Officer & Coordinator, Deen Dayal Upadhyay Kaushal Kendra, Banaras Hindu University, Varanasi	Chairman, Academic Board
Dr. Anshuman Mishra Scientist, Pukang National University, South Korea	Vice President, Academic Board, Phenome Research Foundation
Dr. Raghvendra Raman Mishra Assistant Professor Medical Lab Technology, Deen Dayal Upadhyay Kaushal Kendra, Banaras Hindu University, Varanasi	General Secretary
Dr. Asem Surindro Singh Scientist, Department of Pathology, University of Mississippi Medical Center, USA	Joint Secretary Medical Technology
Dr. Pragya Mishra, Faculty Centre of Food Technology, University of Allahabad	Joint Secretary Food Technology
Dr. Parjanya Kumar Shukla, Associate Professor, Kirishnarjit Institute of Pharmacy, AKTU, Lucknow	Joint Secretary Pharmacotechnology
Dr. Ved. Kumar Mishra, Assistant Professor, Naraina Vidya Peeth Engineering and Management Institute, Kanpur, Uttar Pradesh, India-208020.	Joint Secretary Agrotechnology
Dr. Parmit Kumar Singh, Scientist I, Dana-Faber Cancer Institute, Harvard Medical School, Boston, USA	Chairperson Medical technology
Dr. Manish Mishra, Associate Professor, Trinity School of Medicine, St. Vincent & the Gren, South America	Chairperson Medical technology
Dr. Akhilesh Kumar Chourasia, Research Professor, Samsung Biomedical Research Institute, Sungkunkwan, Osun State University, Osogbo, Nigeria	Chairperson Pharmacotechnology
Dr. Ebenezer Idowu O. Ajayi, Assistant Professor, Osun State University, Osogbo, Nigeria	Chairperson Agrotechnology
Dr. Gyanendra Sonkar, Associate professor, King George's Medical, University, Lucknow	Editor Medical technology
Dr. Naveen Dwivedi, Professor SD College of Engendering and Technology,	Editor Food technology

Muzaffernagar	
Dr. Gyanendra Sonkar, Associate professor, King George's Medical, University, Lucknow	Editor Medical technology
Dr. Naveen Dwivedi, ProfessorSD College of Engendering and Technology, Muzaffernagar	Editor Food technology
Dr. Shravan Kumar Singh, Scientist C, Institute of Nuclear Medicine and Allied Sciences, Delhi	Editor Pharmacotechnology
Dr. Shubha Dwivedi, AssistantProfessor, Meerut Institute of Engineering and Technology, Meerut	Editor Agrotechnology
Prof. Nira Misra, Professor, School of Biomedical Technology, Indian Institute of Technology, Banaras Hindu University, Varanasi	Senior Reviewer Medical Technology
Dr. Anirudha Kumar, Assistant Professor, Indira Gandhi National Tribal University, Amarkantak, Madhya Pradesh	Senior Reviewer Food Technology
Prof. Amita Verma, ProfessorDepartment of Pharmaceutical Sciences, Shalom Institute of Health & Allied Sciences Sam Hingginbottom University of Agriculture, Technology and Science, Allahabad	Senior Reviewer Pharmacotechnology
Dr. Prashant Ankur Jain, Assistant Professor, Department of Computational Biology and Bioinformatics, Jacob Institute of Biotechnology and Bioengineering, SHUATS, Allahabad	Senior Reviewer Agrotechnology
Dr. Subodh Gupta, DST-CPR, Babasaheb Bhimrao Ambedkar Central University, Raebareli Road, Lucknow-226025	Reviewer Medical Technology
Dr. Mohammed S. Mustak, Assistant Professor, Manglore University, Manglore	Reviewer Food Technology
Dr. Aditya Nath Jha Scientist C, Sickle Cell Institute, Raipur, Chhattisgarh	Reviewer Pharmacotechnology
Dr. Biswajit Roy, Scientist,CSIR-Centre for cellular and Molecular Biology, Hydrabad	Reviewer Agrotechnology
Dr. Charles Adetunji, Osun State University, Osogbo, Nigeria	Member
Prof. Dinesh Chandra Upadhyay, STL College, Bhopal, Madhya Pradesh	Member
Dr. Sangeeta Singh, Department of Biochemistry, King George's Medical University, Lucknow	Member
Dr. Vimla, DTRL, DRDO, Metcalfe House, New Delhi	Member

SCHEDULE OF
1st INTERNATIONAL CONFERENCE & INTEGRATED MEETING ON
“PROSPECTIVE OF MEDICAL, FOOD, PHARMA & AGRO TECHNOLOGY: FROM HEALTH TO WEALTH & FUTURE CHALLENGES”
19th – 20th, FEBRUARY, 2018
VENUE : LT COMPLEX, RAJIV GANDHI SOUTH CAMPUS, BARKACHHA
ORGANIZED BY: DEEN DAYAL UPADHYAY KAUSHAL KENDRA, BANARAS HINDU UNIVERSITY

Day 1st, 19th February 2018

08:00 – 09:00	Registration			
09:00 – 10:00	Poster mounting			
10:00 – 11:30	Inaugural Session			
	10:00 – 10:02	Garlanding of Pt. Madan Mohan Malviyaji Bust & Lamp Lighting followed by Kul-Geet		
LT Main Hall	10:02 – 10:07	Presentation of Bouquets to the guest & Welcome Address	: Dr. RS Mishra , CONVENER, INCON-MFPA Technology, 2018	
	10:07 – 10:10	About The Conference	: Prof. RP Shukla , DEAN, Faculty of Education, BHU, Varanasi	
	10:10 – 10: 20	Address of Chief Guest	: Smt. Anupriya Patel , Hon'ble Union Minister of State, Ministry of Health And Family Welfare, Government of India	
	10:20 – 10:30	Guest of Honour	:Sri Siddharth Nath Singh , Hon'ble Minister, Medical Health & Family Welfare, Government of Uttar Pradesh	
	10:30 – 10:40	Guest of Honour	: Prof. R K Khandal , President RD, India Glycols, Noaida Ex Vice Chancellor Uttar Pradesh Technical University	
	10:40 – 10:50	Address of Conference Chair	: Prof. Marie Allen , Department of Immunology, Genetics and Pathology, Science for Life Laboratory, Uppsala University, Uppsala, Sweden	
	10:50 – 11:00	Address of Patron	:Prof. Saket Kushwaha , Professor In-charge, RGSC, Banaras Hindu University, Varanasi	
	11:00 – 11:05	Address of Co-Patron	: Prof. O. P. Singh , Officer on Special Duty , RGSC, Banaras Hindu University, Varanasi	
			Conference Proceeding, Books and Journal release,	
	11:05 - 11:10	Medal Distribution	: Topper Students of DDU KAUSHAL Kendra & MFPA Tech. Awardee	
	11:10 – 11:20	Presidential Address	: Dr. Neeraj Tripathi, Registrar In charge Vice Chancellor (Chief Patron) Banaras Hindu University, Varanasi	
			Memento and Angvastram Presentation guests on the dias	
	11:20– 11:25	Vote of Thanks	: Dr. Raghvendra Raman Mishra , Organizing Secretary, INCON–MFPA 2018	
11:25 – 11:30	National Anthem			
11:30 : HI TEA				
Inaugural lecture Session				
LT Main Hall		Chair: Prof. Saket Kushwaha , Professor In-charge, RGSC, Banaras Hindu University, Varanasi Co-chair: Prof. O. P. Singh , Officer on Special Duty , RGSC, Banaras Hindu University, Varanasi	Session Co-ordinator : Dr. Asem Surindro Singh , Department of Pathology, University of Mississippi Medical Center, 2500 North State Street, MS 39216, USA Rapporteur : Dr. Charles Adetunji , Osun State University, Nigeria	
	11:30 - 11:40	Inaugural lecture 1	: Prof. Marie Allen , Department of Immunology, Genetics and Pathology, Science for Life Laboratory, Uppsala University, Uppsala, Sweden	
	11:40 - 11:50	Inaugural lecture 2	: Prof. Manjeet Aggarwal , DEAN (Research), National Institute of Food Technology and Entrepreneurship Management, Haryana	
	11:50 - 12:00	Inaugural lecture 3	: Prof. Amita Verma , Department of Pharmaceutical Sciences Shalom Institute of Health & Allied Sciences Sam Hingginbottom	

			University of Agriculture, Technology and Science, (Agriculture Institute), Allahabad
	12:00 - 12:10	Inaugural lecture 4	:Prof. Gopal Nath, MD, Ph. D., MNAMS, Head Bacteriophage Research Lab Department of Microbiology Institute of medical Sciences, Banaras Hindu University, Varanasi
Key note Session			
12:10 - 1:45	Chair: Prof. Manjeet Aggarwal, DEAN (Research), NIFTEM, Haryana Co-Chair: Dr. Ebenezer Idowu O. Ajayi, Osun State University, Osogbo, Nigeria &Dr. Pragya Mishra, CFT, Allahabad		Session Co-ordinator : Dr. MK Nandi Rapporteur : Ms. Priyanka
At LT Main Hall	12:10 - 12:20	Key note lecture 1 Medical Technology	: Dr. Niraj Rai, Birbal Sahni Paleobotany Institute, Lucknow
	12:20 - 12:30	Key note lecture 2 Medical Technology	: Dr. Asem Surindro Singh, Department of Pathology, University of Mississippi Medical Center, USA
	12:30 - 12:40	Key note lecture 3 Medical Technology	: Dr. Smita Shrestha Tribhuvan University, Kathmandu, Nepal
	12:40 - 12:50	Key note lecture 4 Pharmacotechnology	:Dr. Naveen dwivedi SD College of Engendering and Technology, Muzaffernagar
	12:50 - 1:00	Key note lecture 5 Medical Technology	: Dr. Gyanendra Sonkar, Department of Biochemistry, King George's Medical University, Lucknow
	1:00 - 1:10	Key note lecture 6 Food Technology	: Dr. Amrita Poonia, Centre of Food Science & Technology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi
	1:10 - 1:20	Key note lecture 7 Pharmacotechnology	Dr. Shravan Kumar Singh Devison of Radioprotector Drug Development Research (RDDR), Radiation Biotechnology Group, Institute of Nuclear Medicine & Allied Sciences, DRDO, Ministry of Defence, Delhi-110054,India
	1:20 - 1:30	Key note lecture 8 Agrotechnology	: Dr. Prashant Ankur Jain Department of Computational Biology and Bioinformatics, Jacob Institute of Biotechnology and Bioengineering, Sam Hingginbottom University of Agriculture, Technology and Science, (Agriculture Institute), Allahabad
	1:30 - 1:45	Discussion	
1:45 - 2:00 Lunch			
Hall A	2:00 - 3:00	Chair : Dr. Gyanendra Sonkar, Department of Biochemistry, King George's Medical University, Lucknow Co-chair: Dr. Prashant Ankur Jain, SHUATS	Session Co-ordinator: Dr. BMN Kumar, Rapporteur: Dr. Manju Tiwari
	2:00 - 2:10	Key note lecture 9 Food Technology	: Dr. Shubha Dwivedi Meerut Institute of Engineering and Technology Meerut
	2:10 - 2:20	Key note lecture 10	: Dr. Santosh Kumar Singh, Molecular Biology Unit, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India
	2:20 - 3:00	Medical / Pharma	: Oral Presentation Session 1:
Hall B	3:00 - 4:00	Chair:Dr. Madhuresh Dwivedi, Institute of Plantation Management, Bangalore Co-chair: Dr. Naveen Dwivedi SDCET Muzaffernagar	Session Co-ordinator : Dr. Ashok Kumar Yadav Rapporteur: Mrs. Shilpi Raj
	3:00 - 3:10	Key note lecture 11	Dr. Madhuresh Dwivedi, Institute of Plantation Management, Bangalore
	3:10 - 3:20	Key note lecture 12	Dr. Subodh Kumar Gupta, DST - CPR, Babasaheb Bhimrao Ambedkar Central University, Raebareli Road, Lucknow-226025
	3:20 - 3:30	Key note lecture 13	Dr. Rajeev Singh , Delhi University, New Delhi
	3:30 - 4:00	Food / Agro	: Oral Presentation Session 2:
4:00 - 4:15: HI TEA			
4:15 - 4:30	Chair: Dr. Shobha Dwivedi Co-chair : Dr. Prashant Ankur Jain		Session Co-ordinator: Dr. Rajani Srivastava Rapporteur Dr. Irfan Ahmed Ansari,
4:30 - 8:00	Cultural Events	Co-ordinator: Dr. Kaustav Chatterjee / Dr. Javed Alam / Mr. Naveen	
8:00 - 8:30 :: GALA DINNER			

Day 2nd, 20th February 2018

06:00-09:00	Site Seen	Vindhyachal Darshan	
09:00 – 10:00	Breakfast		
10:00-12:00	Chair : Dr. Anshuman Mishra Pukyong National University, South Korea Co-chair: Dr. Pragya, CFT Allahabad		Co-ordinator: Dr. Manoj Kumar Singh Rapporteur: Dr. Sana Fatima
Young Faculty session LT Main Hall	10:00 – 10:10	Key note lecture 14: Medical technology	Dr. Charles Adetunji Osun state University, Nigeria.
	10:10 – 11:20	Key note lecture 15 Pharmaco technology	Dr. Avinash Singh , Department of Microbiology, Sanjay Gandhi Post Graduate Institute of Medical Sciences Lucknow, UP, India
	11:20 - 11:30	Key note lecture 16: Agrotechnoogy	Dr. Sangeeta Singh , Department of Biochemistry, King George's Medical University, Lucknow
	11:30 - 11:40	Student Industrialist interaction	CEO-Subico Biofertilizers (Mr. Brijesh Kumar Yadav)
11:40 – 12:00 :: Hi Tea			
	Chair : Dr. Smita Shrestha Tribhuwan University, Kathmandu, Nepal Co-Chair : Dr. Parjanya Kumar Shukla		Co-ordinator: Dr. MK Nandi Rapporteur: Mr. Sidharth Rai
At LT Main Hall	12:00- 12:10	Key note lecture 17: Agrotechnology	Dr. Chanchal Singh Krisi Vigyan Kendra, Hamirpur
	12:10- 12:20	Key note lecture 18: Food technology	Dr. Bijay Kumar Molecular Biology Unit, Institute of Medical Sciences, Banaras Hindu University, Varanasi – 221005
	12:20- 12:30	Key note lecture 19: Medical Technology	Dr. Vimla Singh, DTRL, DRDO, Metcalfe House, New Delhi
	12:30- 12:40	Key note lecture 20: Agrotechnology	Dr. Anil Kumar , Horticulture-Fruit, BPSAC Bihar Agricultural University, Bihar,
12:40 -1:40	Chair : Dr. Shravan Kumar Singh, DRDO, Ministry of Defence, Delhi-110054, India Co-chair : Dr. Ved Kumar Mishra Rapporteur : Mr. Kishor Kumar Hall A		Chair : Dr. Anil Kumar, BAU Session Co-ordinator: Dr. Ashok Kumar Yadav Rapporteur : Dr. Javed Alam Sheikh Hall B
1:40- 2:00: LUNCH			
2:00- 3:00	GBM meeting for MFPA Technology 2019 announcement: All Committee members		
3:00- 3:45 AWARD SESSION	Chief Guest Prof. Hari S Shukla, MS, FRCSEd, PhD, DSc (Hons), FAMS Professor Emeritus, Banaras Hindu University, President WFSOS (2006-08) Founder Head, Department of Surgical Oncology, Former Dean, Faculty of Medicine Institute of Medical Sciences, Banaras Hindu University, Varanasi - 221005, U.P.		
VALEDICTORY	Chairperson Dr. Asem Surindro Singh, Department of Pathology, University of Mississippi Medical Center, 2500 North State Street, MS 39216 Co-Chair Dr. RS Mishra, Convener, INCON–MFPA 2018 Co-ordinator Dr. Anshuman Mishra Pukyong National University, South Korea & Dr. Raghvendra Raman Mishra, Organizing Secretary, INCON–MFPA 2018 Rapporteur: Dr. Charles Adetunji, Osun State University, Nigeria		
3:45- 3:55	Vote of Thanks: Mr. Vivek Mishra		
3:55- 4:00	National Anthem		
4:00- 5:00 :: Hi Tea			

Deen Dayal Upadhyay Centres for Knowledge Acquisition and Upgradation of Skilled Human Abilities and Livelihood (DDU-KAUSHAL) Kendras: An Update

Dr. R. S. Mishra

Nodal Officer & Coordinator, Deen Dayal Upadhyay Kaushal Kendra, Banaras Hindu University, Varanasi

THE BANARAS HINDU UNIVERSITY (HOST INSTITUTION)

Banaras Hindu University is a leading residential & internationally reputed temple of learning situated at half a mile away from the bank of Ganga in the holy city of Varanasi- “the sacred city” Known for spirituality. The University was founded by the great nationalist and visionary leader, Mahamana Pt. Madan Mohan Malviya, in 1916. The university is spread over 4,000 acres in two campuses – i.e. the main campus being in Varanasi and the second campus being developed at Rajiv Gandhi South Campus, Barakachha, Mirzapur. There are 4 institutes, 17 faculties, more than 140 teaching departments, 4 advanced centers and 4 interdisciplinary schools, 1 undergraduate college for women and more than 80 hostels with more than 30,000 students, about 1,800 teachers and nearly 5,000 non-teaching staffs.



SOUTH CAMPUS, BHU

Rajiv Gandhi South Campus, Barkachha is situated about 12 kilometers from Mirzapur railway station on Robertsganj highway. It has huge campus of over 2600 acres. This campus runs more than 25 interdisciplinary courses including Bachelor & Masters of Vocation course of various disciplines. This campus has administrative block, lecture theatre complex, student's health center, separate boys and girls hostels, guest house, residential facility, dairy farm, two full-fledged banks, Malviya park etc. **Goddess Vindhyachal** temple is very nearby to this campus. Some tourist attraction such as Windom fall, Sirsi fall and Tanda fall are very nearby to this campus.



DEEN DAYAL UPADHYAY KAUSHAL KENDRA, BHU

Deen Dayal Upadhyay Centres for Knowledge Acquisition and Upgradation of Skilled Human Abilities and Livelihood (DDU-KAUSHAL) Kendras are introduced so as to ensure that the graduates of higher education system have adequate knowledge and skills for employment and entrepreneurship. The higher education system has to incorporate the requirements of various industries in its curriculum, in an innovative and flexible manner while developing a holistic and well groomed graduate.



OBJECTIVES OF DDU KAUSHAL KENDRA

- ❖ Create skilled manpower for industry requirements at various levels.
- ❖ To provide for vertical mobility from short term certificate courses to degree programme.
- ❖ To provide supplementary modular training programmes according to job roles at NSQF Level 5 onwards by conducting assessment and certification with respective Sector Skill Councils (SSCs), so that a learner, irrespective of his/her training background, is made job ready with necessary work skills (soft, communication, ICT skills etc) and fill the gaps in the domain skills measured against QPs/NOS.
- ❖ To provide judicious mix of skills and appropriate content of general education specific to a profession.
- ❖ To provide flexibility to the students by means of pre-defined entry and multiple exit points.
- ❖ To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.

At DDU Kaushal Kendra, Rajiv Gandhi South Campus, BHU following skill orientated courses are running:

- Bachelor of Vocation in Food Processing and Management
- Bachelor of Vocation in Retail and Logistics and Management
- Bachelor of Vocation in Hospitality and Tourism and Management
- Bachelor of Vocation in Medical Laboratory Technology
- Master of Vocation in Hospitality and Tourism and Management
- Master of Vocation in Food Processing and Management
- Master of Vocation in Retail and Logistics and Management
- Master of Vocation in Medical Laboratory Technology.

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Abstract ID: INCON-MFPA Technology/INAGURAL LECTURE -01

Improving PCR Analysis of Challenging DNA Samples with Inhibitor Tolerant DNA Polymerases

Prof. Marie Allen,

Professor, Department of Immunology, Genetics and Pathology, Science for Life Laboratory, Uppsala University, BMC, Box 815, 751 08 Uppsala, Sweden, Phone: +46 18 471 4803

DNA analysis is a demanding challenge when DNA samples are degraded, present in low amounts, or contain inhibitors, which are known to frequently compromise the PCR and genotyping. In the present study, seven inhibitors (indigo, ammonium nitrate, EDTA, melanin, humic acid, haematin, and tannic acid), and four different DNA polymerases, are evaluated for final product yield following the polymerase chain reaction (PCR). The results demonstrate that the KAPA 3G Plant and KAPA HiFi polymerases are highly resistant to five out of seven inhibitors in a manner that is relatively independent of concentration. The KAPA 2G Robust polymerase is more resistant than the other polymerases to ammonium nitrate and EDTA. By contrast, AmpliTaq Gold produced very little, or no, PCR product in the presence of all inhibitors. Thus, several polymerases are available that could improve analysis of challenging samples in for example the area of medical, forensic or food technology.

Keywords: - DNA, EDTA, PCR, KAPA 3G Plant, KAPA HiFi polymerases

Abstract ID: INCON-MFPA Technology/INAGURAL LECTURE -02

Presence of Naturally Induced Bacteriophages in the Ganga Water: Application in Medical, Food, Pharmacy and Agro. Technology Field

Dr. Raghvendra Raman Mishra¹, Prof. Gopal Nath²

¹ Medical Lab Technology, DDU Kausal Kendra, RGSC, Banaras Hindu University, Varanasi

² Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University, Varanasi,

Several species of bacterial contaminants are at the high level in Ganga water but question arises that, why Ganga water is not spoils even left for long time and answer is Bacteriophage. In the present study our aim was to isolate bacteriophages against few bacterial contaminants including methicillin resistant *S. aureus* (MRSA); meropenem, imipenem resistant *P. aeruginosa* ceftriaxone and azithromycin resistant *Salmonella Typhi*, and *Escherichia coli* from different Ganga water samples at different rituals during Mahakumbh. The proposed study started since 2007 and conducted by the Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University and Medical Lab Technology, DDU Kausal Kendra, RGSC, Banaras Hindu University after the grant of Council of Scientific and Industrial Research, New Delhi (No.: 9/13(306)/2010-EMR-I). Our study concludes that the great Ganga water is a huge source of above bacteriophages among all possible natural sources with full of diversity.

Keywords: - Bacteriophage, methicillin resistant *S. aureus* (MRSA), *Salmonella Typhi*, *Escherichia coli*, *Pseudomonas aeruginosa*.

Abstract ID: INCON-MFPA Technology/INAGURAL LECTURE -03

Emerging Dichlorvos-Based Air Freshener Pertube Kidney Function in Male Albino Rats

Ajayi E.I.O.^{1*}, Adetunji B.J.², Adeleke M.A.³, Dr. Onilejin A.O.⁴, Idrees M.O.⁵, Babalola T.E.⁶

^{1,2,3,4,5,6} Biochemistry Department, ¹Microbiology Department, Faculty of Basic and Applied Sciences, Osun State University

Dichlorvos is an active ingredient, which is predominantly present in all synthetic and local organophosphorus pesticides used indiscriminately in Nigeria homes and farms. The deleterious effects of this toxicant have been severally reported. Recently, some dichlorvos-based air fresheners have been introduced into the market both for insect eradication and aromatic fragrance, by spraying as mist in homes and offices without the need to vacate the space. The aim of this study, therefore, was to investigate the effects of two variants of dichlorvos-based aerosols, Sharp Action[®] (insecticide) and Choice Double Action[®] (air freshener) on kidney function indices of experimental rats compared to DD Force[®]. Thirty-six (36) male albino rats weighing 180-200g were randomly divided into six groups: Sharp Action[®] (SA₁, 1:12; SA₂, 1:24), Choice Double Action[®] (CDA₁, 1:0.5; CDA₂, 1:1), DD Force[®] (DDF, 25ng/kg) and Control, respectively. The 3 commercial samples were orally administered to rats for 21 days, and following overnight fasting, the rats were sacrificed. Blood was collected for biochemical analysis while kidney was excised for organ-body weight assessment. The results obtained showed that the organ-body weight ratio significantly increased in all treated groups (4.4×10^{-3} , 4.1×10^{-3} , 5.2×10^{-3} , 4.9×10^{-3} , 4.8×10^{-3} , respectively) compared to the control (3.3×10^{-3}). Also, serum urea and creatinine significantly increased ($p < 0.05$) in CDA₁ and CDA₂ (8.39 ± 1.14 mg/dl and 9.55 ± 1.08 mg/dl; 7.38 ± 1.11 mg/dl and 8.07 ± 1.17 mg/dl, respectively) similar to DD Force[®] (6.40 ± 1.02 mg/dl and 7.90 ± 1.18 mg/dl). These were higher compared to SA₁ and SA₂ (5.98 ± 1.01 mg/dl and 6.78 ± 1.05 mg/dl; 5.40 ± 0.09 mg/dl and 6.40 ± 1.03 mg/dl) and control (4.89 ± 0.75 mg/dl and 5.83 ± 0.69 mg/dl). Serum albumin and total protein were significantly lowered by the toxicant (50.48 ± 1.73 g/l and 153.95 ± 8.09 g/l; 53.66 ± 1.33 g/l and 139.46 ± 9.59 g/l; 36.93 ± 2.41 g/l and 81.49 ± 4.38 g/l; 41.89 ± 2.79 g/l and 89.83 ± 3.72 g/l; 41.32 ± 1.10 g/l and 89.66 ± 1.38 g/l, respectively) when compared with the control (66.30 ± 3.63 g/l and 216.30 ± 6.87 g/l, $p < 0.05$). These results suggest that kidney function as well as protein synthesis were seriously impaired by all the dichlorvos samples, more importantly by Choice Double Action[®]. Embracing these dichlorvos-based air fresheners may increase the incidence of chronic kidney disease in the country arising from its nephrotoxicity and ability to damage the kidney.

Keywords: - Dichlorvos, nephrotoxicity, dichlorvos-based aerosols

Abstract ID: INCON-MFPA Technology/ Young Scientist Awardee-01

INCON –MFPA Technology – 2018: Medical Technology



Present Challenges and Appropriate Lead in Phenotype and Disease Identification with Advance Genetic Tools

Dr. Anshuman Mishra^{1,2,3}

¹ CSIR- Centre for Cellular and Molecular Biology, Hyderabad, India

² Pusan National University, Busan, South Korea

³ Pukyong National University, Busan, South Korea

Virus, Bacteria and Protozoa infections in human or animals were related to many diseases and heavy economic burden in all over the world. Genetics used as a effective tool to identify the disease and phenotype differentiation and suggest appropriate lead in either diagnosis or identification. Phenotype identification or clinical phenotype is must for making hypothesis for any genetic analysis. Indian population is complex in terms of diversity & endogamy practices. Our, phenotype and genotype study (n=3031) in middle gangetic regions suggest, 2 SNPs is associated with skin colour (SLC24A5). Further, Phylogeography study shows presence of derived alleles in caste populations of India. In human infectious diseases, understanding the innate immune system (resistance & susceptible populations) is essential to identify any potential risk. Moreover, our Immuno-genetics analysis (Promoter & exonic region along with serum level) of MBL & Ficoline immune molecule in Visceral Leishmaniasis patient (protozoan disease) & control cohort, suggest association of non-synonymous SNPs in ficoline and importance of MBL in host susceptibility. Interestingly, we have found a novel variant (g.5311A-

IL10) is associated with VL patients. Although, another important cytokine of Th2 response; shows different regulation of IL4, due to difference in parasite and Human population. Our study accentuates the complex regulation of VL outcome & demonstrates how the environment, genes & evolution interact to shape the pattern of variation. Genetic analysis is helpful in identifying diagnosis region in infectious agent (bacteria and virus). Bacterial and viral infection in fishes also caused heavy economic loss. Our advance genetic analysis of phylogeography data of worldwide databases lead to find out appropriate diagnostic marker for streptococcal (bacterial) and Iridovirus infections. Through advance genetic analysis, we have established the importance of population phenotype in identification and understanding the progression of disease. Additionally, we have also identified diagnostic regions for viral and bacterial infection in fishes.

Acknowledgement: DBT-RA fellowship, PNU-PDF fellowship, Prof. K. Thangaraj research group (CSIR-CCMB, India), Prof. H. S. Kim research group (PNU, S. Korea)

Keywords: - *Protozoan Disease, non-synonymous SNPs, Genetic analysis*

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Abstract ID: INCON-MFPA Technology/ Young Scientist Awardee-02

INCON –MFPA Technology – 2018: Food Technology



Isolation and Molecular Characterization of Edible *Spirulina* Species and Evaluation of their Food Supplement Under Different Abiotic Stress Condition

Pragya Mishra^{1, 2*}

¹Centre of Food Technology, Institute of Professional Studies, University of Allahabad, Allahabad-211002, Uttar Pradesh, India

²Ranjan Plant physiology and Biochemistry Laboratory, Department of Botany, University of Allahabad, Allahabad- 211002, Uttar Pradesh, India

The aim of the present study was to isolate different *Spirulina* species from paddy fields. By using different microbiological techniques like serial dilution, streaking, pouring and plating method pure and axenic culture of *Spirulina platensis* and *Spirulina maxima* and selected for their further characterization on molecular basis. The 16S rRNA sequences of selected strain was isolated and sequenced. The isolate was confirmed as *Spirulina platensis* and *Spirulina maxima* on the basis of morphology, biochemical tests and 16S rRNA sequence. Amplified and sequenced partial gene sequence of 16S ribosomal RNA gene, *Spirulina deposited to Gene Bank, National Center for Biotechnology Information; <http://www.ncbi.nlm.nih.gov> ...NCBI and received an unique accession number. The *Spirulina* sp. cells were grown in Zarrouk's medium and CFTRI medium at 27 ± 2 °C under the photosynthetically active radiation (PAR) of $75 \mu\text{M photon m}^{-2}\text{s}^{-1}$ with a 16/10 h of light/dark period. Growth of both *Spirulina* species was found to*

maximum in Zarrouk's medium than in CFTRI medium; therefore it was selected for further experimentation. The objective of study was also set to determine the effect of precise/mild stress of Zn (2.5, 3.5 and 4.5 mg L⁻¹) and UV-B radiation (5, 15, 45 min) singly on the growth, physiological and nutritional characteristics of *Spirulina* species (*Spirulina maxima* and *Spirulina platensis*). An increase in biomass production with enhanced antioxidant activity both species of *Spirulina* has been observed with mild stressing i.e. 2.5 mg/L in single metal systems and 5 min exposure of UV-B. Furthermore, we propose how combining such stress adapted strains in weaning food for value addition, to alleviate malnutrition as well as appeal health conscious people. The standardized product consisted of one part of pearl millet crushed for 5 min in a low speed mixer cooked with eight parts of water, 5% salt and 0.8% of cumin powder. Cooked weaning food mixed with 1% curd culture, 1% Spirulina powder and incubated for 12 h (fermentation). The standardized product consisting of this formulation scored 8.13 for colour and appearance, 7.93 for flavor, 7.88 for consistency, 7.94 for mouthfeel, 7.30 for acidity and 8.14 for overall acceptability scores on 9 point Hedonic scale.

Keywords: - *Spirulina* species, paddy fields, serial dilution, streaking, pouring, plating

Acknowledgement: University Grant commission, New Delhi & UPCAR, Lucknow.

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Abstract ID: INCON-MFPA Technology/ Young Scientist Awardee-03

INCON –MFPA Technology – 2018: Pharmacotechnology



Design Synthesis and Pharmacological Activity of some Nitrogen Containing Heterocycles

Parjanya Kumar Shukla

Krishnarjit Institute of Pharmacy, Affiliated to Dr. APJ Abdul Kalam Technical University, Lucknow, Uttar Pradesh, India- 208020

On the basis of background of literature available on nitrogen containing heterocyclic compounds, our research work designed to synthesize different new compounds of biologically active nitrogen containing heterocyclic moieties like thiazole, 1,2,4-triazole, isatin and thiazolidinone and to evaluate their pharmacological activities. Efficient one pot synthesis schemes of these compounds well design by uses of different synthetic environments well accomplished by different catalysts, solvents and reagents. All the synthesized compounds were tested for their *in-vitro* antibacterial, antifungal as well as antitubercular activity against agar disc diffusion method and minimum inhibitory concentration technique in comparison with different standard reference drugs and the results were presented in the given the form of tabular and graphical representation. The *in-vivo* pharmacological screening of the synthesized compounds done for analgesic, anti-inflammatory and antidiabetic activities.

Keywords: - *heterocyclic compounds, thiadiazole, in-vitro antibacterial*

Acknowledgement: Pharmacy Council of India, New Delhi.

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INCON –MFPA Technology – 2018: AgroTechnology



Identification the Host and Pathogen Interaction of Lagenaria Siceraria in Around Varanasi Region Focus on Leaf Curl and Mosaic Disease

Ved Kumar Mishra¹

¹Department of Computational Biology and Bioinformatics, Jacob School of Biotechnology and Bioengineering, Sam Higginbottom University of Agriculture Technology and Sciences, Allahabad, U. P., India.

Genetic basis of phenotypes & its consequent application in plant sciences provide an adequate resource for researchers to understand the agronomics. The quantitative & qualitative traits controlled by genetic as well as environmental factors have been revealed. Genome mapping regions coalescing several genetic factors, regulating diverse phenotypes encoding respective traits, recognition of causatives of mutations unravelling genetic basis of phenotypic diversity. Bottle gourd (*Lagenaria siceraria*) an important crop in India. It was observed to be affected by a chlorotic curly stunt disease (CCSD) in the vegetable growing areas of Varanasi and adjoining cities. The affected plants are severely stunted and bear very small chlorotic and mildly curled leaves. The disease could be easily transmitted by whitefly, *Bemisia tabaci*. Sequence identified of putative coat protein and replication initiator protein (Rep) genes. Host–pathogen interactions are the interactions between a pathogen such as disease, bacteria and their host such as humans, plants. The interactions can be described on the population level that is disease infections in plants, on the single-cell level (individual encounters of host

and bacteria), on the organismal level (e.g. disease infects host), or on the molecular level (e.g. disease protein binds to receptor on human cell). Pathogens may interact with their host without causing disease, e.g. when diseasees cause asymptomatic infections. Notably, some organisms may be both hosts and pathogens, e.g. bacteria that can infect plants but are themselves infected by diseasees.

Keywords: - *Genetic, phenotypes, causatives of mutations, phenotypes encoding*

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Screening for Inborn errors of metabolism in children: Our laboratory experience

Nazmin Fatima¹, Gyanendra Kumar Sonkar², Shalini Tripathi³, Sangeeta Singh⁴, Jamal Akhtar⁵

¹ Department of Biochemistry, IIMS&R, IU, Lucknow

^{2,4,5} Department of Biochemistry, King George's Medical University, Lucknow

³ Department of Pediatrics, King George's Medical University, Lucknow

Inborn errors of metabolism (IEM) constitutes a diverse heterogeneous group of disorders, mainly caused by genetic mutations and result in deficiency of an enzyme or a cofactor or partially active proteins, which may alter synthesis, transport, degradation or storage of molecules in the organism. To screen children symptomatic for IEM, especially aminoacidopathies. This cross sectional study included children population aged 0 to 15 years over a period of 2 years. The urine samples were examined for reducing sugar using Benedict's test, Seliwanoff's test for fructose, Rothera's test for ketone bodies, Ferric chloride test for phenylketonuria, Nitrosonaphthol test for tyrosine, Dinitrophenylhydrazine (DNPH) test for Maple syrup urine disease (MSUD) and Homogentisic acid test for Alkaptonuria. TLC for amino acids was done in urine and blood samples, using butanol, acetic acid and water (12:5:3) as solvent and Ninhydrin was used as staining agent. HPLC was used for quantitative estimation of amino acids. A total of 520 children symptomatic for IEM were screened. Out of this 150 had inherited metabolic disorders of which 84 suffered from aminoacidopathies. Preponderance of males (60%) was more as compared to females (40%). Maximum cases were in the age group neonates to 1 year (47.34%). The most common presentation was lethargy, followed by recurrent vomiting & developmental delay and convulsion. Screening for IEM is most useful in children at a very early age i.e preferably below the age of 1 year because at later stages of life the complications become irreversible.

Keywords: - IEM, aminoacidopathies, screening, TLC, HPLC

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Diagnosis of Indian Visceral leishmaniasis: Current and Future Prospects

Subodh Kumar

DST – CPR, Babasaheb Bhimrao Ambedkar Central University, VidyaVihar, Raebareli Road, Lucknow-226025

Leishmaniasis is a neglected tropical disease, caused by protozoan parasite, of the genus *leishmania*. It comprises of self-healing cutaneous form to life threatening visceral form. In Indian subcontinent, visceral leishmaniasis is prevalently found which is caused by *L. donovani* and is transmitted by blood sucking female sandfly mosquito of the genus *Lutzomyia*. It is a digenetic parasite as it completes its lifecycle in two different hosts. An intermediate host (sandfly mosquito) and definitive host (Human). The clinical symptoms associated with this infection are fever, anemia, pancytopenia, splenomegaly and hepatomegaly. National Vector Borne Disease Control Program (NVBDCP), New Delhi, India, reported that out of total number of cases, 75% of them reported from Bihar state alone. Diagnosis is an important intervention towards the management of the disease morbidity as well as mortality. Currently, microscopic examination of LD body is the gold standard but it is a painful and risky procedure. The others comparatively less invasive methods are ELISA, DAT, PCR & LATEX agglutination test. Literature suggests that in term of sensitivity and specificity, ELISA and DAT were found more sensitive and specific than LATEX agglutination test. PCR based diagnosis were also found sensitive but it required skilled person and sterilized conditions. ICT (Immuno Chromatographic strip test) format has also been developed for field diagnosis. In such strip, a leishmania specific rK39 antigen is impregnated which detects the rK39 antibodies in the blood/serum of the patients with the help of chase buffer. rK39 ICT were found more sensitive (>95%) but the drawbacks associated with this is its inability to differentiate between relapse and cure. It is also showing false positivity in endemic area. The antigen based diagnosis is better than the antibody based as it reflect in the circulation, so that, early diagnosis can be possible.

Keywords: - *Leishmaniasis, protozoan parasite, L. donovani, splenomegaly, hepatomegaly*

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ADIPOQ gene as maker of T2DM and associated complications

Sangeeta Singh¹, Mohammad Mustufa Khan², Gyanendra Kumar Sonkar³, Satyendra Kumar Sonkar⁴, Abbas Ali Mahdi⁵

^{1, 3, 5} Department of Biochemistry, King George's Medical University, Lucknow

⁴ Department of Medicine, King George's Medical University, Lucknow

² Department of Biochemistry, IIMS&R, IU, Lucknow

Genome Wide Association Studies (GWAS) among European and Asian populations identified ADIPOQ locus as the major gene for variation in the serum adiponectin levels. ADIPOQ gene has direct and indirect association with obesity, insulin resistance, metabolic traits that contributes in development of T2DM. Allelic variants of ADIPOQ gene, which is associated with lower adiponectin levels, has been shown to be related with obesity, T2DM, diabetic nephropathy and cardiovascular disease. It was reported that ADIPOQ gene might be responsible for the varying levels of circulating adiponectin. The study was to evaluate the association between circulating adiponectin and its gene variants (**-11377C/G and +10211T/G**) in patients with T2DM, associated complications as compare to control subjects. PCR-RFLP method was used for genotyping and circulatory levels of adiponectin was measured by ELISA. We observed that GG genotype of rs17846866 had significant impact on circulatory adiponectin levels in T2DM cases. The G allele of rs17846866 SNP was found as contributory risk for T2DM in our study. CG haplotype of rs266729 and rs17846866 SNPs have also increased the risk for T2DM. SNP rs17846866 had significant association with serum creatinine and hypoadiponectinemia; indicating it's association with progression of nephropathy. We can conclude that it may be the better predictor for T2DM associated nephropathy but not for T2DM associated cardiovascular disease.

Keywords: - ADIPOQ, gene variants, T2DM, hypoadiponectinemia, nephropathy

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Seroepidemiology of Hepatitis B in Nepal

Smita Shrestha¹, Sudhamshu KC², Balram Gautam³, Sher Bahadur Pun⁴, Sila Mahatara⁵,
Krishna Das Manandhar⁶

^{1,5,6} Central Department of Biotechnology, Tribhuvan University,

^{2,3} Hepatology Division, Bir Hospital, Kathmandu, Nepal

⁴ Sukraraj Tropical and infectious Disease Hospital, Kathmandu, Nepal

In this work, an effort will be made to study the epidemiology biochemical serological and molecular data of the hepatitis B infected patients. Such information will help in assessing the present scenario of Hepatitis B virus in Nepal and also in generating a baseline data regarding the prevailing genotypes in Nepal.

Keywords: - *Epidemiology Biochemical Serological, Hepatitis B, Genotypes*

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Parkinson Disease: Symptoms, Molecular and cellular study, current research, and cure

Sunil Kumar Rai¹, Ajeet Kumar²

¹Department of Biochemistry and Molecular Medicine, University of California Davis, California, USA.

²Department of Biological sciences and Biotechnology, Chungnam National University, Daejeon, South Korea.

Parkinson's disease (PD) is one of the most widespread neurodegenerative disorder ends with symptoms like bradykinesia, rigidity, resting tremor and postural instability in human old age. It is a progressively deteriorative disorder characterized by the consecutive loss of dopaminergic (DA) neurons in the substantia nigra pars compacta (SNpc), a domain of the ventral midbrain (VM). To date, not a single therapeutic possibility for PD have been able to stop or slow down the degeneration of DA in SNpc or its symptoms. Currently, the drugs used to command symptoms, such as levodopa (a dopamine precursor) and MAO-B (a dopamine receptor agonists), are still the basic diagnostic method for PD. However, the side effects of these drugs, including it stop the influence of, dyskinesia, and motor fluctuations, visualize after long-term intake. Furthermore, the aim of these drugs is not to reverse the loss of DA neurons in SNpc domain. A recent perspective to treat the loss of DA neurons is expected using cell-transplantation therapy. However, there is a long way to go before it is possible to generate. Currently, there is no any specific, permanent and positively fruitful with zero side-effects treatment method for the PD diagnosis, mostly researchers focusing on cell transplantation/replacement therapy and many other possibilities. There is few negative points about cell replacement therapy to overcome. In near future, cell replacement therapy will be the most efficient treatment method for PD. Stem cells from different source can be a useful achievement to differentiate in mature DA neurons to replace the degenerated DA neurons. Mature DA neurons can be differentiated from different variety of stem cells like embryonic stem cells, neural stem cells, mesenchymal stem cells, and induced pluripotent stem cells. Human or mouse pluripotent embryonic stem cells are most promising source for the generation of matured and functional dopaminergic neurons. In this chapter we are discussing a detailed story about the PD with its symptoms, molecular and cellular study, current research status with its available treatments.

Keywords: - *Parkinson's disease, Neurodegenerative Disorder, Dopaminergic (DA) Neurons, Ventral Midbrain*

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KN: c*84G>A mutation: risk for myocardial infarction in south Indian population

Sheikh Nizamuddin¹, M. Asif², K. Subramanyam³, Mohammed S Mustak⁴,

¹ School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi - 110067

² Department of Anatomy, Yenepoya Medical College and Hospital, Mangalore, Karnataka, India

³ Dept of Cardiology, K S Hegde Medical College Hospital, Mangalore, Karnataka, India

⁴ Department of Applied Zoology, Mangalore University, Mangalore, Karnataka, India

Myocardial infarction (MI) is multifactorial disorder, caused by interaction of genetic and environmental factors. In this study, we evaluated the genetic risk of rs1801706/c.*84G>A (cholesteryl ester transfer protein) with MI in South-Indians and its effect on blood lipid level, including effect of other environment factors. PCR and Sanger-sequencing was performed to genotype rs1801706/c.*84G>A in 142 MI patients. R was used for all statistical analysis. The rs1801706/c.*84G>A was significantly associated with MI in South-Indians (p -value: genotypic = 0.0206 and allelic = 0.0124; relative risk/RR: AA vs. GG = 1.55, AG vs. GG = 1.58 and A vs. G = 1.52). The rs1801706/c.*84G>A was observed to increase normalized level of VLDL (bad cholesterol) vs. HDL (good cholesterol) ($R_{V/H}$) (p -value = 0.0451). Intriguingly, the frequency of rs1801706/c.*84G>A in MI patients was similar to South-Asian population of 1000 genome project. Besides this, we also observed that other co-factors *i.e.* log (Age), gender and tobacco-use, are associated with lipid levels in MI patients. Association of "A" allele of rs1801706/c.*84G>A with higher level of $R_{V/H}$ and its RR > 1, reveals that rs1801706/c.*84G>A increases the risk of MI through increasing the level of bad vs. good cholesterol. Since, rs1801706/c.*84G>A is same in both MI patient and South-Asian population, we predict similar genetic risk and suggest to avoid smoking, to decrease risk of MI in general population.

Keywords: - Myocardial Infarction, HDL, VLDL, Association, Allele, Mutation

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Role of Common Addictions in Gallbladder Cancer

Dr. Arundhati Rai¹, Prof. S C Mohapatra², Prof. H S Shukla³

¹ Assistant Professor, Home Science, Government Girls P.G. College, Adalhat, Mirzapur, UP, India,

Gallbladder cancer (GBC) is a highly lethal disease. It has a very unusual geographical distribution. The wide geographical difference in incidence of gallbladder cancer suggests the probability of the effect of environmental factors, diet and issues related to life style. The study population comprised 153 patients of gallbladder cancer (GBC) as cases and 153 subjects each of gallstone disease (GSD) and normal healthy people as control groups. The ratio of case: control was 1:2. Individuals in the control groups were matched with the cases for their age, sex and area of residence. Addiction of alcohol consumption, smoking and tobacco chewing was assessed by pre-designed interview schedule with detail history of frequency and duration of intake. Odds ratio with 95% CI were computed. To comprehend gallbladder cancer is a disease of multifactorial aetiology, and it seems highly probable that dietary factors are related to the disease in several ways. Consumption of green leafy vegetables, fruits, tea, coffee and fruit juice was found to be protective for gallbladder cancer. Risk of gallbladder cancer was increased with the consumption of fried foods. Our interpretation of these findings is that, the consumption of alcohol, smoking and tobacco chewing are significantly associated with the risk of gallbladder cancer. This suggests that addiction of any of the three (i.e. alcohol, smoking and tobacco) has definite risk of developing gallbladder cancer and more so if consumed for more than 20 years.

Keywords: - *Addiction, Alcohol, Smoking, Tobacco chewing, Gallbladder Cancer.*

Abstract ID: INCON-MFPA Technology/OT-01

Induction of VBNC state in *Salmonella* Typhi incubated in packaged drinking water and their resuscitation by acid exposure

Ajita Bhawini¹, Mukti Nath Mishra², Gopal Nath^{1*}

¹Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University, India

²CSIR- Central Institute of Medicinal and Aromatic Plants, Lucknow- 226015 (India).

A huge number of microorganisms including *Salmonella* Typhi are known to enter into viable but nonculturable (VBNC) state in response to adverse environmental conditions, which result in unculturability on routine microbiological media. From food hygiene and health perspectives, it creates problem that the improper assessment of real load of the pathogenic bacteria in food or clinical samples by routine microbiological procedures may lead to severe health hazards as these pathogens may resuscitate by various external factors or inside host also. We have induced VBNC form in *Salmonella* Typhi in sterile packaged drinking water at -20°C and successfully resuscitated the bacteria by acid exposure in Luria- Bertani broth. After 30 days of incubation in packaged drinking water at -20°C the CFU/ml decreases from 8×10^{11} to 106 and acid exposure has increased the CFU/ml to 5×10^7 . The 7 log increase in the number of culturable cells after acid exposure represents the potency of our resuscitation factor (LB of pH 3.5). A plasmid (pGF1819) having *gfp* was mobilized in *S. Typhi* for monitoring of viability and the fluorescence in UV light help in better comparative study on culturability. Further involvement of sigma factors (σ^E and σ^S) were also investigated and we found that both the genes resist VBNC induction as double mutant was found to enter in VBNC state faster followed by σ^S mutant, σ^E mutant and then wild type. For the first time we are reporting LB of pH 3.5 as a potent resuscitation factor for *S. Typhi* in case of environmental sample and our findings also raise questions on reliability of current microbiological culture techniques for detection of pathogens or estimation of microbial load in samples.

Keywords: -VBNC, *Salmonella Typhi*, pathogenic bacteria

Abstract ID: INCON-MFPA Technology/OT-02

Synthesis, characterization and evaluation toxicity and immunological effects of melatonin loaded poly (D, L-lactic acid) Nano-Particles (Mel-PLA-Nano-Particles)

Somenath Ghosh¹, Ravi S. Pandey²

^{1,2} Biochemistry Laboratory, Department of Zoology, University of Allahabad, Allahabad-211002, India

Melatonin loaded PLA-Nano particles are nowadays important in biological system for its biodegradable nature in the mammalian system for systemic/targetted drug delivery system.

Hence the aim of the present study is to note the effect of Mel-PLA-Nano particles and toxicity in osteoporosis which is a lesser explored area of research. Different concentrations of commercially available melatonin and PLA were prepared by dissolving in dichloromethane (DCM). The final dried nano-particles were stored at 4°C for future use and a part was used for structural analysis by Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Fourier Transform Infrared Spectroscopy (FTIR). Further, to evaluate the toxicity and immunological impact of nano-particles on rats; animals were divided into 2 groups (control and nano-particle treated, n=5/group) for 7 days. After treatment animals were sacrificed and blood, liver and kidney were collected. A fraction of blood was processed for assessment of cell mediated immune parameters (TLC, DLC and % LC) and remaining blood was centrifuged at 3000 x g at 4°C for 30 min. Plasma was separated and used for evaluation of cytokines, (IL-2, IL-6, TNF- α , IFN- γ , IL-1 β), makers of renal function test (urea, creatinine and BUN). Both plasma and tissue homogenates were used for estimations of AST, ALT, ACP and ALP. The nano-particle size was evaluated by SEM and TEM and was further confirmed by FTIR and in vitro controlled drug release efficacy. We noted significantly high ($p < 0.05$) levels of cell mediated immune parameters (TLC, DLC and %LC) and cytokine parameters (IL-2 and TNF- α) upon nano-particle treatment. But rest of the parameters were found to be significantly low (like IL-6, IL-1 β , AST, ALT; $p > 0.05$) or un-affected (like IFN- γ , ACP and ALP). From our preliminary study we may conclude that we have successfully synthesized Mel-PLA-nano-particles and their physiological effects were non-toxic to the animal.

Keywords:- Mel-PLA-nano-particles, Characterization, Immune effect, Synthesis, Toxicity.

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Current Trends in Life Science: IPR Perspective

Noopur Goel

IP Attorney, Humane IP Consultancy Services

Intellectual Property Rights (IPR) is a bundle of rights which act as a tool for the management of human intellect and knowledge. The IPR scenario is dynamic and fast changing with increasing globalization, advancement of technologies, digital environment, development imperatives and global public policy issues. Intellectual Property (IP) rights are not new in the life sciences domain as well. Some of the concerns about modern biotechnology have, however, focused on the nature, impact and legitimacy of IP rights as applied to gene technology and to inventions drawing on genetic resources and traditional knowledge. Just as the impact of modern biotechnology is being felt nowadays, there is increasing recognition of the importance of the need to have a more balanced IP system that would assure economic development for all. In relation to life sciences as a whole and biotechnology in particular, there are also concerns that IP rights do not encompass material in the public domain or that has been somehow misappropriated. In keeping therewith, many countries including India are currently taking IP into

their economic policies, industrial and technological planning, and into research and development as well as educational programs. This has led to a debate about balancing public and private interests -- on the one hand, providing sufficient incentives for the investments required to bring new technologies to the public, and on the other, ensuring that there is sufficient flexibility and capacity for ensuring that the benefits of new technologies are widely available on equitable terms. There is no doubt that reaping the social benefits and potential value of IP, how the overall balance of interests is struck, does require a practical understanding of how the IP system operates and how IP rights can be used and managed most effectively. IP system acts as more than an inert collection of legal documents. Instead, it is a toolkit for development of and access to technologies, and a means of ensuring their beneficial application. Just as not all researchers need to become patent experts, many, however, strive to make better use of the IP system to assist in ensuring that their research outcomes can be effectively disseminated and used, and often to ensure improved funding for future research programs.

Keywords:- *Intellectual Property Rights, Intellectual Property, patent expert.*

Abstract ID: INCON-MFPA Technology / PP-01

HIV/AIDS: A Threatening Disease and Its Treatments

Kartik Goel¹, Kajol Singh²

^{1,2} Department of Biotechnology and Microbiology, Meerut Institute of Engineering and Technology Meerut, INDIA

AIDS is the last stage of HIV infection, caused by depletion of number of T lymphocytes that deplete the immunity to least. HIV infected patients suffer from various kinds of diseases by getting other infection in our body, as the capability of fighting the other disease is weaker. In this article we focused on some of the researches carried out on HIV infection and the treatment of AIDS. These researches include the treatment by edited stem cell and silencing the gene that codes for CCR5 Protein (CD195) presented on cell surface of the immune cell and then transplanting them into the AIDS suffering person. Another research about treating the infected cell of AIDS by directly applying genome editing technique (CRISPR/Cas9 mechanism) in them and some benefits of these gene editing technique over traditional Anti Retroviral Treatment (ART) by drugs. This review focused on AIDS treatments and provides deep knowledge to get best way to irradiate this disease.

Keywords :- Treatment, Cell transplantation, CCR5 gene, CRISPR/Cas9 mechanism, ART

Abstract ID: INCON-MFPA Technology / PP-02

Cord Blood Derived Mesenchymal Stem Cells: Application in Genetic Diseases

Vivek Pandey¹, Ravi Bhushan¹, Anima Tripathi² and Pawan K. Dubey¹

¹Centre for Genetic Disorders, Institute of Science, Banaras Hindu University, Varanasi-221005, India

²Department of Zoology, MMV-BHU, Varanasi-221005, India

Stem cell regenerative therapies offer great promise in a variety of diseases including bone, neuro and muscular disorders. Umbilical cord (UC) blood is an excellent source of highly proliferative mesenchymal stem cells (MSCs) which have tremendous potential in regenerative medicine for the treatment of malignant and non-malignant conditions in neonates and adults. These cells have an immunomodulatory potential on cells of both the innate and adaptive immune system and recent clinical trials have demonstrated very promising results for the treatment of various diseases. Transplantation of UC derived MSCs provide several advantages, including prompt availability, ease of collection, decreased risk of transmissible viral infections and graft-versus host disease. Extensive laboratory research is taking place and many clinical trials are underway investigating the benefits of mesenchymal stem cells for neurological and autoimmune disorders such as Cerebral Palsy, Autism and Type 1 Diabetes. Although still at early stages, preliminary results from these clinical trials demonstrated high potential and hope towards developing effective therapies for various diseases and disorders for which current mode of therapy is inadequate. In this way, cord blood offers a useful alternative to bone marrow transplants for many patients who are suffering with neurological, muscular and genetic diseases. Further research should be conducted by clinician and researchers to explore molecular mechanism behind the therapeutic potential of UC derived MSCs for the successful treatment of several incurable genetic diseases.

Keywords: -Cord blood, Mesenchymal Stem Cell, Regenerative medicine, Genetic diseases

Abstract ID: INCON-MFPA Technology / PP-03

Human gut microflora and relevance of probiotics and other pathogens on behavioural synergy.

Anil Pandey¹, Neelam Yadav², Atul Kumar Mishra³

^{1,2,3}Centre of Food Technology, University of Allahabad, Allahabad

Man has been keen enough in propagating the efficient exploitation of microorganism in day to day life with advancing modern technologies. Ever since the factual relation which bring about the exploration of microbes for food and pharmacological purposes has been well known. Food consumption pattern and association of microbes in gut colonization brings about significant changes in the behavioral aspects right from infant, adolescence, adult and continued up till old

age. Food consumption pattern and colonization of microbes is dependent on the characteristic profile of good and bad bacteria. This article signifies the food consumption pattern around globe and the type of microflora which exhibits the phenomenal reflections in behavior and physiology of human being. Often the debatable topic of good and bad bacteria has been addressed by various research issues which signify the relevance of proper colonization of such bacteria which can suppress the association of bad bacteria. Hence probiotics association with gut microflora in co-relation to suppression of harmful pathogens is dependent upon the food consumption pattern and the associated lifestyle. This article provides the relative synergism of gut microflora which effects the entire human anatomy. Right from the very birth the gut pattern undergoes sequential steps of modifications with type of microflora and food consumption synergy. Such information has been technically exploited for development of certain probiotics which aid in immunological benefits. The key to healthy living is a healthy association and balance of good and bad bacteria which will be the future trend of health management.

Keywords: -*Probiotics, gutmicroflora, colonization, food pattern*

Abstract ID: INCON-MFPA Technology / PP-04

Antihypertensive Activity of Food Derived Bioactive Peptides: An Overview

Anusha Dhaval¹, Neelam Yadav²

^{1,2} Centre of Food Technology, University of Allahabad-211002, India

Vascular diseases such as hypertension, atherosclerosis, stroke or myocardial infarction are a significant public health problem worldwide. Attempts to prevent vascular diseases often imply modifications and improvement of causative risk factors such as high blood pressure, obesity, an unfavorable profile of blood lipids or insulin resistance. In addition to numerous preventive and therapeutic drug regimens, there has been increased focus on identifying dietary compounds in recent years. Among the food derived bioactive peptides, those with blood pressure-lowering effects are receiving special attention due to high prevalence of hypertension and its role in management of cardiovascular diseases. Bioactive food peptides are encrypted within the sequence of food proteins, which can be released during food processing (by enzymatic hydrolysis or fermentation) or during gastrointestinal transit. As components of functional foods or nutraceuticals with certain health claims, bioactive peptides are of commercial interest as well. Structure/ activity relationship of angiotensin converting enzymes (ACE) inhibitory peptides, as well as their bioavailability, physiological effects demonstrated by both in vitro and in vivo assays, and the contribution of mechanisms of action other than ACE inhibition is discussed in the manuscript.

Keywords: - *Hypertension, cardiovascular disease, bioactive peptides, angiotensin converting enzymes (ACE), bioavailability.*

Abstract ID: INCON-MFPA Technology / PP-05

Identification of Antifungal Nature of Novel Natural Compound CorrA using Comparative Expression Proteomics Approach

Ved Kumar Mishra¹, Prashant Ankur Jain², Satyam Khanna³

^{1,2}Department of Computational Biology and Bioinformatics, JSBB, SHIATS-Allahabad, U.P.-India,

³Directors of RASS Biosolution Pvt. Ltd., Kanpur, U.P.-India

Computational biology and bioinformatics approaches have the potential to completely change the way drugs are discovered and designed. Computational methods like classification and network-based algorithms can be used to understand the mode of action and the efficacy of a given compound and to help elucidating the pathophysiology of a disease. In the present work for the identification of mode of action of natural compound (CorrA) comparative expression proteomics approach was applied. The complex genetic landscape and interaction networks were analyzed to significantly identify the response of the compound. It is evident from the results that all the sub networks generated shows that transcription factor proteins are under expressed and translational annotated protein are under expressed as well. This means that our compound is inhibiting the growth of fungus via inhibiting the expression of translational machine. Hence the result predicts that the plant extract is a viable source for being an antifungal compound (CorrA).

Keywords: - *Computational Assessment, Natural Compound, Transcription Factor*

Abstract ID: INCON-MFPA Technology / PP-06

Women's Nutrition Situation in India: Past, Current status and Challenges Ahead

Zoomi Singh¹, Neelam Yadav²

^{1,2} Centre of Food Technology, University of Allahabad

India is an important front in the fight against malnutrition and is grappling with the coexistence of under nutrition, over nutrition, and micronutrient deficiencies. Being a country in the developmental transition, India faces the double burden of malnutrition. The women health remains to be a challenging issue and led to double burden of diseases with surging prevalence of non-communicable diseases. The health of women is of prime concern in the present scenario as women, throughout the world, have the major responsibility for their families' nutrition and their own nutrition is impaired, under the social and biological stresses they face. The National Family Health Survey (NFHS) conducted in 2004-05, 2015-16 and National Nutrition Monitoring Bureau (NNMB) report 2017 provides a comprehensive profile of population, health, and nutrition in India. The information was collected from women aged 15-49 years drawn from some states of the country. Using data of the national surveys conducted in

last 10 to 12 years and comparing it with recent data, this study addresses the multi-dimensional nutrition challenges being faced by Indian women and their relation with current morbidities and their determinants. Therefore in the present communication some of the salient findings of the NFHS and NNMB report with regards to trends of nutritional status of women belonging to different economic strata are presented.

Keyword: - *Nutrient intake, non communicable diseases, NFHS, NNMB, malnutrition.*

Abstract ID: INCON-MFPA Technology / PP-07

Opium addicts- susceptible to diabetes?

Anit Kumar, Dr. Amit Kaushik

Molecular Genetics Lab, Amity Institute of Biotechnology, Amity University Uttar Pradesh, Sector 125, Noida, Uttar Pradesh, 201313

Diabetes, high blood glucose (hyperglycemia) levels due to low insulin production and/or utilization by cells. Insulin and glucagon are vital for glucose metabolism. On the other hand, Serotonin, monoamine neurotransmitter serves as mood regulator. Serotonin is associated with depression, anxiety, sleep, food craving and reward functions and many other metabolic disorders. serotonin levels are found to be higher than normal in opium addicts and diabetes. These higher levels of serotonin may affect glucose metabolism regulation which may lead to susceptibility to diabetes. This study may reflect a close association of opium addiction to diabetes. In association both, high levels of serotonin and blood glucose levels may cause susceptibility to diabetes in opium addicts.

Keywords: *Opium addiction, Blood glucose level, Serotonin, Diabetes.*

Abstract ID: INCON-MFPA Technology / PP-08

Emerging Role of Nanoparticle in Treatment of Cancer

¹Deepika Singh, ²Amita Verma

^{1,2} Department Of Pharmaceutical Sciences ,Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad

Nanoparticles are targeted drug delivery system, made up of biocompatible material such as silica, metal and nanometres in size. They are novel technology evolving in the field of cancer therapy. They are selective and particular toward their main site, can improve the anticancer effects and at the same time they reduce the toxicity of drug when compared to conventional therapy. Moreover, they offer the possibility to defeat drug resistance prompting higher intracellular drug accumulation. These days, nanotechnologies are connected to molecular diagnostics and fused in cutting- edge sub-atomic analytic strategies, for example, DNA and protein microarray biochips. Nanotechnologies empower analysis at the single-cell and single-

atom levels. Recent advances in disease nanotechnology raises energizing open doors for drug targeting system.

Keywords:- *Cancer, nanoparticles, molecular, drug targeting*

Abstract ID: INCON-MFPA Technology / PP-09

Bacteriophages: A Weapon against Pathogenic Biofilms

Priyanka Singh¹, Pinki Saini²

^{1,2} Centre of food Technology, University of Allahabad

Microbiological contamination in the food industry is often attributed to the presence of biofilms in processing plants. Biofilm formation occurs spontaneously on both inert and living systems and is an important bacterial survival strategy. It forms a complex communities of bacteria attached to a surface and surrounded by an extracellular polymeric material. Their extreme resistance to cleaning and disinfecting processes is related to a unique organization, which implies a differential bacterial growth and gene expression inside the biofilm. In humans biofilms are responsible for many pathologies, most of them associated with the use of medical devices. A major problem of biofilms is their inherent tolerance to host defences and antibiotic therapies; there is therefore an urgent need to develop alternative ways to prevent and control biofilm-associated clinical infections. The impact of biofilms on health, and the economic consequences, has promoted the development of different approaches to control or remove biofilm formation. Recently, successful results in phage therapy have boosted new research in bacteriophages and phage lytic proteins for biofilm eradication. Several in vitro experiments have shown that phages are able to infect biofilm cells and that those phages inducing the production of depolymerases have an advantage since they can penetrate the inner layers of the biofilm by degrading components of the biofilm exopolymeric matrix. This review include different techniques for the improvement of performance of phages against biofilms.

Keywords: - *Biofilms, Phages, Antibiotic therapies, Exopolymeric matrix, Bacteriophage*

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Evaluation of Genomics And Proteomics of Staphylococcus aureus Bacteria And Their Specific role in Causing Diseases

Shruti Mishra¹, Prashant Ankur Jain² and Raghvendra Raman Mishra³

^{1,2}Department of Computational Biology & Bioinformatics, Jacob Institute of Biotechnology & Bioengineering, Sam Higginbottom University of Agriculture, Technology & Sciences (Allahabad U.P)

³2Department of Medical Lab Technology, DDU Kaushal Kendra, Banaras Hindu University (BHU) Varanasi Uttar Pradesh, India

Staphylococcus aureus has long been recognized as one of the most important bacteria that cause serious disease in humans. It is the leading cause of skin and soft tissue infections such as abscesses (boils), furuncles, and cellulites. *S. aureus* can cause serious infections in many patients such as bloodstream infections, pneumonia, bone and joint infections. Methicillin-resistant *Staphylococcus aureus*, known as MRSA, is a type of *Staphylococcus aureus* that is resistant to the antibiotic methicillin and other drugs in this class. We have done some unique experimentations regarding *S. aureus* species like Sample collection, Bacterial Isolation, *Staphylococcus aureus* identification, Morphological characterization on different media, Gram staining, Biochemical characterization, Primer designing for *Staphylococcus*, Quantitative estimation of DNA, Development of Multiplex PCR Assay for Amplification of SEs and 16S rRNA, Post amplification agarose gel electrophoresis for Assay validation, Enterotoxin production and quantification from isolated colonies of *S. aureus*, Molecular weight determination of SEs by SDS and Western Blotting, Antigenicity determination of SEs using In silico approach, Structure analysis of SEs after that we have get unique identity for this species.

Keywords: - Gel electrophoresis, Bioinformatics tools and techniques, PhyML and MEGA6, Clustal W.

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Current Approach of Bacteriophages in Biotechnology

Urvashi Srivastava¹, Pinki Saini²

¹Research Scholar, Centre of Food Technology, University of Allahabad.

²Assistant Professor, Centre of Food Technology, University of Allahabad.

Bacteriophages also called phages are viruses that infect and replicate within bacteria. Phages has been used as predators of pests (bacteria) which is associated with plants, fungi or their products. Bacteriophages are one of the most abundant life forms on earth. They are found in water, soil and within human, plants and animals. Phages are metabolically inert in the extracellular form. They have played key role in the biotechnology and advance in molecular biology over the past 30 years, has been built on the study of phage structure and genetic information carried out through 1950 and 1960. Phages are used as vehicles for vaccines both DNA and protein, for the detection of pathogenic bacterial strain as display system for many proteins and antibodies. Bacteriophages are diverse group of viruses which are easily manipulated and therefore they have potential use in bacteria, research and therapeutics. Phages can be used individually to treat a bacterial infection by lysis the bacterial cells and at the same time the versatility of phages would allow us to use the antibodies against the bacteria. They have been displayed on the surface of phage, similarly a protective antigen could be delivered as a DNA as phage display vaccine. So a mixture of phage that is modified genetically would be more helpful in addressing all these problems. Phages have been used in the diagnosis of the disease, through phage typing and its prevention (phage vaccines), to the treatment. The aim of this review article is to enable the wide range of researches to practice and accelerate the progress and development in the field of biotechnology.

Keywords:- Bacteriophages, biotechnology, endonuclease, phage vaccine.

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Characterization of Effects of Formulated Plant Extracts (Clove and Cardamom) on Hyphal Morphogenesis in Candida albicans

Riya Agarwal¹, Asmita Das²

^{1,2} Department of Biotechnology, Delhi Technological University, Rohini, New Delhi

There is a recent estimation of about 8.7 million eukaryotic species on earth, out of which 7% (611,000 species) are fungi. Among them only around 600 species are pathogenic to humans. This relatively small group circumscribe fungi that causes relatively mild infections of the skin (e.g., dermatophytes and Malassezia species), fungi that causes severe cutaneous infections (eg., Sporotrix schenckii) and fungi that have the possibility to cause life threatening systemic infections (eg., Aspergillus fumigates, Cryptococcus neoformans, Histoplasma capsulatum and Candida albicans). Actually, Candida species are the fourth most widespread systemic infections in US with crude death rates of upto 50%. In humans, C. albicans causes two major types of infections: i) Superficial infections (eg. oral or vaginal Candidiasis) and ii) life threatening systemic infections (1). Candida show two modes of proliferations: i) hyphal mode, in which elongated tubes are formed by the continuous growth at the tips where the separate cells are marked by septa. ii) Yeast growth mode, where distinct cells are elongated or bud-off daughter cells that typically dissociate from mother cells. In nature, yeast form is less commonly found but it is generally seen in economically and scientifically important organisms such as Saccharomyces cerevisiae. Some fungi are not restricted to specific growth mode i.e. they can grow either in yeast form or in hyphal form, depending on certain environmental conditions. Such fungi are termed as dimorphic fungi.

Keywords: - fungi, dimorphic fungi, cutaneous infections

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Bacteriophages: as an indicator for the presence of bacteria in a sample

Virendra Bahadur Yadav¹, Gopal Nath²

^{1,2} Ph.D. Scholar, Dept. of Microbiology, IMS, BHU

Bacteria are becoming resistant to almost all available antibiotics very rapidly. So, there is need to search an effective alternatives. Bacteriophages may be one of them. Bacteriophages are fairly narrow in their spectrum of activity, display larger therapeutic window, capable of replicating to higher densities in situ. Presence of these properties in bacteriophages makes it good alternative against multidrug resistant bacteria. To isolate Salmonella Typhi and bacteriophages against it to observe the prevalence of both in our environment. We tried to isolate S. Typhi from 10 different water samples by conventional methods, but could isolate only

two (20%). Then we modified our isolation procedure by exposing the samples to LB broth of pH 3.5 for 15 minutes and neutralizing the pH with alkali followed by overnight incubation and then cultured on DCA media. Bacteriophages from all samples were isolated and host range determination was done. After modification in isolation procedure, our isolation rate was 4 out of 10 isolates (40%). Surprisingly, we got bacteriophages against isolated *S. Typhi* from all 10 water samples. Activity of all bacteriophages were tested against *E. coli*, *K. pneumoniae*, *S. aureus* and *P. mirabilis*. Only one phage was active against *E. coli*, rests all were specific to *S. Typhi* only. The presence of bacteriophages in all water samples although indirectly but strongly indicates the presence of *S. Typhi* in all samples. There must be something missing in our conventional isolation procedure which is making the bacteria VBNC.

Keywords :- *Bacteria* , *Bacteriophages* , *Salmonella Typhi*

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Risk Factors of Metabolic Syndrome

Dr. Praveen Kumar Singh

Medical Officer , Centre for National Facility for Tribal and Herbal Medicine (NFTHM), Faculty of Ayurveda, IMS, BHU

Metabolic syndrome is also known as syndrome X, insulin resistance syndrome, or dysmetabolic syndrome. It is a cluster of metabolic risk factors that come together in a single individual. These metabolic factors include insulin resistance, hypertension (high blood pressure), cholesterol abnormalities, and an increased risk for blood clotting. Affected individuals are most often overweight or obese. Metabolic syndrome is considered to be a risk factor for cardiovascular diseases and type 2 diabetes. While obesity itself is likely the greatest risk factor, others factors of concern include: Post-menopausal women, smoking, eating an excessively high carbohydrate diet, sedentary lifestyle. Insulin resistance refers to the diminished ability of cells to respond to the action of insulin in promoting the transport of the sugar glucose, from blood into muscles and other tissues. Based on the guidelines from the National Heart, Lung, and Blood Institute (NHLBI) and the American Heart Association (AHA), any three of the following traits in the same individual meet the criteria for the metabolic syndrome: (a) Abdominal obesity: a waist circumference of 102 cm (40 in) or more in men and 88 cm (35 inches) or more in women. (b) Serum triglycerides 150 mg/dl or above. (c) HDL cholesterol 40mg/dl or lower in men and 50mg/dl or lower in women. (d) Blood pressure of 130/85 or more. (e) Fasting blood glucose of 100 mg/dl or above. In laboratory picture of metabolic syndrome also includes presence of small LDL3 particles and increased concentration of apolipoprotein B. Determination of glycaemia and triglycerides and HDL-cholesterol levels is fundamental for the diagnosis of metabolic syndrome.

Keywords: - *Syndrome-X*, *BMI*, *LDL3 particles*

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Ethyl acetate Extracts of Tephrosia purpurea Induces Anticancer Activity and Apoptosis in Human Breast Cancer Cell line MCF-7

Rajesh Kumar Singh¹, Amit Ranjan², Ruchita Tripathi³, Anil Kumar Singh⁴, Santosh Kumar Singh⁵

^{1,2,5} Centre of Experimental Medicine and Surgery, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005;

^{1,3,4} Department of Dravyaguna, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005

Breast cancer is the most frequently cause of death in women due to malignancy. The incidence rate is increasing day by day and projected to be double nearly 2030 of the present incidence. Most of the drugs in clinical use are either isolates of plants or their derivatives. The medicinal plants are potent source of drug development and discovery. Tephrosia purpurea is a well known Indian medicinal herb which belongs to Fabaceae family. It is commonly known as wild indigo and described as Sarapunkha in Ayurveda to treat various diseases such as jaundice, liver, asthma and urinary disorders. Its anticancer potency is poorly understood. Therefore, this study aims to investigate the anticancer activity of T. purpurea in MCF-7 human breast carcinoma cells. The whole plant of Tephrosia purpurea was dried at room temperature ($25 \pm 2^\circ\text{C}$) for three weeks and grinded into powder. The powder (100 g) was macerated into 1 l ethylacetate for two days and this process was repeated twice, followed by column chromatography using petroleum ether, ethyl acetate and methanol as solvents for elution. The ethyl acetate (EA) elute was evaporated and dried at 50°C under reduced pressure using a rotary evaporator. The cytotoxicity of the EA extracts of T. purpurea was evaluated using MTT assay whereas the mode of cell death was examined by AO/EB double staining and DNA laddering assay. The ethyl acetate extract (EAE) of the plant was found to have a potency to induce cytotoxic (IC_{50} value $13.37 \mu\text{g/ml}$) apoptosis in human breast cancer, MCF-7 cells. The ethyl acetate extract of T. purpurea induce apoptosis mediated cell death in MCF-7 cells.

Keywords: - *Tephrosia purpurea*; MTT assay; MCF-7; apoptosis; breast cancer

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Zinc Oxide nanoparticles (ZnONPs) as contrast agent for imaging of animal tissue using swept source optical coherence tomography (SSOCT)

Titiksha Mishra¹, Mayukh Chakravarty², Raju Poddarb³

^{1,2,3} Biophotonics lab, Department of Bio-Engineering, Birla Institute of Technology, Mesra, Ranchi, Jharkhand – 835215.

We present a noninvasive three-dimensional depth resolved imaging of animal tissue with a swept source OCT (SSOCT) system at 1064 nm center wavelength and Zinc Oxide nanoparticles (ZnONPs) as a potential contrast agent. A swept source laser light source is used to enable imaging rate of 100 kHz (100,000 A-scans/s). Swept source optical coherence tomography (SSOCT) is a new variant of OCT technique, offering unique advantages in terms of sensitivity, reduction of motion artifacts etc. To enhance contrast of OCT image, ZnONPs are utilized as exogeneous contrast agent. ZnONPs are synthesized using zinc acetate and oxalic acid via precipitation method. Characterization of ZnONPs is done by UV-Vis spectroscopy, Dynamic light scattering (DLS), Scanning electron microscopy and Energy dispersive X-ray spectroscopy (SEM & EDS). In-vitro imaging of chicken breast tissue, with and without the application of ZnONPs is performed. The effect of ZnONPs is studied with different exposure time. A mathematical model is also built to calculate changes in local scattering coefficient of tissue from OCT images. A quantitative estimation of scattering coefficient and contrast is performed for tissues with and without application of ZnONPs. Significant improvement in contrast and increase in scattering coefficient with time is observed.

Keywords: - OCT contrast agents, Swept source optical coherence tomography, Tissue scattering coefficient, Zinc Oxide nanoparticles (ZnONPs), Biomedical imaging.

Abstract ID: INCON-MFPA Technology / PP-17

The challenges of common health issue: OBESITY

Dr. Raju Poddar¹, Satya Prakash², Abhishek Kumar³, Naresh Mishra⁴, Minakshi Dwivedi⁵, Neetu Gupta⁶

^{1,2,3,4,5,6} NFTHM Centre, Faculty of Ayurveda, IMS, BHU

Obesity represents a major public health problem and carries with it the risk of developing significant medical problems. The global burden of obesity is rising at an alarming rate worldwide and also in India. The WHO estimates that in 2015, more than 1.9 billion adults worldwide were overweight and more than 600 million were obese¹ in the 21st century; obesity has reached epidemic proportions in India with morbid obesity affecting 5% of the country's population. Body mass index (BMI) is an index of weight-for-height that is commonly used to classify overweight and obesity in adults. The World Health Organization (WHO) definition is: 1) A BMI greater than or equal to 25 is overweight and, 2) A BMI greater than or equal to 30 is obesity. Usage of herbs for the management of obesity in the recent times is attracting attention. Many herbal interventions are available today which have anti-obesity properties. There are at least 250,000 species of plants out of which more than 1,000 plants have been found to possess significant pharmacological properties. Natural herbal medicinal plant preparations may enhance satiety, boost metabolism, and speed up weight loss. Dietary fat is associated with well-known diseases like diabetes, hypertension and cardio-vascular diseases. Herbal drugs are a promising route to treat obesity as it is a disease. There are various plants and formulation in pharma zone, which are claiming the challenge, but we are currently working on two therapies. One is Apamarga with Yogic interventions and another is "MedoHar Pay", a formulation developed by us for giving a simple morning tea treatment to all obese or overweight people. As

we know that ideal herbal anti-obesity product should be showing improvement in bio markers like blood pressure, and lipids without any side effects, we are collecting data on these parameter too.

Keywords: - *BMI, Obesity, Apamarga, Herbal drug.*

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Medical technology in Indian Medicine with special reference to Panchakarma

Aanchal Sharma

Faculty of Ayurveda, Institute of medical Sciences, BHU

Ayurveda, the ancient science of health is one of the Indian and traditional systems of medicine. The mode of treatment is broadly classified into palliative (samana) and purificatory (sodhana) therapies. The latter consists of well-known practices categorized under Panchakarma- five therapeutic procedures, one of the prominent Ayurveda tools which uses induced vomiting therapy, purgation therapy, enema therapy, nasal therapy and bloodletting preceded by oleation and steam therapy. It is designed to allow the body to rid itself of wastes that have accumulated and lodged in the body, creating blockages in the intelligent flow of the various systems, including the circulatory, nervous, and digestive systems. Once this cleansing process is complete, the body can resume its natural functioning without interference. These procedures can serve as major interventions to prevent various metabolic and lifestyle disorders like obesity, type II diabetes, arthritis, atherosclerosis, asthma, liver disorders, heart disease, osteoporosis, depression. Also to identify those at high risk, it requires modern technological tools for scientific and clinical study of its mode of actions in human population such as hematological, immunological, microbiological, serological, urinalysis and miscellaneous body fluid analysis along with vital findings before and after the mentioned purificatory procedures. Use of sophisticated equipments for medical imaging like CT, MRI and X-rays along with medical monitors can be used to assess the patient's vital parameters including ECG, EEG, and blood pressure. This will allow the Panchakarma practitioners to measure a patient's medical state during the therapy and documenting its efficacy for further researches.

Keywords: - *Medical technology, Ayurveda, Panchakarma, Therapeutic tools, traditional system*

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Anemia and Rural Pregnant Women in Varanasi Region

Dr. Sushma Tiwari

Medical Officer, Centre for National Facility for Tribal and Herbal Medicine, Faculty of Ayurveda, IMS, BHU

Anemia is a major public health problem affecting the developing countries. According to World Health Organization, prevalence of anemia among pregnant women in developed countries is about 14%, whereas it is still as high as 51% in the developing world. The aim of the present study was to understand the health profile and the socio demographic factors of the country's rural pregnant females and to estimate the exact prevalence of anemia and its associated factors among pregnant women at term based on the level of hemoglobin. Indian women have very high prevalence of anemia as well as malnutrition in the world. Hemoglobin (Hb) level in their blood is reported below the normal value i. e 11-14gm According to National Family health survey of India -3, prevalence of anemia among women of 15-49 years age group is found to be 55.3 %, in pregnant women it was 8%. It is underlying cause for 20 -40 % maternal death, thus anemia is the most frequently observed nutritional diseases in the world. In India, anemia is the second most common cause of maternal death, accounting for 20% total maternal deaths. This study aims to determine the prevalence of anemia and to explore factors associated with anemia in rural Indian pregnant population, in Varanasi district of Uttar Pradesh state. A total of 178 rural pregnant women were selected randomly. Data on socioeconomic status, pregnancy, nutritional status and food consumption were collected. Hemoglobin estimation of the samples was done. Observed data were analyzed statistically. It was investigated in the present study, that prevalence of anemia was significantly higher. The contributing factors found were: literacy, occupation and low standard of living of the study women; their awareness about anemia and its prevention by regular consumption of iron and folic acid tablets and increase in food intake.

Keywords:- Anemia, pregnant women, dietary intake.

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Development of chronic typhoid carrier model in Swiss albino mice

Shailendra Singh¹, Gopal Nath²

¹ Ph.D Scholar Dept. of Microbiology IMS, BHU

² Dept. of Microbiology, IMS, BHU, Varanasi.

Typhoid is a food and water borne infectious disease which is transmitted by fecal oral route. It can cause millions of death every year worldwide. Approximately 2% to 5% patients of typhoid fail to eradicate the Salmonella sp. within one year and it finally establish chronic carrier. Chronic carriers shed Salmonella bacilli intermittently and maintain reservoir of disease in endemic community. Our objective was to develop chronic carrier model in Swiss albino mice. We take Swiss albino mice 6-8 weeks old. Fresh culture of Salmonella Typhimurium was inoculated in Luria Bertani broth for overnight incubation. Next day we take cultured flask and centrifuge at 5000rpm for 10 min. and it repeated with phosphate buffer saline (PBS) . Serial dilution was done for bacterial counting. Bacterial inoculation was done by IP (Intraperitoneal) route .Experiment was started from 10³ CFU/ml and after every seventh day tenfold count of bacterial load was increases to the final of 10⁷ CFU/ml. Culture and PCR was done from stool to detect shedding of Salmonella Typhimurium. We found that S. Typhimurium are getting

secreted in the stool both by culture and species specific PCR. Intraperitoneal (IP) injection of 103 to 107 CFU/ml after every seventh day make chronic typhoid model in mice.

Keywords: - *Salmonella Typhimurium, chronic carrier.*

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Forest Health Assessment Using Hyperspectral Remote Sensing : An Approach for Natural Resource Management

Vimla Singh¹, L.K. Sinha²

^{1,2} DTRL, DRDO, METCALFE HOUSE, NEW DELHI

The socioeconomic development of the any country is based on the natural resources of the nation. If there is any technique that helps to manage the natural resources then it will be boon for the nation. Remote sensing (RS) and Geographical Information System (GIS) is the technique that helps lot in the management of the natural resources. Here in this study we have tried to estimate the vegetation health of the region using hyperspectral imagery in ENVI software for the management of forest and its conservation in terms of healthy and stressed vegetation with different vegetation indices. Vegetation health mapping is useful for detecting pest and blight conditions and it is useful in assessing areas of timber harvest. A forest exhibiting low stress conditions is usually made up of healthy vegetation, whereas a forest under high stress conditions shows signs of dry or dying plant material, very dense or sparse canopy, and inefficient light use. Hyperspectral RS is an advanced technique in the series of RS that is helpful in efficient mapping and analysis of the object. RS gives an abundant opportunity to monitor and manage natural resources at multi-temporal, multi-spectral and multi-spatial resolution imagery. It is an urgent need to understand the specialized capabilities of RS in an ever-expanding array of image sources and analysis techniques for natural resource management. In this article, we have inferred the various applications of remote sensing and GIS tools for forest health assessment in terms of stress detection, vegetation health analysis and fire fuel vegetation analysis that is most useful information for forest management and its conservation.

Keywords: - *Natural Resource Management, Remote Sensing, GIS, Hyperspectral RS, Forest Health Assessment, Vegetation Indices, Forest management*

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Dichlorvos, pesticides, inflammation, nephrotoxicity, chronic kidney disease

Komal Kumari

SHUATS Allahabad

Kala azar continues to be a medical problem in India and with the increase in incidence of HIV Infection it is likely that kala azar will be encountered more frequently and in its atypical forms. To aid diagnosis, several immunological tests are now available and they are more sensitive and specific than the aldehyde test. Like many other diseases today, the treatment of kala azar is hampered by drug resistance. Newer drugs are available and so are new delivery systems. Kala azar develops frequently in the HIV infected person before development of AIDS. The presentation is atypical and leishmanial species other than *L. donovani* may also be the infecting agents. A combination of sandfly control, detection and treatment of patients and prevention of drug resistance continues to be the ideal approach for the control of the disease.

Keywords: - *Kala azar, Leishmaniasis, HIV*

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Prospective of Ayurveda in Wound Management

Dr.Garima Yadav¹ , Dr.S.J.Gupta²

¹ PG Scholar Dept.of Shalya Tantra, Faculty of Ayurveda, IMS-BHU, ² Professor Dept. Of Shalya Tantra, Faculty of Ayurveda, IMS-BHU

The whole surgery revolves around wound & no any surgeon remains untouched with it. So, wound healing is a big quest for all surgeons. A wound may be defined as the disruption of cellular and anatomical continuity of soft part of body structures caused by violence or trauma. All living beings are bestowed with a natural phenomenon of repair, regeneration and healing in due course of time. However, wound healing is delayed and becomes difficult to manage if they become infected. As great pioneer of Ayurvedic surgery, Acharya Sushruta has also given the equal importance to Vrana by giving the term 'Vrana Vinischayartham' in the definition of Shalya Tantra itself. Sushruta covered each & every aspect of wound in very scientific & systemic manner in his treatise Sushruta Samhita. He not only elaborated the description of Vrana, its etiopathogenesis, types, principles of management, sixty procedures named as Shastiupakrama, but also described locally applied drugs as well as systemic application of drugs in wound management along with the cosmetic management of wound scar. Acharya Sushruta was also aware of the facts chronic wounds/infected wounds and describe its various characters as 'Dushta Vrana'. Sushruta also indicated the process by which impediments to dushta vrana (chronic wound) can be removed thus preparing way for uninterrupted healing by process known as 'Vrana Shodhana' (Wound Bed Preparation). Once these impediments are removed normal healing process can be accelerated by the process described under the heading 'Vrana Ropana' (wound healing). Thus it can be said that Sushruta's management of wound was much more thorough and ahead of its time.

Keywords: - *Wound, Sushrut, Ayurved, Wound Healing*

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Effect of sodium reduction by KCl and CaCl₂ on mango pickle properties

Arghya Mani¹, Prodyut Kumar Paul²

¹ Department of Post-Harvest Technology, BCKV, Mohanpur

² Department of Pomology and Post Harvest Technology, UBKV, Pundibari

An intensive study was conducted for sodium reduction in mango pickle without compromising with the pickle quality. As mango pickle is high salt containing product, so there is large consumption of Na⁺ ions along with pickle. Hence an attempt had been made to partially reduce the consumption of Na⁺ by using alternative salts like KCl and CaCl₂. However, the maximum limit of KCl and CaCl₂ in a salt mixture has been set to 75% and 25% respectively. D-optimal mixture design was adopted to formulate 16 runs. The 16 runs are actually the 16 different combinations of salts that are to be used for curing purpose. The pickles thus prepared were evaluated for the responses like water drawing capacity (g/100g salt), hardness of cured sample (N), water activity, sodium and potassium concentration in pickle (in ppm), LAB population (log CFU), total plate count (log CFU) and organoleptic properties based on Hedonic scale. The result shows that Water Drawing Capacity was of maximum value of 102.692 in the 6th run and minimum value of 58.364 in 2nd run. Hardness of cured sample (in N) was found to be maximum 8.470 in 11th run and minimum of 6.998 in 9th run. Water activity was found to be maximum in 9th run which is 0.974 and minimum of 0.968 in the 2nd run. Na concentration in final pickle sample (in ppm) was found to be highest in the 14th run which is 408.715 and lowest in 2nd run (68.715) and lower in the 1st run (70.408). K concentration in final pickle sample (in ppm) was found maximum in 6th run which is 472.222, and minimum in 9th run which is 28.744. Lactic acid bacteria count in log CFU was found to be maximum in 14th which was 6.452 and minimum in the 6th run which is of value 6.151. Total Plate Count (log CFU) was found to be maximum in 14th response which is 6.397 and minimum in 10th run which was 6.316. When organoleptic properties based on hedonic scale was evaluated, it was found that run number 14 and 12 have maximum score of 7.429 and 7.393 respectively whereas run number 1 and 2 have minimum score of 6.552 and 6.616 respectively. Through numerical optimization, it is concluded that a salt mixture having 50% NaCl and 50% KCl can be used as salt mixture for curing mango pickle with a desirability constant of 0.658. However a salt mixture of 51.7% NaCl and 42.9% KCl can also be used as a salt mixture for curing mango pickle with a reasonably comparable desirability constant of 0.64.

Keywords: - Pickle, Salt reduction, salt substitution, Na less salt, KCl, CaCl₂, firmness

Abstract ID: INCON-MFPA Technology / PP- 25

The consumer behavior towards food packaging with special reference to food , safety food nutrition and environment

Mandavi Sahu¹, Dr. Tribhuvan Nath²

^{1,2} NIFTEM (National Institute of Food Technology Entrepreneurship And Management)

The food packaging is the vital component of the food marketing , the food processing industries are producing the package processed food to increase the shelf life and to safe guard the packaged food from external environmental influences from the living organism , damages , spoil , etc. The major objective of food packaging to provide the safe and nutritious food to customer . The food packaging is perform different roles the primary role is protect the food from contamination and preservice of food quality it consist of different layer these layer in the form of tamper indication and labeling give the information about the product, usage , hologram, credence attributes of the product etc. Traceability , convenience , availability and tamper indication are comes the secondary function of packaging , that makes the food product more value added . The goal of food packaging should be cost effective to meet the customer expectation in terms of safe , nutritious and minimize the environment pollution and to meet the industry requirement . the study is conducted a customer base of 500 population size using empirical research for analysis the consumer preference towards food packing with reference to food safety , food nutrient and environment by using statistical tool for analysis of the data and tabulation method for report generation and preparation , whether the food packaging is meet the standard baseline of packaging.

Keywords: - *nutrient, sustainability, safety, credence, attributes.*

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Quality retention of Dolichos lablab seeds by various Post-Harvest treatments

Abhinay Shashank¹, Er. Durga Shankar Bunkar², Dr. Amrita Poonia³

^{1,2,3} Centre of Food Science and Technology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi-221005

Dolichos lablab (field bean) is traditionally grown as a pulse, and also used as vegetable and fodder. Legumes (including lablab beans) are a rich source of bioactive, non-nutrient compounds (phytochemicals) (Anderson et al. 1999; Messina 1999). Dietary polyphenols from dry beans may act as antioxidants to inhibit the formation of damaging free radicals, that result from the natural degradation of foods (Namiki, 1990). Keeping in view the nutritional and functional qualities of Dolichos beans and the need to enhance its storage quality, the present

study entitled has been carried out. 9 sets of trials were generated taking into account three treatments blanched, washed and chemically treated as well as storage temperature of 50C, 100C and 250C and were performed in triplicates. Responses were examined for physicochemical properties, sensory and textural properties, antioxidative and phenolics analysis as well as microbiological properties. The data were analyzed using software MS Excel 2007 (statistical functions). The Chemical treatment (Sorbitol 0.05%, citric Acid 3% and Calcium Chloride 1%) solution used for dipping Dolichos beans was found to preserve many quality parameters for a considerable period of time. Among many other retention of firmness, colour and antioxidative and Phenolics content of treated Dolichos beans were of noticeable significance. In the present study, it was found that the most favorable condition came out to be at 50C with Chemical treatment for storage of bean seeds, while at 250C with blanched condition was found most adverse.

Keywords: - *Dolichos lablab*; *Post Harvest Treatments*; *Temperature*

Abstract ID: INCON-MFPA Technology / PP- 27

Biosorption: A Novel Biotechnological Application For Removal of Hazardous Pollutants"

Anchal Singh¹, Pinki Saini²

^{1,2} Center of Food Technology , University of Allahabad, Allahabad ,U.P

Biosorption is an emerging biotechnological innovation that involves removal/remediation of organic and inorganic substances like heavy metals, pigments, dyes, phenolics and pesticides from aqueous solution by economical alternate biological materials. A number of biomasses of different genera have been recognized to possess good biosorption capacity. It includes living or dead microorganisms like algae, bacteria, fungi, yeast and their components such as exopolysaccharides, seaweeds and plant materials, industrial, agricultural waste, natural residues are employed as sorbent in biosorption process. Biosorption process involve a solid phase (sorbent/biosorbent material) and liquid phase (solvent) containing a dissolve species to be sorbed (sorbate/metal ions). It is a physico-chemical, passive, rapid, reversible and metabolic independent process. The binding characteristics of biological materials are attributed to functional groups present on their surface. Mechanisms involved in the biosorption process include complexation, adsorption-complexation on surface and pores, ion exchange, membrane filtration, microprecipitation, heavy metal hydroxide condensation onto the biosurface, and surface adsorption. Time, temperature, pH, concentration of organic pollutants and biomass in solution have significant role in this process. It is an excellent way to treat industrial waste effluents, precious metal recovery, offering significant advantages like the low-cost, availability, profitability, ease of operation and efficiency, effective and ecofriendly biological method. The aim of this article is to bring out the role of biosorption in treatment and management of toxic waste.

Keywords: - *Biotechnology*, *Biosorption*, *Biosorbent*, *Physio-Chemical*, *Microprecipitation*.

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Traditional Indian earthenware cooking system; the lost art of home therapeutic and nutritional management.

Anil Pandey¹, Neelam Yadav²

^{1, 2} Centre of Food Technology, University of Allahabad, Allahabad

Relation of man with nature and resource utilization has always played a vital role in exhibiting the importance of food system from farm to fork. Although the modern day food preparations and packaging signify the importance of high pressure with the advanced packaging that shows the constant growth and comprehension of man with modern technologies. Such advance technologies have constantly replaced the traditional life style and important aspect of earthen ware cooking which has contributed to the phenomenal living standard in the ever cultural ethics of Indian food consortium. This article provides relative information on the lost cooking and healthy eating standards which have better advantages in countering the nutritional challenges. The symbiosis of nature, food and man has suffered due to the interventions receding the harmony of man with natural association. The information compiled ascertains the strong synergism of food when cooked and served in natural artifacts. Modern day challenges and lifestyle diseases need to draw the traditional cooking style which has the potential for delivering health benefits. The article throws the impact and interaction of food with earthen wares during cooking which has been utilized ever since the early civilizations (Indus valley). Serving of food on banyan and banana leaves which is still under practice in some parts of India could be resourceful ethics of countering nutritional challenges. The interaction of food with such natural adjuvant has been found quite blissful in restoration of shelf- life while meeting nutritional and therapeutical synergy of the food component.

Keywords: - *traditional, earthenware, nutritional, therapeutic*

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Nutrition Education : A Step Towards Food and Nutrition Security

Anugya Bharti¹, Kalpana Kulshrestha²

^{1, 2} Department of Foods and Nutrition, GB Pant University of Agriculture and Technology, Pantnagar, Uttarakhand – 263145

The problems of undernutrition, vitamin and mineral deficiencies, obesity and diet related chronic diseases increasingly exist side by side across the world. On one side, those who do not get enough energy or key nutrients cannot sustain healthy, active lives resulting in poor physical and mental development and at the same time, hundreds of millions suffer from chronic diseases caused by excessive or unbalanced diets. Thus, many developing nations are now dealing with severe health issues at both ends of the nutritional spectrum. Thus, focussing solely on food security alone does not lead to improvements in nutritional status. Access to

healthy food is critical to solving the problem of nutrition security and is most effective when combined with nutrition education. Nutrition education helps individuals, families, and communities make informed choices about food and lifestyles that support their physiological health, economic, and social well-being. It is delivered through multiple venues and involves activities at the individual, community, and policy levels. Nutrition education is an evidence-based, cost effective way to improve health outcomes and foster healthy eating habits for a lifetime.

Keywords: - *Nutritional spectrum, food security, nutrition education, nutrition security.*

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Heavy Metal Accumulation in Fruits and Vegetables

Arshi¹, Neetu Mishra²

^{1,2}Centre of Food Technology, University of Allahabad, Allahabad-211002

The issue of heavy metal pollution is very much concerned because of their toxicity for plant, animal and human beings and their lack of biodegradability. Excess concentrations of heavy metals have adverse effects on plant metabolic activities hence affect the food production, quantitatively and qualitatively. Heavy metal when reaches human tissues through various absorption pathways such as direct ingestion, dermal contact, diet through the soil–food chain, inhalation and oral intake mysteriously affect their health. Heavy metal contamination of agricultural soils resulting from rapid industrialization and urbanization is of great concern because of potential health risk due to dietary intake of contaminated fruits and vegetables. The present study aims to evaluate the status of heavy metals contamination of agricultural soils and agricultural products like fruits and vegetables. The concentrations of Pb, Cd, Zn and Ni in fruits/vegetables exceeded the WHO/FAO safe limits. Alternative options should be carried out in order to prevent excessive accumulation of heavy metals and all fruits and vegetables should be washed properly before consumption as washing can remove a significant amount of aerial contamination from the fruits and vegetables surface. To avoid the entrance of metals into the food-chain, municipal or industrial waste should not be drained into rivers and farmlands without prior treatment.

Keywords: - *Agricultural products, Heavy metals, Biodegradability, Contamination, Urbanization.*

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Utilization of Defatted Rice Bran for the Development of High Fiber Biscuit

Devinder Kaur¹, Pinki Saini², Neelam Yadav³, Nidhi Tiwari⁴, Smriti Singh⁵

^{1, 2, 3, 4, 5}Centre of Food Technology, University of Allahabad, Allahabad, U.P., India

In the present study, physico-chemical characteristics, antioxidant potential of microwave stabilized rice bran and its utilization in preparation of bread were evaluated. The effect of

supplementation of rice bran at 5-30% on the proximate composition, texture, color and sensory attributes were evaluated and dietary fiber content and antioxidant activity were determined. The moisture content, crude protein, crude fat, crude fiber and ash of the composite biscuit increased significantly with increased level of supplementation. The incorporation of rice bran give significant effects towards the biscuit spread ratio and texture attributes, where the biscuit become denser and harder in texture with increased supplementation of rice bran. The increasing bran levels darkened the product as shown by decrease in lightness (L^*) and whiteness whereas other color attributes, dietary fiber content and antioxidant activity increased significantly ($p < 0.05$) with increased bran percentage. Thus supplementation of rice bran up to 15% level would improve the nutritional quality of biscuit without adversely affecting the sensory parameters.

Keywords: - rice bran, bread, composite biscuit

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Food industry By-Products/Waste as a vital source of bioactive compounds and their future perspectives

¹Bijay Kumar

¹SERB Young Scientist; Molecular Biology Unit, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005

Modern life style of the current generation has made large working populations foremost dependent on processed food. As result great demand occurs for processed food that revolutionized food industry in past 2 decades. The food industry usually generates million tons of waste or by products annually throughout the world by various means. These waste or by products mostly become problems for the society under casual disposal and also put economical burden on industry for waste management system. Recent advancement in biotechnology and medicine; several research on these waste or by products have prominently highlighted the presence of large amounts functional food ingredients; having excellent medicinal and health supplement property. And these waste or by products are chiefly available the large volume of the low cost by-product gives economical advantage of its potentially valuable components and environmental benefits. Therefore, the recovery of by-products to health beneficial product and economic benefit to labor, stakeholder and country. Now people become more health conscious for their health and diet to avoid the life style related diseases. Consumers selective approach for nutritional values foods have created the dramatic changes manufacturer concept of food preparation and their waste or by products uses as food supplements. Now a day's consumer always looks for nutritional values of the food; as directly related with health and wealth. We not only look foods just to fulfill our hunger but must have essential nutrient to keep us healthy and protected from many disease. The market for the functional foods has seen a tremendous demand in the recent years. This chapter will brief about various food industries by products that are being commercially used in functional food ingredients for human consumption and their uses in various disease.

Keywords: - *Processed food, nutritional values*

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β - sitosterol - Predominant Phytosterol of Therapeutic Potential: A Review

Ena Gupta¹, Neha Mishra², Reena Chaturvedi³

^{1,2,3} Centre of Food Technology, University of Allahabad, Uttar Pradesh, India.

In plant cell membranes there is a group of naturally occurring compounds referred to as phytosterols (plant sterol and stanol esters). Phytosterols are structurally similar to cholesterol, occurring in plants and vary in absence or presence of a double bond in carbon side chain. These phytosterols does not produce undesirable side effects and are generally recognized as safe (GRAS). There are around more than 200 sterols and allied compounds have been identified. The plants exclusively made the most predominant phytosterol that is β - sitosterol, a white waxy powder in its pure form. A Deoxyxylulose and mevalonate pathway promotes its biological synthesis. It is majorly found in plant kingdom (nuts and seeds, fruits, fresh vegetable, and higher concentration in unrefined plant oils such as flaxseed, olive, canola, corn and sesame oil). Some clinical and preclinical studies suggest that β -sitosterol provides many significant health benefits. It lowers the level of bad cholesterol (LDL) and reduces the risk of coronary artery disease, heart attack and atherosclerosis, preventing many types of cancers along with supporting body's natural recovery process. This review article is aimed at the chemistry of β -sitosterol, biosynthetic pathways, and their metabolism along with wide range pharmacological and therapeutic applications.

Key words: - *Phytosterols, β - sitosterol, Therapeutic applications*

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Breakfast and Nutrition: Presumptions and Assumptions

Fatma Mahajabi¹, Upadhyay Garima²

^{1,2} Vasant Kanya Mahavidyalaya, Kamaccha, Varanasi (constituent college of BHU, Varanasi)

Breakfast is one of the most essential components of a person's diet and plays significant role in assuring the good health and well being of person. It kick starts our metabolism. In spite of the proven significance of this meal, it has been observed that it is often devalued and skipped. Skipping this important meal has become an increasingly popular part of modern life. Many studies have linked breakfast to good health, including better memory, concentration, cognitive development and prevention of some life style diseases including obesity. This paper attempts to focus whether breakfast aids in helping lose weight. Methodology consists of collecting data from secondary sources. The results of various studies will be analyzed. Experts found that people who eat breakfast are less likely to overeat the rest of the day. Some recent studies also suggest no difference in weight gain between breakfast skipper and who do not skip. On the

one hand, it is also found that fasting for longer overnight periods could actually help people lose weight. The global prevalence of obesity has risen in the last few decades, affecting the higher and lower-middle income countries populations. Obesity commonly results from association of factors including unhealthy diet, breakfast skipping and physical inactivity. Irregular breakfast consumption is associated with obesity among different age groups. Breakfast consumers tend to have lower body mass index than breakfast skippers.

Keywords: -*Breakfast Consumption, Obesity, Nutrition, Assumptions, Health*

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Microbial Production and Applications of L-lysine

Ashutosh Kumar Pandey¹, Kritika Pandey², Lalit Kumar Singh³

^{1, 2, 3}. Department of Biochemical Engineering School of Chemical Technology, Harcourt Butler Technical University, Kanpur – 208002 (Uttar Pradesh), India

L-lysine is one of the nine essential amino acids and important for human and animal growth. L-lysine constitutes a crucial part of a billion dollar animal feed industry and represents the fastest growing amino acid segment. The global market for L-lysine has increased almost 20 times in the past 20 years. As a supplement in cereals, it forms a balanced feed for animals including poultry and other livestock. It is used in pharmaceuticals, cosmetics, dietary and feed supplement. L-lysine is used in overcoming Angina Pectoris as key factor to clean arteries and also in cancer prevention. It is important for adequate calcium absorption and hence for maintaining bone health. It is also an integral component of musculature and has a role in antibody production. L-lysine, along with arginine, is shown to have a role in collagen synthesis and also the highest proportion of these two amino acids has been reported in histone nucleoprotein. Soybean meal, malt extract, corn steep liquor, molasses are rich source of L-lysine and are generally used as substrates for the industrial production of the amino acid. Various species like *Corynebacterium glutamicum*, *Brevibacterium flavum*, *Brevibacterium lactofermentum*, *Corynebacterium lilium*, *Brevibacterium dicvaricatum*, *Escherichia coli* are used for industrial production of L-lysine. More than 2.2 million tonnes of lysine salts are produced annually worldwide and the demands have been continuously increasing in recent years. Ajinomoto Co. Inc., Archer Daniels Midland Co., Global Biochem Technology Group Company Ltd. are some of the leading manufacturers of L-lysine.

Keywords: - *L-lysine, amino acids, fermentation, microorganisms.*

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Probiotics and Health

Megha Singh

Department of Biotechnology and Microbiology, Meerut Institute of Engineering and Technology Meerut, INDIA

Probiotics, splitting on literary side we get "pro" meaning "promoting" and "biotics" as "life" and on scientific relevance these are the "live microorganisms (especially bacteria) which, when administered in adequate amounts, confer a health benefit on the host" by interacting and improving the gut (intestinal) microflora, directly enhancing the immune system of the body. The original modern hypothesis of the positive role played by certain bacteria was first introduced by Russian scientist and Nobel laureate Élie Metchnikoff. The strongest evidence to date finds that probiotic benefits boosting immune system, prevent urinary tract infections, improve digestive dysfunction (diarrhea), heal inflammatory bowel conditions like IBS, manage and prevent eczema in children, fight food-borne illnesses. Microorganisms most frequently used are Lactobacilli (*L. fermentum*, *L. plantarum*), Bifidobacteria (*B. infantis*, *B. bifidum*), *Bacillus subtilis*. Probiotics are produced by conventional batch fermentation and suspended cultures; also continuous cultures and immobilized cell systems are also used. Probiotic products including food (yogurt, sauerkraut, cheese), dietary supplements (Wakamate-D, Acilact), infant formula, medical foods, pharmaceuticals etc are commercially available in the market. However, tablets, capsules, powders & sachets containing bacteria in freeze-dried form are also available. On the contrary side, probiotics can also have some harmful side effects such as immunocompromised patients or patients with a leaky gut has resulted in infections, sepsis (infection of the bloodstream) and allergy.

Keywords: - *Probiotics, microflora, fermentation, yakult, sepsis*

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Consumption of Green Chilli and its Nutritious Effect on Human Health

Mohammed A. Al-Sebaei¹, Anil Kumar Chauhan², Arvind³, Poonam Yadav⁴

^{1, 2, 3, 4} Centre of Food Science and Technology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi-221005, India

¹ Department of Food Science and Technology, Faculty of Agriculture and Veterinary Medicine, University of Ibb, Yemen

Chilli (*Capsicum annum* L.) is the most widely consumed spice and used in the cuisine of both the developing and developed countries. Green chilli has widespread acceptance around the world as a food and source of spices. They provide essential antioxidant, vitamins A, C and E for most of the world population. They are considered to be a good source of various nutritional compounds, such as flavonoids and mineral elements. Chilli also produces high amounts of

Vitamin B1 (thiamine), B2 (riboflavin), and B3 (niacin), Green chilli showed antioxidant and antimicrobial properties and can be used as natural antioxidant agents in food preparations. The group of pungent components is called capsaicinoids. The most commonly capsaicinoids found in food are capsaicin (69%), Dihydrocapsaicin (22%), Nordihydrocapsaicin (7%), Homocapsaicin (1%), and Homodihydrocapsaicin (1%). These compounds have strong physiological and pharmacological properties. Chillies are widespread as a neuropharmacological component in medical products due to its high contain of capsaicin, protein, fixed oil, thiamine and ascorbic acid. Chilli can be used a fresh, the normal way to use it is in the dried form either whole ground or crushed. The fresh fruit is also used in salad, pickle and canned product. In food flavourings, capsicum is extensively used in hot sauces like Tabasco and pepper. It is an important ingredient for flavouring meat, vegetable soups and processed meats. The tincture and essence of capsicum are used to increase pungency in chewing and smoking tobacco, ginger, ginger ale, ginger soda, rum etc. Chilli oleoresins and oils are also used for flavouring the snack foods.

Keywords: - *Chilli, Capsicum, Green, Capsaicin, Health.*

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β-glucan: A valuable functional ingredient of food

Neha Mishra¹, Ena Gupta²

^{1,2} Centre of Food Technology, University of Allahabad, India

β-glucans is a group of β-D-glucose polysaccharides naturally occurring in the cell walls of bacteria, fungi, yeasts, algae, lichens, and plants such as oats and barley. They have received considerable attention in last few decades due to their various biological and therapeutic activities such as antibacterial, antitumoral, immunomodulant, and radioprotective properties. Typically β-glucans comprises a different molecular backbone, level of branching, and molecular weight which affects its solubility and various physiological activities. This review article comprises the structure, history, sources and focused on the physicochemical properties, extraction procedure, mechanisms of action and their pharmacological effects. Based on previous studies effects of addition of β-glucans on technological and functional properties of various ingredients in food and pharmaceutical industries are discussed. Concurrently, we also summarized the recent knowledge about their unfavorable and potential toxic side effects of β-glucans.

Keywords: - *β-glucans, biological activity, therapeutic activity, pharmaceutical, physicochemical properties.*

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Nutritional Status and Risk Assessment of Cardiovascular Disease among Women of Reproductive Age in Varanasi City

Singh Nidhi¹, Chakravarty Archana²

^{1,2} Mahila Mahavidyalaya Banaras Hindu University, Varanasi

The health of women is associated to their status in the society. In women's life, those years of life between menarche and menopause called reproductive years. The requirement of all nutrient elements has been increased during pregnancy and lactation periods of women. Cardiovascular disease (CVD) is a general term describing disease is the most common form of CVD and caused by atherosclerosis in the large and medium arteries that supply the heart muscle with oxygen and nutrients. Cardiovascular disease is the leading cause of death in many countries. The possible etiological factors are diet, fats, cholesterol, carbohydrates, sedentary life, smoking cigarettes and obesity. Diet restriction (fat and carbohydrates) and exercise are helpful in the management of cardiovascular disease. The study was carried out in Varanasi. The sample consisted of one hundred (100) respondents (women) of reproductive age. The data was collected through interview schedule method.

Keywords: - *Nutrition, Women, Cardiovascular Disease*

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Formulation, Preparation and Evaluation of Low-Cost Extrude Products Based on Cereals and Pulses

Verma Nidhi¹, Chakravarty Archana²

^{1,2} Department of Home Science Mahila Maha Vidyalaya, Banaras Hindu University, Varanasi

The World Health Organization defines nutrition as "a process whereby living organisms utilize food for maintenance of life, growth and normal function of organs and tissues and the production of energy" Protein-energy malnutrition among children is the major health challenges in developing countries. Low nutritional quality of traditional complementary foods and high cost of quality protein-based complementary foods it is evidence that high prevalence of deaths each year among children aged less than five years old in the developing world is associated with malnutrition. The main aim of this study was formulation, preparation and evaluation of low-cost extrude products based on cereals and pulses. In current research, researchers used different methods of processing such as soaking, germination, milling, and finally extrusion cooking to increasing shelf-life; removal of toxins; removal of anti-nutrients, which will improve digestibility and availability of nutrients; and improvement of palatability of new products. Extrusion is a powerful food-processing operation which utilizes high temperature and high shear force to produce a product with unique physical and chemical characteristics. Extruded products are

mainly produced from cereal grain. Snack products, which contain mainly carbohydrate and fat, can be made with increased protein content by adding high quality protein including pulses. Extrusion cooking is used worldwide to produce snack foods, ready-to-eat cereals, baby foods, pasta and pet foods. The mean scores of sensory evaluation of extruded products showed that this combination has significantly better color, flavor, texture and overall acceptability than others.

Keywords: - *extruded products, low cost food, cereals, and pulses*

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Omega 3 fatty acid from plant sources and its application in Food Industry

Poonam Yadav¹, Anil Kumar Chauhan², Mohammed A. Al-Sebaei³

^{1,2}Centre of Food Science and Technology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi-221005, India.

³Department of Food Science and Technology, Faculty of Agriculture and Veterinary Medicine, University of Ibb, Yemen

Lipids are considered as one of the most elemental nutrients for humans. Lipid metabolism generates many bioactive lipid molecules, which are fundamental mediators of multiple signaling pathways and they are also indispensable compounds of cell membranes. Omega 3-fatty acids, one of the lipid compounds and have a high nutritional status; its consumption has been reported to improve health by reducing the risk of cardiovascular disease, obesity, diabetes, inflammation, and several neurological diseases. They also involved in inflammatory processes in the body. The three types of omega-3 fatty acids involved in human physiology are α -linolenic acid (ALA) (found in plant oils), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA) (both commonly found in marine oils). It is important for vegetarians to include foods that are rich in omega-3 fatty acids on a daily basis. Alpha-linolenic acid is found in many vegetables, beans, nuts, seeds, and fruits. The best source of alpha-linolenic acid is flaxseeds or flaxseed oil. For those seeking to increase their intake of omega-3 fatty acids, more concentrated sources can be found in oils such as canola (also known as rapeseed), soybean, walnut, and wheat germ. Omega-3 fatty acids can be found in smaller quantities in nuts, seeds, and soy products, as well as beans, vegetables, and whole grains. Fortification and encapsulation are the most common methods used for addition of Omega-3 fatty acids to food product such as yogurt, juices, grains, nuts, fresh produce, oil, baby food.

Key words: - *Omega 3, fatty acid, Plant, Food*

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Development of Pearl millet Supplemented Kulfi

Prafull Kumar¹, Shiv Bhushan Singh², Srishti Upadhyay³

^{1,2,3}Warner College of Dairy Technology, SHUATS, Allahabad (U.P) – 211007

Kulfi is a traditional dairy-based frozen dessert sold in almost all the cities in India and relished by people of different age groups, mainly popular among the teenagers. Although quite similar to ice cream, it is denser and creamier. It is available in variety of flavours. Pearl millet is a good source of antioxidant, excellent bulking agent and cholesterol lowering agent. It is full of vitamins, minerals and amino acids. It is excellent source of energy. Pearl millet based products generally have more nutritional value and health benefits provide a wide range of benefits like lactose digestion, diarrhoea, immune system modulation and serum cholesterol. The present investigation involved development of pearl millet powder supplemented kulfi. Control kulfi mix was standardized to 12% milk fat, 14% sugar to obtain 44% total solid. Treatments T1, T2, T3 was supplemented with 2%, 3% and 4% pearl millet powder respectively. T0 treatment was considered as the control sample containing no pearl millet powder. Optimization of product was done by sensory evaluation using 9 point hedonic scale and the products were presented to a panel of 5 partially trained judges who found that T3 was best with respect to flavour and taste, colour and appearance, body and texture and overall acceptability. The physico-chemical analysis of the product was also carried out.

Keywords: - *Kulfi, pearl millet, supplemented, organoleptic evaluation, compositional analysis*

Abstract ID: [INCON-MFPA Technology / PP- 43](#)

Microbial Enzymes and Their Applications in Food Industries

Priyanka Singh¹, Pinki Saini²

¹Centre of Food Technology, Faculty of Science, University of Allahabad, India.

Enzymes are proteins, which act as catalysts. Enzymes lower the energy required for a reaction to occur, without being used up in the reaction. Many types of industries, to aid in the generation of their products, utilize enzymes. Examples of these products are; cheese, alcohol and bread. Traditional enzyme production relied on the natural hosts as raw materials, however genetic engineering has now given a choice for producing sufficient quantities of enzymes in selected production hosts including microorganisms and transgenic plants. Fermentation is a method of generating enzymes, which involves the use of microorganisms, like bacteria and yeast to produce the enzymes. Production of microbial enzymes is a necessary event in the industrial sectors, due to the high and superior performances of enzymes from different microbes, which work well under a wide range of varied physical and chemical conditions. Hence microbial sources are found to be the cheapest and most potent source for enzyme production for industrial applications.

Keywords: - *Enzymes, Microorganism, Fermentation.*

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Microbial Enzymes and Their Applications in Food Industries

Priyanka Singh¹, Pinki Saini²

^{1,2} Centre of Food Technology, Faculty of Science, University of Allahabad, India.

Fermentation in food processing is the process of converting carbohydrates to alcohol or organic acids using microorganisms—yeasts or bacteria—under anaerobic conditions. Fermentation usually defines the desirable action of microorganism to enhance food safety by inhibition of pathogens, they generally preserve the foods and modify their sensory properties, they improve their nutritional value by removing anti-nutritive compounds, and by enhancing bioavailability of components. Pulses and Legumes are the major source of dietary nutrients all over the world. Although, they are deficient in some basic components (e.g. essential amino acids), fermentation can be the most simple and economical way of improving their nutritional value, sensory properties and functional qualities. Pulses and legume based fermented food products offer opportunities to include probiotics, prebiotics and fibers in the human diet. In the Indian subcontinent, making use of fermented food and beverages using local food crops and other biological resources are very common. But the nature of the products and the base material vary from region to region. The consumption of lactic acid fermented cereal product has proven its positive effect on human health. This chapter focuses on some of the indigenous fermented foods produced in the country that have not received the scientific attention they deserve in the last decades. Products produced from different pulses and legumes substrates fermented by lactic acid bacteria, yeast and/or fungi are included.

Key words: -*Fermentation, Pulses, Legumes, Nutritional values, Probiotic, Prebiotic.*

Abstract ID: INCON-MFPA Technology / PP- 45

Recent techniques used in modification of starches: A review

Radha Kushwaha¹, Devinder Kaur²

^{1,2} Centre of Food Technology, University of Allahabad (email: radhakushwahagunn@gmail.com)

Starch is a carbohydrate which can be extracted from a variety of sources like cereals (maize, wheat and rice) roots and tubers (cassava, yam and potato) and pulses. Starches have a wide applications in food and non- food Industries. In native state of starches limited applications was found as they have poor solubility at room temperature, resistant to enzymatic hydrolysis and lack of specific functional characteristics, low shear stress resistance and thermal decomposition and high syneresis and retrogradation so it must undergo for modification to disrupt the granule structure and to get required functional properties. Modification of starches can be done by using physical (annealing, heat moisture treatment, microwave oven method, pre-gelatinization, and other non-thermal processes), chemical (etherification, carboxy-

methylation, esterification, cross-linking and oxidation), enzymatic and genetic modification or combination of them. All these techniques have ability to prepare starches with altered physicochemical properties, enhanced functional properties and modified structural attributes. Modified starches have numerous possibilities to produce new functional and value added properties as demanded by the food industries.

Keywords: - *Starch, cereals, roots, tubers, pre-gelatinization, etherification, esterification.*

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Therapeutic potentials of Bael (*Aegle marmelos*)-A concealed boon for society

Rashmi Srivastava¹, Neetu Mishra²

^{1,2}Centre of Food Technology, University of Allahabad, Allahabad-211001

Aegle marmelos (L.) Corr. commonly known as is Bael, Beli, Beligiri (Hindi), Golden apple, Bael (English), Shivaphala, Vilva (Sanskrit) Bael, Bael kham (Urdu), Bael (Assamese and Marathi), Marred (Malayalam), Bilvaohal (Gujrati), Vilvama Vilvamarum (Tamil), Belo (Oriya), and Bilva, Bilva Pandu (Telugu) in India belonging to the family Rutaceae is a very important medicinal plant of India. Other name of this fruit is "Mahaphala" (Fruit with all qualities) in Ayurvedic System of medicine. Bael is native to Northern India but widely disseminated throughout the Indian peninsula and in Ceylon, Burma, Bangladesh, Thailand and Indo-China. Bael fruit is useful in the treatment of chronic diarrhea, dysentery, and peptic ulcers, as a laxative and also used in various folk medicines. Traditionally Bael has been used against various diseases and many bioactive compounds have been isolated from this plant also. Different clinical and experimental studies revealed that *Aegle marmelos* plant shows their therapeutic potential as antidiabetic, antimicrobial, antiviral, anticancer, antidiarrhoeal, chemopreventive, antipyretic, ulcer healing, antigenotoxic, radioprotective, diuretic, antifertility and anti-inflammatory properties, which helps to play role in prevention and treatment of many disease. In the present review, it is tried to summarize the phytochemical and pharmacological studies done on *Aegle marmelos* plant. Therefore, it is valuable to review its therapeutic properties to give an overview of its status both modern and ancient. In current review discussed about the therapeutic potentials of the above plant in many fields due to its preventive activities.

Keywords: - *Aegle marmelos, folk medicine, peptic ulcer, Phytochemical, therapeutic potential*

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Effect of Pomegranate Peel

Reshma Saroj¹, Devender Kaur²

^{1,2}Centre of food technology, University of Allahabad, Allahabad- 211001

Punica granatum (L.) belongs to the family Puniceae commonly known as Pomegranate. In India pomegranate is commercially cultivated in solapur, sangali, nasik, ahmednager, pune, dhule, Aurangabad, satara, bijapur, belgaun, pune and bagalkot districts etc. The peel of pomegranate is rich in antioxidant which helps in curing the degenerative diseases such as obesity, diabetics, cardio-vascular disease, cancer etc. The therapeutic potential of Pomegranate peel has been also reported. Pomegranate rind is a rich source of hydrolysable tannins of the ellagitannin group. From previous studies it can be concluded that pomegranate peel has rich in proximate composition and antioxidant potential. Hence its antioxidant used for natural preservatives and also used in the production of dyes. Pomegranate peel helps in the treatment of intestinal worms, diarrhea, inflammation, infertility and cough etc. Pomegranate peel extracts used for antibacterial activity was tested against staphylococcus aureus, enterobacter aerogens, salmonella typhi etc. Recent studies shows that from pomegranate peel pectin can be extracted. Due to low cost wastage of pomegranate peel is available from industry which can be use as product formulation.

Keywords: -*Pomegranate peel, Antioxidant, Antibacterial activity.*

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Odontonutraceuticals: Phytochemicals for Oral Healthcare

Shikha Pandhi¹, Arvind²

^{1,2}Centre of Food Science and Technology, Institute of Agricultural Sciences, Banaras Hindu University

Use of plants for treatment of many diseases had been known from decades. Alike various health problems, oral diseases had also emerged as a serious health issue amongst the population. Due to high emergence of oral infections, increased resistance by bacteria to antibiotics, adverse effects caused by the chemical based remedies currently used in dentistry and also the financial considerations serve as the major reason for development of alternative prevention and treatment options that are safe, economical and effective in this regard. Odontonutraceuticals is a new term introduced in order to identify those phytochemicals that contributes to prevention and management of oral diseases. Plant polyphenols are secondary metabolites that are essential for many plant functions. They exert a preventive action against infectious and degenerative diseases and may also help in preventing oral diseases, via mechanisms like antioxidant activity and neutralization/ modulation of human/bacterial/viral proteins/enzymes. Incorporation of these substances exhibiting antimicrobial and antioxidant activity in the form of extracts into different systems such as Chewing gums, toothpastes etc. Poor oral bioavailability and easy modification by environmental factors such as temperature, pH and light of these substances is a major constraint. Nano-delivery systems have been developed in order to overcome the delivery challenges of polyphenols. The main objective of this review is to provide a comprehensive introduction about the role of polyphenols in oral health care and also about the use of nanocarriers as delivery system to improve their bioavailability and stability.

Keywords: -*Phytochemicals, Polyphenols, Nanocarriers, Bioavailability, Antimicrobial*

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Plant Based Milk Substitutes

Sonika Pandey¹, Dr. Amrita Poonia²

^{1,2} Centre of Food Science & Technology, Institute of Agricultural Sciences, Banaras Hindu University

Plant based milk substitutes or non dairy substitutes are among the fastest growing beverage segments worldwide. There are many reasons behind such growth. Lactose intolerance is one of the main reasons. Now days, more and more consumers are attracted towards eating healthily. Due to this, they pay close attention to the foods they consume. Plant based milk substitutes are naturally lactose-free and lower in cholesterol and fat than milk from animals. These substitutes are often more easily digested than dairy products this also favours those people who do not suffer from lactose intolerance. Other than soy, which is the main driver of this growth – instead, innovative beverages are made from nuts, grains and seeds. These substitutes are manufactured by extracting the plant material in water, separating the liquid, and formulating the final product. Homogenization and thermal treatments are necessary to improve the suspension and microbial stabilities of commercial products that can be consumed as such or be further processed into fermented dairy type products. The nutritional content depends on the plant source and fortification.

Keywords: -*Plant based milk substitutes, lactose intolerance, nutritional content, innovative beverages.*

Abstract ID: INCON-MFPA Technology / PP- 50

Cold Plasma an emerged Technology for Food Industry: An Overview

Suman Rai¹, Amrita Poonia²

^{1,2} Centre of Food Science & Technology, Institute of Agricultural Sciences, Banaras Hindu University

The necessity for improving microbial food safety and quality, without conceding the sensory, functional and nutritional characteristics of food, has created an interest in novel technologies in food industry. This is an emerging non-thermal technology offering many potential applications and fulfils the necessity of the industry. The plasma is considered as the fourth state of matter and a neutral ionized gas that consist highly reactive species, such as electrons, positive ions, negative ions, free radicals, gas atoms and photons at near room temperature. This technology requires minimum processing conditions and offer great opportunities for food preservation. It is reflected as modern non-conventional technique which is used for the preparation of modified starches; increase the surface energy of polymers that enhance adhesion and printability of packaging materials. The reactive species generated by electron collision play a key role in the surface decontamination of food and food packaging materials. Recent research showed that cold plasma processing caught the attention of various areas of food industry like cereal, fruits,

vegetables, dairy, meat, poultry etc. Besides this, it is an eco-friendly technology which is used in the preservation of food and other potential applications as an alternative to common techniques.

Keywords: - *Cold Plasma, Non-thermal, Preservation, Packaging, Decontamination, Eco-friendly*

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Functionalized Electrospun Nanofiber for Food Packaging

Suman Rai¹, Tanya Chakrabarti², Anil Kumar Chauhan³

^{1,2,3} Centre of Food Science & Technology, Institute of Agricultural Sciences, Banaras Hindu University

The electrospinning technology is a novel fabrication technology and has garnered huge interest in the last few decades. It is based on high electric fields that can be used to manufacture polymer and biopolymer based mats which is composed of nanofibers or other nanostructures. The fibres can be made in a variety of lengths with fibre diameters ranging between 10 and 1000nm. Although electrospinning is known since 1930's, its application in food science and technology is relatively new. The various advantages of fibres having exceptionally small diameters include large surface-to mass ratio, high porosity, and superior mechanical performance. Electrospun fibres can be functionalized using additives and there is intensive research to produce nanofibers with added functionalities for food packaging. Some of the research done in this includes manufacturing of antimicrobially active packaging material by incorporating silver nanoparticles in synthetic polymer fibres. Another example is an electrospun nanofiber made of soy protein or PLA fibres with allyl isothiocyanate, which is a natural antimicrobial compound. Similarly research is being carried out in manufacturing of zein or chitosan nanofibers with biocide. Electrospun nanofibers can also be used in smart packaging, which can monitor quality change during storage. A research study showed that scientists produced a fibre mat to monitor real time pH change in food systems by using a pH sensitive dye. Electrospun nanofibers also provide better protection as it can be used in multi-layered structures. Researchers have produced fibres with oxygen barrier thereby reducing food oxidation during storage. Various other examples exist and show the advantages of using nanofibers in food packaging. They can be used as carrier systems for the delivery of antimicrobial agents, antioxidants, enzymes drugs, flavours, colours, and other functional components.

Keywords: - *Electrospun, Functionalized, Active Packaging, Smart Packaging, Nanofibers*

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Biosynthesis of Vitamins by Lactic Acid Bacteria-Current and Future Prospects

Urvashi Srivastava¹, Pinki Saini²

¹Research Scholar, Centre of Food Technology, University of Allahabad.

²Assistant Professor, Centre of Food Technology, University of Allahabad.

Vitamins are organic compounds and essential micronutrients that are required in limited amounts. They are obligatory for several biochemical reactions for living cell as the precursor to enzymes. Although, variety of foods are the good source of vitamins, but some bacteria belonging to the genera *Lactobacillus* and *Bifidobacterium* have potential to produce vitamins. Fermented dairy and food products can be made more purposeful by incorporating such strains of probiotic bacteria. Biosynthesis of vitamin by using probiotic bacteria could be an organic and economic strategy of vitamin production and it allows the production of food with higher level of vitamin content. Fermentation by probiotic bacteria of food provides ample of essential nutrients and bioactive components such as B vitamins like cobalamin, folate, pyridoxine, riboflavin, thiamine and vitamin K, enzymes, exopolysaccharides and bacteriocins or bioactive peptides which enhance the efficiency and technological properties of the food. This review will show the current progression related with biosynthesis of vitamins and draw attention to the use of probiotic bacteria. Lactic acid bacillus could be of profitable choice to vitamin enhancement programme and be the functional amplification of emerging vitamin enriched products.

Key words: -*Probiotic, Lactobacillus, Bifidobacterium, exopolysaccharides, bacteriocin.*

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Food and Nutritional Security: The Biggest Epidemic in Future

Vivek Chaudhary¹, Pragati Sahni², Ved Kumar Mishra³

¹Agriculture Department, U.P. College, Varanasi, Uttar Pradesh, India

²Chemistry Department, Harishchandra P.G. College (Affiliated to Mahatma Gandhi Kashi Vidyapeeth) Varanasi.

³Department of Biotechnology, Naraina Vidya Peeth Engineering and Management Institute, [Affiliated to Dr A P J Abdul Kalam Technical University (AKTU Code-429), Lucknow, Uttar Pradesh, India], Naraina Group of Institution, Gangaganj, Panki, Kanpur, Uttar Pradesh, India-208020.

In this paper we discuss about the effect of various factors on food security *i.e* population, climate change, post harvest losses and their impact on food security. From my point of view if we not sort out the problem of food insecurity in next coming 10 years, it will converted in epidemic of starvation and you can't think that what is the situation will be create in future

because food is directly related to human life and life is impossible without the food. The word "epidemic" is used for failure of food security system in present time and many countries where people are hardly suffering from malnutrition due to poor system of food security and distribution of food. In future it will be a biggest reason for epidemic of starvation. Not only epidemic because it is concluded that after some decades if the problem of food insecurity is not solved in future then this problem initiates the struggle between major countries and then struggle is to be converted into war and may it will be a 3rd world war between countries. We are not sure about the what type of impact of food insecurity on our world but it is confirmed that our land resource is minimized day to day due to continue civilization and not only land, water is also important for growing of food so that our world is going on that way where it will be converted into field of war and countries are become enemy to each other and fight for possession on natural resourceful areas.

Keywords: - *Epidemic, starvation, possession, resource, war.*

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Formulation, Preparation and Evaluation of Low-Cost Extrude Products Based on Cereals and Pulses: A Review

Verma Nidhi¹, Chakravarty Archana²

¹Research Scholar, Mahila Maha Vidyalaya, Department of Home Science Banaras Hindu University, Varanasi

²Professor, Mahila Maha Vidyalaya, Department of Home Science Banaras Hindu University, Varanasi

The World Health Organization defines nutrition as "a process whereby living organisms utilize food for maintenance of life, growth and normal function of organs and tissues and the production of energy" Protein-energy malnutrition among children is the major health challenges in developing countries. Low nutritional quality of traditional complementary foods and high cost of quality protein-based complementary foods it is evidence that high prevalence of deaths each year among children aged less than five years old in the developing world is associated with malnutrition. To Review formulation, preparation and evaluation of low-cost extrude products based on cereals and pulses. The paper is based on secondary data. Data related to formulation, preparation and evaluation of low-cost extrude products based on cereals and pulses among children. Data is collected from various books, journal and periodicals on the particular topic and internet surfing for content analysis. Shadan Raza Mohammad et al resulted that Extruded products are mainly produced from cereal grain. Snack products, which contain mainly carbohydrate and fat, can be made with increased protein content by adding high quality protein including pulses. Sensory evaluation of extruded products showed that this combination has significantly better colour, flavor, texture and overall acceptability than others. Extrusion cooking is used worldwide to produce snack foods, ready-to-eat cereals, baby foods, pasta and pet foods. Whole cereals and legumes that have the natural ability to reduce the risk of metabolic as well as degenerative diseases.

Keywords: - extruded products, low cost food, cereals, and pulses, PEM

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Assessment of Nutrition Education Programme on Nutritional: Status of Adolescent Girls

Dr. Meera Pal

Assistant Professor, Nutrition, Food and Dietetics, UP Rajarshi Tandon Open University, Allahabad.

The present study was conducted with the objective to assess the impact of Nutrition Education Programme on nutritional status of adolescent girls. Interview cum schedule method was used for data collection. A sample of hundred girls was selected for the study from a Gurukul Montessori school Phaphamau. Allmost maximum aspects of nutrition were selected like food, food groups, functions of food, nutritional deficiency disorders. 24 hr. Recall method was used for collecting and calculating dietary history. Anthropometric measurements viz. height and weight were measured and Body Mass Index (BMI) was also calculated of each girl. Thinness has been assessed using the indicator BMI-for-age. Result of the study related to anthropometric measurement revealed that maximum percentage of subjects belonged to underweight, followed by ideal BMI. According to the z-score moderate malnutrition was found in 35% respondents at base line and after nutrition education it was found in 26% of respondent. At base line 65% of the respondents were lying in normal category, after nutrition education this percent was increased. Their diet was found grossly inadequate at base line in cereals, pulses, milk and milk products, green leafy vegetables, fruits, other vegetables, fats and oils. The results of the study thus conclude that nutrition education programme made a significant impact on nutritional status of adolescent girls.

Keywords: -Nutritional status, Underweight, Food intake

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Nutritional Status and Risk Assessment of cardiovascular Disease among Women of Reproductive Age in Varanasi City

Nidhi Singh¹, Archana Chakravarty²

¹Post Graduate Student, Mahila Mahavidyalaya, Banaras Hindu University

²Professor, Mahila Mahavidyalaya, Banaras Hindu University

In women's life those years of life between menarche and menopause called reproductive years. During pregnancy and lactation, the requirement of nutrient element has been increased. Cardio-vascular disease (CVD) is a general term describing disease of heart and blood vessels. Coronary heart disease (CHD) is the most common form of CVD and is caused by atherosclerosis in the large and medium size arteries that supply the heart muscle with oxygen

and nutrients. The present study was conducted to detect "Risk Assessment of Cardiovascular Disease among Women of Reproductive Age". 100 samples were selected for the study by purposive random sampling technique from railway colony. The data was collected by interview schedule method. It concluded from the study that 50% women were low risk level at CVD, 30% at medium risk level and 20% women were at high level risk of CVD. The food we eat in our daily life has many symbolic meaning. No one single cause of cardiovascular disease but the factors are varied. Hypertension is a common public health problem. If untreated it leads to many degenerative disease several life style changes can lower risk of CVD as weight, control physical activity and low fat and fiber rich diet.

Keywords: - Nutrition, Women, Cardiovascular Disease, Healthy Diet, Coronary Heart Disease.

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Acidification Kinetics of Flaxseed Fortified Synbiotic Flavoured *Dahi*

Manju Tiwari¹, Dinesh Chandra Rai², Dipti Rai¹

¹Research Scholar, Centre of Food Science and Technology, Banaras Hindu University

²Professor, Department of Animal Husbandry and Dairying, Banaras Hindu University

The effect of the addition of defatted flaxseed powder (DFP) and synbiotic alginate-chitosan microcapsules of probiotic bacteria on the fermentation kinetics texture parameters, post-acidification and bacterial counts of probiotic mango *dahi* (Indian yoghurt) were evaluated during 14 days of storage at 4 °C. Low fat milk was fermented by Dairy starter of dahi culture, *Lactobacillus plantarum* (LP) along with free and microencapsulated *Lactobacillus acidophilus* (LA) and *Bifidobacterium bifidum* (BB). The addition of DFP significantly reduced fermentation time of low fat milk co-fermented by the LA and BB whether free or in encapsulated form. DFP significantly increased the texture parameters of flaxseed fortified mango dahi while whey separation was greatly reduced. At the end of 14-day shelf-life, counts of *L. acidophilus* and *B. bifidum* were about 1 Log CFU mL⁻¹ higher in dahi/yoghurt fermented along with DFP and with encapsulated cells of LA and BB in comparison to its control. In general, the addition of DFP has marked influence on counts of probiotic bacteria enhancing its growth in dahi. The titratable acidity in yoghurts with DFP was significantly higher than in their respective controls. The DFP increased firmness, consistency, cohesiveness and index of viscosity of all *dahi* (Indian yoghurts). The results point out the suitability of using defatted flaxseed powder, (a flaxseed oil industry by-product) in the formulation of fruit based fermented product like probiotic dahi/yoghurt.

Keywords: -Acidification kinetics, defatted flaxseed, encapsulated bacteria, mango.

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Bryonia Laciniosa Linn. (Shivlingi) Seeds: Application in Male Infertility

Ravi Bhushan¹, Vivek Pandey², Anima Tripathi³, Pawan K. Dubey⁴

^{1, 2, 4}Centre for Genetic Disorders, Institute of Science, Banaras Hindu University

³Department of Zoology, Mahila Mahavidyalaya, Banaras Hindu University

Despite the advancements in diagnostic techniques and therapeutic interventions, medical science has failed to keep the incidence of infertility under control. Ayurveda, the ancient Indian medical system has given due emphasis on infertility and proposed various measures to cure infertility. Infertility varies across the regions of the world and it has been estimated to affect 8 to 12% couples worldwide. The WHO has estimated the overall prevalence of primary infertility in India to be between 3.9 and 16.8% suggest that there is need to intervene increasing rate of infertility. *Bryonia laciniosa* Linn. (Cucurbitaceae) plant is an annual herb, which has been included in *Vrishya rasayana* category in Ayurvedic texts. The seeds of *B. laciniosa* are known as 'Shivlingi' because the upper surface of seeds has a marking and morphology, which resembles 'Shivling', icon of Lord Shiva. According to Ayurveda, Shivlingi seeds are best in cases of impotence and oligospermia if the patient has excess Kapha Dosha or symptoms of increased or aggravated Kapha. Shivlingi reduces blockage of several channels in the body by clearing the excess Kapha and Ama. This mechanism also improves the supply of nutrients to the testes and blood flow to male reproductive organs, which ultimately helps to improve the process of spermatogenesis and treat impotence. Shivlingi seeds are also recommended by ayurveda practitioners as a potent aphrodisiac because of their androgenic activity. The exact mechanism by which it controls the infertility is not known, however, animal studies suggest that *Bryonia laciniosa* influence the hypothalamic-pituitary-gonadal axis to increase the release of luteinizing hormone (LH), which subsequently increases testosterone production. However, there is currently very little research into bryonia's impact on testosterone and subsequent male infertility. Therefore, it may explore the therapeutic potential of *Bryonia laciniosa* Linn seed for the control and treatment of infertility in human.

Keywords: - *Ayurveda, Infertility, Shivlingi, Treatment*

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In Silico Structure Based Modelling of AKT1 Threonine-Protein Kinase Gene of Proteus Syndrome

Ved Kumar Mishra¹, Prashant Ankur Jain², Srinath Pandey Raghvendra³, Raman Mishra⁴, Naveen Dwivedi⁵, Aradhna Pal⁶, Vandana Yadav⁷

^{1&3}Department of Biotechnology, Naraina Vidya Peeth Engineering and Management Institute, [Affiliated to Dr A P J Abdul Kalam Technical University (AKTU Code-429), Lucknow, Uttar Pradesh, India], Naraina Group of Institution, Gangaganj, Panki, Kanpur, Uttar Pradesh, India-208020.

²Department of Computational Biology and Bioinformatics, Jacob Institute of Biotechnology and Bioengineering, Sam Higginbottom University of Agriculture Technology and Sciences (SHUATS), Allahabad, Uttar Pradesh, India-211007

⁴Department of Medical Laboratory Technology, Deen Dayal Upadhyay Kushal Kendre, Banaras Hindu University (BHU), Varanasi, U.P., India-231001

^{5, 6 & 7}Department of Biotechnology, Sanatan Dharm College of Engineering and Technology (SDCET) [Affiliated to Dr A P J Abdul Kalam Technical University, Lucknow (AKTU Code-083)], Muzaffarnagar, Uttar Pradesh, India.

AKT1 is causative of proliferation, growth in cell cycle and PTEN is tumour suppressor gene in which the alteration is the reason of the growth in cells. The serine-threonine protein kinase encoded by the AKT1 gene, catalytically immobile in serum-starved primary and immortalized fibroblasts. Platelet-derived growth factor activates AKT1. The activation is rapid and specific. Mutations in this gene have been associated with the Proteus syndrome, which is a very rare to find globally. The causative genes for the proteus syndrome were AKT1 gene and PTEN. Proteus syndrome is a chromosomal mutational disorder. The major pathway breaks are found; subsequently lead to the clinical approaches as their effect. It was shown that the activation mediated by phosphatidylinositol 3-kinase. AKT is a critical mediator of growth factor-induced survival in the developing nervous system. Survival factor suppresses apoptosis in a transcription-independent manner. It activates the serine/threonine kinase AKT1, phosphorylating and inactivating apoptotic machinery components. Homology modeling is a structure prediction tool for unknown protein. It utilizes known structure of a similar protein. It is possible to identify the 3D-structure by looking at a molecule with some sequence identity.

Key Words: -AKT1, Proteus Syndrome, Phosphorylation, Molecular dynamic, Homology modelling

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Pharmacological Potential of Thymol: An Overview

Swati Agarwal¹, Mishra Neetu²

^{1, 2}Centre of Food Technology, University of Allahabad, Allahabad

Thymol, belongs to a class of naturally presenting phenols with a ten-carbon unit, chemically known as 2-isopropyl-5-methylphenol (C₁₀H₁₄O), is a colourless crystalline monoterpene phenol found in the seeds of *Nigella sativa* and oil of thyme. Thymol is an active ingredient of several plants as *Thymus vulgaris*, *Thymbra spicata*, *Thymus ciliates*, *Trachyspermum ammi* and *Monarda fistulosa*. This versatile molecule is incorporated as a useful ingredient in many food products and finds applications in agricultural, pharmaceutical, fragrance, cosmetic, flavour and other industries. For centuries, it has been used in traditional system of medicine and has been

shown to possess various beneficial therapeutic effects, including anti-oxidant, anti-inflammatory, anti-myocardial infarction, anti-bacterial, anti-fungal, local anaesthetic, antiseptic and radioprotective effects. The noteworthy effects of thymol are largely attributed to its anti-inflammatory (via inhibiting recruitment of cytokines and chemokines), anti-oxidant (via scavenging of free radicals, enhancing the endogenous enzymatic and nonenzymatic antioxidants and chelation of metal ions), anti-hyperlipidemic (via increasing the levels of high density lipoprotein cholesterol and decreasing the levels of low density lipoprotein cholesterol in the circulation and membrane stabilization) (via maintaining ionic homeostasis) effects. It is significant to say that thymol is one of the most powerful contenders in the race of phytochemicals of natural origin with polypharmacological properties against an array of maladies.

Keywords: - *Thymol, Nigella sativa, pharmacological activities, anti-oxidant, anti-inflammatory.*

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Glutamate toxicity in neurological diseases

Dr. Neetu Mishra¹, Ajaz Ahmad Waza², Zeenat Hamid³, Shabir Ahmad Bhat⁴, Bashir Ahmad Ganai⁵

¹Assistant Professor Centre of Food Technology, University of Allahabad, Allahabad

²Centre of research for development (CORD) University of Kashmir, Srinagar, Jammu and Kashmir, India

^{3, 4, 5}Department of Biotechnology, University of Kashmir, Srinagar, Jammu and Kashmir, India

Under normal conditions, glutamate is responsible for sending signals between nerve cells. The concentration of glutamate in the brain can be fifty times more under certain pathological conditions such as ischemia, hypoxia, and brain injury and at these excitotoxic concentrations, glutamate can elicit damage and death of neurons. The pathological process of the excessive stimulation of nerve cells caused by glutamate which leads to the damage and ultimately death of the nerve cells is referred to as glutamate toxicity. Excessive glutamate leads to over-excitation and ultimately damage and death of the receiving nerve cells. Furthermore, the glutamate receptors present on the receiving nerve cell can become oversensitive, such that fewer molecules of glutamate are required to excite that cell. Moreover, activation of ionotropic glutamate receptors have been suggested to result in entry of enormous amount of calcium especially in mitochondria which result in energy failure, excessive ROS formation and ultimately, cell death. However, the molecular mechanisms responsible for glutamate-induced cell death have not been fully elucidated. A crosstalk between various inflammatory, non-inflammatory, oxidative stress and excitotoxicity mechanisms have been hypothesized, which ultimately leads to diverse neurodegenerative conditions. So, the reduction of glutamate toxicity is one of the most essential therapeutic strategies which can pave way for the treatment of these disorders. The information presented in this chapter may be useful in the design of future

experimental research and increase the likelihood targeting glutamate toxicity as a therapeutic target for neurodegenerative diseases in the future.

Keywords: - *glutamate, excitotoxic concentrations, ROS, neurodegenerative, therapeutic target.*

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The Role of the PI3K/AKT/mTOR Signaling Pathway: A Novel Approach towards Cancer Treatment

Akanksha Gupta¹, Dr. Udaya Pratap Singh², Rahul Kaushik³

^{1,2}Sam Higginbottom University of Agriculture, Technology & Sciences, Naini, Allahabad- 211007, Uttar Pradesh, INDIA.

³Ram-Eesh Institute of Vocational and Technical Education, Plot No. 3, Knowledge Park- I, Kasna Road, Greater Noida, Gautam Budh Nagar- 201310, Uttar Pradesh, INDIA.

The phosphatidylinositol 3-kinase (PI3K)/Akt/mammalian target of rapamycin (mTOR) pathway is one of the key signaling pathways induced by various receptor-tyrosine kinases. Accumulating evidence shows that this pathway is an important promoter of cell growth, metabolism, survival, metastasis, and resistance to chemotherapy. Inhibiting both PI3K and mTOR in this pathway can switch off Akt activation and hence, plays a powerful role for modulating this pathway. The PI3K/AKT/mTOR pathway is related to proliferation, protein synthesis, survival, angiogenesis, apoptosis, and cell motility. Genetic alterations in either activation of oncogenes or inactivation of tumor suppressor make it the second most altered pathway in neoplastic processes. The PI3K/AKT/mTOR pathway is currently considered an attractive target for the development of anti-tumor molecules. Specific inhibitors of this pathway are under development, and those already recognized are being tested in clinical trials, representing a promising approach for the treatment of cancer patients.

Keywords: - *PI3K/Akt/mTOR pathway; neoplasm; target therapy; metastasis; apoptosis.*

Abstract ID: INCON-MFPA Technology / PP- 63

Standardization and Qualitative Analysis of Ayurvedic/Herbal Drugs

Dr. Amit Singh¹, Dr. Ayush kr. Garg², Dr. Chandan Singh³

^{1,2}PG Scholar, Department of Dravyaguna, Dr. Sarvapalli Radhakrishnan Raj. Ayurved University Nagaur

³Associate Professor. Department of Dravyaguna, Dr. Sarvapalli Radhakrishnan Raj. Ayurved University Nagaur

India is a vast and rich resource of herbal raw materials. In its 15 Agro-climatic zones, India is home to a large number of medicinal plants. Out of 960 medicinal plants species, about 178 are in trade with annual consumption of more than 100 metric tons. These plants can create a niche

for itself in the global herbal market if the domestic industry is able to regulate quality of herbal products upto international standards. WHO traditional medicine strategy 2014-2023 emphasizes integration of traditional and complementary medicine to promote universal healthcare and to ensure the quality, safety and efficacy of such medicine. The current global herbal market is estimated to be around \$ 70 billion. Indian herbal industry is not only meeting the domestic requirement but few are also exporting to other countries, but India's share in export of AYUSH and value added products of medicinal plants in the global herbal medicinal market during 2015-2016 was a miniscule 0.5 percent. Concern has been raised about the quality of the Indian AYUSH medicinal/herbal drugs particularly regarding the presence of toxic heavy metals eg. Lead, mercury, and arsenic, microbial load, aflatoxin, and pesticides. The global acceptability of our traditional systems of medicine can be met by improving the use of technological interventions and ensuring the quality of raw materials and processes used in the AYUSH medicinal products. Now, phytopharmaceuticals drugs are being introduced for converting plant material into medicine, where standardisation and quality control with proper integration of modern scientific techniques and traditional knowledge. In order to produce herbal formulations of consistent composition and quality, not only the proper botanical material but adequate analytical methods such as High Performance Thin Layer Chromatography (HPTLC), High Performance Liquid Chromatography (HPLC) and Inductively Coupled Plasma (ICP-OES) etc. need to be applied. In this paper I am trying to upgrade the knowledge in developing herbal/Ayurvedic products of uniform quality with robust efficacy on globally acceptable parameters.

Keywords: -Ayurvedic products, AYUSH, Herbal drugs

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Pharmacogenomics: "A Review on Medical Genetic Approach via Biomarkers"

Amit yadav¹, Priyanka Rai², Rohit Tripathi³, Parjanya Kr. Shukla⁴

^{1, 2, 3, 4}Department of Pharmaceutics, Krishnarpi Institute of Pharmacy, Allahabad, U.P.

Scientifically, personalized medicine is known as pharmaco-genomics (drugs combined with genes), or how genetic differences in individuals effect the way people respond to drugs. Biomarkers are biological molecules found in blood, body fluids, tissues or the tumour itself. Biomarkers can be a sign of a normal/abnormal process, or of a condition or disease. For example, blood pressure is widely accepted as a biomarker because a correlation between elevated blood pressure and adverse cardiovascular outcomes has been demonstrated. Biomarkers can be divided into categories of predictive or prognostic. Using biomarkers in recent years, significant advances in our understanding of human biology have yielded novel drug targets that may impact disease. Typically, early clinical trials test a drug target's safety and tolerability. The efficacy of a drug is typically not tested until later stages in development. But, researchers may now be able to use pharmaco-genomics to improve the efficiency of drug development. Using biomarkers, we can explore how a drug works in the body, allowing earlier

decisions on whether to advance molecules in clinical trials. Biomarkers may also be used to diagnose disease and for patient selection. As research continues, our understanding of the role of biomarkers can play in the management of disease areas such as cancer, cardiology, and neurology, metabolic, autoimmune, and inflammatory diseases.

Keywords: - *Pharmaco-genomics, tumour, tolerability, Biomarkers.*

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Antibiotics Resistance: Existing Challenge in Healthcare

Anjali¹, Pushpraj S. Gupta²

¹Arya College of Pharmacy, Hyderabad, India

²Department of Pharmaceutical Sciences, SHUATS, India

Increasing bacterial resistance is concomitant with the volume of antibiotic consumed, as well as missing doses when taking antibiotics. Inappropriate prescribing of antibiotics has been credited to a number of cases of drug resistance. The current generations drugs necessitate definite variation to improve efficacy and to conquer multiple drug resistance. To conquer drug resistance the discovery of new derivatives are obligatory as preexisting drugs are now less affective, most drugs existing presently at the market are varied heterocyclic compounds, amongst these compounds the five-membered heterocycles represent a broad and differentiated group with extensive range of biological activity. Heterocyclic compounds are five and six membered compounds containing one to three heteroatoms in their nucleus. Compounds from this class are found in nature as constituents of nucleic acids, some vital amino acids, alkaloids and hormones. They are naturally active compounds act as antibiotic, anti-inflammatory, antidepressant, antitumor, anti-malarial, anti-HIV, antibacterial, antifungal, antiviral anti-diabetic, herbicidal, fungicidal, and other insecticidal agents. They are also recurrently found as a major structural unit in synthetic pharmaceuticals and agrochemicals.

Keywords: - *Resistance, Antibiotic, Heterocyclic, Pharmaceuticals*

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Needlefree Injection Technology

Ansh Dev Ravi¹, D.Sadhna², L Chawla³

^{1,2,3}Bundelkhand University, Jhansi

Needle free injection technology (NFIT) is an extremely broad concept which include a wide range of drug delivery systems that drive drugs through the skin using any of the forces as Lorentz, Shock waves, pressure by gas or electrophoresis which propels the drug through the skin, virtually nullifying the use of hypodermic needle. This technology is not only touted to be

beneficial for the pharma industry but developing world too find it highly useful in mass immunization programmes, bypassing the chances of needle stick injuries and avoiding other complications including those arising due to multiple use of single needle. The NFIT devices can be classified based on their working, type of load, mechanism of drug delivery and site of delivery. To administer a stable, safe and an effective dose through NFIT, the sterility, shelf life and viscosity of drug are the main components which should be taken care of. Technically superior needle-free injection systems are able to administer highly viscous drug products which cannot be administered by traditional needle and syringe systems, further adding to the usefulness of the technology. NFIT devices can be manufactured in a variety of ways; however the widely employed procedure to manufacture it is by injection molding technique. There are many variants of this technology which are being marketed, such as Bioject ZetaJet™, Vitajet 3, Tev-Tropin and so on. Larger investment has been made in developing this technology with several devices already being available in the market post FDA clearance and a great market worldwide.

Keywords: - Immunization, syringe systems, needle stick injuries, propel, sterility

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Antimicrobial Activity of Ayurvedic Drug

Archana Chaturvedi¹, Kriti², Neeta Bhagat³,

^{1,2,3}Amity Institute of Biotechnology, Amity University, Noida – 201301, UP.

Bacterial infections of digestive tract are considered to be the major cause of morbidity and mortality, especially in children and elderly patients in India. There are reports showing that infection caused by bacterial enteropathogens has led to approximately 46,000 hospitalizations and 1500 deaths each year in United States. These bacterial pathogens belong to the genera of non-typhoid *Salmonella*, *Shigella*, *Vibrio*, *Campylobacters*, species of *Yersinia enterocolitica* (*Y. enterocolitica*) and *Clostridium difficile* (*C. difficile*), and of course to the group of diarrhoeagenic *Escherichia coli*. Management of disease involves maintaining hydration, decreasing the frequency of stools passed etc. The antibacterial used can shorten span of disease and can cure infection. However, a number of cases have been reported where enteric bacteria has developed resistance to antibiotics—including sulfa compounds, penicillins, tetracycline, and trimethoprim/sulfamethoxazole—when these drugs are used extensively. In this background antimicrobial activity of medicinal plants which have traditionally been claimed to have antidiarrheal properties was screened. The extract of the formulation was made in the solvent of different polarity and was tested against *E. coli*, *Salmonella typhimurium*, *Staphylococcus aureus* and *Shigella dysenteriae*. *In silico* study comparing five steroidal alkaloids reported to be present in Ayurvedic drug selected for the present study along with drugs which are commercially being used for the treatment of diarrhea to GCC receptor.

Keywords: - *Salmonella*, *Shigella*, *Vibrio*, *Campylobacters*, *E. coli*, *Salmonella typhimurium*, *Staphylococcus aureus*, *Shigella dysenteriae*

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Metalomineralic Preparation: An Ayurvedic Approach

Dr. Dimple Sharma¹, Dr. Bhavana Verma², Dr. Jishnu Nandi³, Dr. Ashish Kumar Tripathi⁴

^{1,2,3,4} P.G.Scholar, Dept. of RSBK, Rishikul Campus, UAU, Haridwar, Uttarakhand

Pharmacopoeia of 'Ayurveda' comprises of drugs derived not only from herbs but also from minerals, metals and animal products. The minerals as compared to animal and plant products were not compatible with human body constitution. And they could not be consumed in their natural form. The belief that intensive and elaborate processing is required to make them fit for therapeutic utilization lead to the evolvement of sophisticated processing procedures. A distinct principle of producing a drug, compatible with human body, is observed in the processing of mineral substances. The mineral or metallic material is treated with plant or animal substances, compatible with the body. In certain cases substances non-compatible with the human body such as minerals like orpiment (Hartaal), Realagar (Manshila) are also used in processing. However in such cases the ultimate object of the processing is to produce an assimilable product for the human body, without producing harm in therapeutically effective dose. This treatment makes the processed material compatible and facilitates its easy assimilation. There are some basic processing techniques for mineral or metal treatment which are also established as basic principles of Rasashastra, the iatrochemistry branch of Ayurveda. In this chapter we are going to discuss these basic techniques along with its modern scenario.

Keywords: -*Iatrochemistry of Ayurveda, Rasashastra.*

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Some herbal plants that solve worldwide issues of typhoid fever

Avadh biharee¹, Arpita yadav², Ranjeet yadav³, Sudha bharti⁴, Anoop tiwari⁵, Paras kesharwani⁶, Akanksha singh⁷

^{1,2,3,4,5,6,7} Department of Pharmacology Krishnarpit Institute of Pharmacy, Allahabad U.P.

This study therefore investigates anti-typhoidal herbal medicinal plants that make easy to treat typhoid infection over the antibiotics and vaccination. Typhoid fever a common and sometimes lethal infection of both adults and children that causes bacteremia and inflammatory destruction of the intestine and other organs. It is caused by the human-restricted organism *Salmonella Typhi* (*S. Typhi*), is a major public health problem worldwide. Development of novel vaccines remains very important, but is hindered by an incomplete understanding of the immune responses that correlate with protection against *Salmonellatyphi*. Traditionally an impressive number of plant species are traditionally used in the management of typhoid fever. Some plants that are used for the treatment of typhoid from ancient time are *Black pepper*, *Acacia Arabica bark*, *Carica papaya*, *Mangifera indica*, *Zingiber officinale*, *Azadirachta indica*, *Spilanthes acmella*, *Tinospora cordifolia*, *Cocos nucifera*, etc. This chapter is totally based on literature

survey and is the updated work of the published research articles. This chapter discusses and summarizes important work in literature in response to the Introduction, pathogenesis, symptoms and treatment of typhoid fever, mostly focused on nature gift that is natural product and their active constituents which are responsible for activity.

Keywords : - *Salmonellatyphi*, are *Black pepper*, *Acacia Arabica bark*, *Carica papaya*, *Mangifera indica*, *Zingiber officinale*, *Azadirachta indica*, *Spilanthes acmella*, *Tinospora cordifolia*, *Cocos nucifer*.

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Active Compounds

Ila Shukla¹, Lubna azmi², Shashi Kant Shukla³, Ch. V. Rao⁴

^{1, 2, 3, 4} Pharmacognosy and Ethnopharmacology Division, CSIR-National Botanical Research Institute, Lucknow-226 001, Uttar Pradesh, India.

Biochemical research of lichens went through "exponential" development in recent past only. Lichenized fungi occur in a wide range of habitats from arctic to tropical regions, from the plains to the highest mountains and from aquatic to xeric conditions. Lichens can be found on or within rocks, on soil, on tree trunks and shrubs, on the surface of living leaves, on animal carapaces, and on any stationary, undisturbed man-made surface such as wood, leather, bone, glass, metal, concrete, mortar, brick, rubber, and plastic. Lichens are able to survive in extreme environmental conditions; they can adapt to extreme temperatures, drought, inundation, salinity, high concentrations of air pollutants, and nutrient-poor, highly nitrified environments (Nash, 2008), and they are the first colonizers of terrestrial habitats (pioneers). In addition, both fungal and algal cells in the lichen thallus are known for their ability to survive in space too. Lichens produce a great variety of secondary metabolites, and most of them are unique to lichen-forming fungi. These chemically diverse (aliphatic and aromatic) lichen substances have relatively low molecular weight. Approximately 1050 secondary compounds have been identified to date. Traditionally many of the lichen have been used to treat a number of ailments. Hence these are the promising candidates for futuristic pharmacological research.

Keywords: -*Lichen*, *Secondary Metabolites*, *Xeric Condition*, *Pioneers*.

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Application of Ultrasound assisted extraction technique in pharmaceutical world: Comparative study

Lubna Azmi¹, Ila Shukla², Aniruddh chaudhary³, Padam Kant⁴, Ch. V. Rao⁵

^{1, 2, 5} Pharmacognosy and Ethnopharmacology Division, CSIR-National Botanical Research Institute, Lucknow-226 001, Uttar Pradesh, India.

^{3, 4} Department of Chemistry, Lucknow University, Lucknow, India.

Ultrasound-assisted extraction (UAE) is a reasonable, modest and effectual substitute to microwave-assisted extraction and conventional extraction techniques. Conventional extraction procedures are quite difficult, time- or energy-overwhelming, include large amounts of solvents, and eventually, may cause some important molecule degradation. This chapter offerings a whole image of present information on UAE in nutraceuticals, cosmetic, pharmaceutical and bioenergy food ingredients and products applications. Strong mechanical effect is offered by ultrasound which allow a greater penetration of polar and nonpolar solvents into the sample matrix and increasing the contact surface area between the solid and liquid phase, and, as a result, facilitating mass transfer of solutes to the extraction solvent. It determine the essential theoretical contextual and some facts about extraction by ultrasound, the methods and their amalgamations, the mechanisms (fragmentation, erosion, capillarity, detexturation, and sonoporation), applications from laboratory to industry, security, and eco-friendly impacts. In addition, the ultrasound extraction procedures and the significant parameters swaying its recital are also included, collected with the advantages and the disadvantages of each UAE techniques. Ultrasound-assisted extraction is a exploration topic, which touches several fields of recent plant-based chemistry. All the described applications have revealed that ultrasound-assisted extraction is a green and economically feasible substitute to microwave-assited and conventional techniques for nutrition, natural products, medicinal and bioenergy. The main assistances are reduction of extraction and processing time, the quantity of energy and solvents used unit operations, and CO₂ emissions.

Keywords: -Conventional techniques, fragmentation, ultrasound-assisted extraction

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Recent Developments and Future Prospective of Sustained Release Dosage Forms

Mahendra Pratap Singh¹, Chandra Shekhar Singh², Alok Pal Jain³

^{1,2,3} RKDF College of Pharmacy, Sarvepalli Radhakrishnan University, Bhopal, M.P. India

Among all drug delivery system, on the basis of ease of administration and to the fact that gastrointestinal physiology offers more flexibility in dosage form design, oral route is the most popular route than other route. Now a day's conventional dosage forms of drugs are rapidly being replaced by the new novel drug delivery systems. Among these, Sustained release (SR) products provide advantage over conventional dosage form by optimizing bio pharmaceuticals, pharmacokinetics and pharmacokinetics properties of drug. Sustained release (SR) dosage forms are designed in such a manner that it releases a drug at a predetermined rate in order to maintain a constant drug concentration for a specific period of time. The goal of developing sustained release dosage forms is to provide a better control on plasma drug levels; reduce dosage frequency, less side effect, increased efficacy and constant delivery. Now days there are so many oral sustained release products are available in market due to significant advantages over conventional dosage form. This chapter Includes Introduction of Sustained release dosage form. Classification of sustained release drug delivery system. Therapeutic

advantages and disadvantages of sustained release dosage forms. Biological factors influencing oral sustained release dosage form. Physiological factors influencing oral sustained release dosage form. Ideal properties of drug suitable for sustained release dosage form. Mechanism of drug release in sustained release dosage form. Goals in designing sustained release dosage form. Recent applications and Examples of sustained release dosage form and conclusions.

Keywords: - *gastrointestinal, pharmacokinetics, Sustained release, plasma drug levels*

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Preliminary, phytochemical screening and liver recovery activity of medicinal plants using rat

Diksha Singh¹, Mayank Srivastava²

^{1,2}Shambhunath Institute of Pharmacy, Jhalwa, Allahabad

Liver is vital organ having principal functions in human body that are necessary for supporting healthy life like metabolism, excretion of many toxic material. The cell injury caused by various toxic chemical like paracetamol, Carbon tetra chloride and excessive alcohol consumption upon the liver has already been identified. Use of medicinal plant for the treatment of various diseases can be dated back over 5000 years ago. Traditional medicine are used for recovery of liver since some ancient times. Medicinal plants used in different system of medicine, particularly Unani, Ayurveda and Siddha exhibited their efficacy and powerful roles in the management & cure of liver diseases. The present review states that medicinal plants have numerous pharmacological activity which can be further used to synthesize drug to treat hepatotoxicity.

Keywords: - *Liver, medicinal plants, pharmacological activity.*

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Recent Advances and Applications of Nanotechnology in Drug Delivery Systems

Nidhi Pandey¹, Rahul Pandey²

^{1,2} Amity Institute of Pharmacy, Amity University, Noida, U. P.

Nanomedicine is now within the realm of reality starting with nanodiagnostics and drug delivery. Advances in nanotechnology have significantly become an effective approach for achieving efficient drug targeting to diseases by circumventing all the shortcomings of conventional drug delivery systems. Most of the available drugs now are lipophilic in nature and this stands as a challenging aspect faced for scientists to formulate and deliver for better efficacy, so nanoparticles, nanosuspension, nanocapsules are used now days to deliver these drugs with

greater bioavailability and also have been adopted to improve the solubility of poorly soluble drugs. The use of nanoparticles is a universal formulation approach to increase the therapeutic performance of drugs in any route of administration. Nanotechnology will affect our lives tremendously over the next decade in very different fields, including medicine and pharmacy. This chapter describes the preparation methods, characterization, physicochemical properties, applications, clinical advantages, and recent developments of nanoparticles and their potential in drug delivery systems.

Keywords: - *Bioavailability enhancement, Nanoparticles, Nanotechnology, Drug delivery system*

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Preliminary, phytochemical screening and memory enhancement activity of medicinal plant in Alzheimer's disease using rat

Reeta Pal¹, Pallavi Tiwari²

^{1,2} Shambhunath Institute of Pharmacy, Jhalwa, Allahabad

More than 4 million Indian have some form of dementia associated with Alzheimer's disease. Alzheimer's includes for 60 to 80 % of all dementia cases; Alzheimer's disease is a progressive neurodegenerative disorder. The major pathological hallmarks of Alzheimer's include deposition of senile plaques and neurofibrillary tangles. Alzheimer's is a disease of brain that affect with memory, thinking & behavior. Alzheimer's get worsen over time, person become confused, misplaces things or has trouble with language. The brain of Alzheimer's patient has amplexness of plaques & tangles. Plaques are deposits of a protein fragments known as β -amyloids that build up in the spaces between nerve cells. Tangles are twisted fibers of another protein called tau that builds up inside cell. Traditional medicine uses several plants as memory enhancer since some ancient times. Medicinal plants used in different system of medicine, particularly Unani, Ayurveda and Siddha exhibited their efficacy and powerful roles in the management & cure of memory disorder. Magnetic resonance imaging, computerized tomography and positron emission tomography are methods used for testing and diagnosis of Alzheimer's disease.

Keyword: - *Alzheimer's disease, Plaques & Tangles, Medicinal plants, Memory disorder*

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Prospective of Bioadhesive Nanoparticles as Novel Drug Delivery Systems

Paras Kesharwani¹, Anoop tiwari², Avadh Biharee³, Parjanya Kumar Shukla⁴

^{1,2,3,4} Department of Pharmaceutical Chemistry, Krishnarpi Institute of Pharmacy, Allahabad

Biopolymer research area is most active and better funded. Protein-polymer research is focused on high-technology applications, such as elastomers, adhesive, bioceramics and electro-optical materials. There are increasing commercial interest in to biohesives due to their

biocompatibility. Also health hazard due to volatile organic compounds, non adhesive nanoparticles and environmental concerns are the reasons for interest in bioadhesives. When we concern about the technology of bioadhesive nanoparticles (BNPs) it overcomes all these problems. It is developed as an important tool to wrap these problems. This chapter reveals, study and most of important knowledge, recent ongoing researches, technologies, roles and advancements of BNPs over the drug delivery and drug efficacy.

Keyword: -*Biopolymer, elastomers, adhesive, bioceramics and electro-optical, bioadhesive nanoparticles (BNPs)*

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Gold Nanoparticles

Purnima Tripathi¹, Sonia Pandey²

¹ Associate Professor, BS Anangpuria Institute of Pharmacy, Faridabad

² Assistant Professor, Uka Tarsadia University, Surat

Nanotechnology has become one of the most interesting and advanced areas of research in the field of pharmacy. Among nanoparticles, gold nanoparticle demonstrates special advantage in this field due to their unique properties, small size and high surface area to volume ratio. These properties have been widely used in the various biomedical applications and drug delivery systems due to their inert nature, stability, high dispersity, non-toxicity and biocompatibility. This article is focused essentially on the synthesis and applications of gold nanoparticles in the field of medicine and targeted drug delivery. The article also focuses on the current trends in using polymer-coated gold nanoparticles for various biomedical applications, including the delivery of chemotherapeutics in cancer. This review includes chemical, physical and biological methods used for the synthesis of gold nanoparticles and "grafting in" and "grafting from" method for the preparation of polymer coated gold nanoparticles. There is an elaborated discussion on the application of gold nanoparticles. Functionalized gold nanoparticles with various biomolecules such as proteins, DNA, amino acid and carboxylic acids have been used in cancer therapy and provide excellent drug delivery system.

Keywords: -*Gold Nanoparticles, Cancer, targeted drug delivery, polymers*

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Quinazoline and Quinazoline Derivates: Recent Structures with Anticancer Activity

Prateek Pathak¹, Amita Verma²

¹ Patanjali Research Foundation, Haridwar

² Department of Pharmaceutical Sciences, SHUATS, India

Cancer is the top reason of death in economically urbanized countries and the second foremost cause of death in developing countries. Chemotherapy is the mode of treatment of any disease through the use of any drug, majority population refers chemotherapy to drugs used in the treatment of cancer. Chemotherapy drugs can be alienated into several groups based on factors such as work mode, their chemical structure, and their interrelationship with other drug. Some drugs act in multiple way, and may belong to more than one class. Quinazoline are classes of fused heterocycles that are of significant attention due to the miscellaneous scope of their biological properties. Quinazoline is the main six-membered heterocyclic ring system reported for their biological activities, compounds with multiple pharmacophores, which bring together knowledge of a target with understanding of the molecule types that might interact with the target family. The purpose of this chapter is to collate literature work reported by researchers on Quinazoline for their anticancer activities and also reported recent efforts made on this moiety such as its synthesis, chemistry etc.

Keywords: - Anticancer, Quinazoline, Chemotherapy

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Pharmacological properties of *Illicium Verum*

Priyanka Singh

Centre of Food Technology, Faculty of Science, University of Allahabad, India.

Illicium verum is being a source of spices and pharmaceutical treatment of many harmful diseases has been widely used in most of the Asian countries. Ministry of Health of the People's Republic of China (2002), considered it as "both food and medicine" due to its low or non-toxicity towards human's health. At present, the research focus on *I. verum* has been mainly on food and medical fields. The fruits are commonly used as an ingredient of the traditional "five-spice" powder of Chinese cooking, and the essential oil of *I. verum* can be used as a flavoring. The extraction from *I. verum* has carminative, stomachic, stimulant, and diuretic properties, and is used as a pharmaceutical supplement. Shikimic acid extracted from *I. verum* is one of the main ingredients in the antiviral drug Tamiflu used to fight avian influenza. It has also been reported to possess antimicrobial and antioxidative properties as well as significant anticancer potential. This review presents a detailed compilation of the literature on phytochemicals, and pharmacological properties of *Illicium verum*.

Keywords: -*Illicium verum*, Antibacterial, Antifungal, Antioxidant, Anticancer Shikimic acid, Tami flu.

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Formulation of Topical Gel for Alopecia

Priyanka Rai¹, Amit Kr. Yadav², M.K. Singh³, Parjanya Kr. Shukla⁴

^{1, 2, 3, 4}Department of Pharmaceutics, Krishnarpit Institute of Pharmacy Allahabad (U.P)

Hair has sociological importance throughout the age. Alopecia (hair loss), a dermatological disorder is common problem in cosmetics as well as primary practice. It is common throughout the world and has been estimated affect between 0.2 % to 2.5 % of world population. Herbal drugs have been widely used for hair growth promotion since ancient times in Ayurveda and Unani system of medicine. In Ayurveda, Bhringraj (*Eclipta alba*) have been reported to be effective in the treatment of alopecia. Natural products are very popular and well accepted in the cosmetics and hair care industries. Alopecia means loss of hair from the head or body. Alopecia includes baldness, a term generally reserved for pattern alopecia or androgenic alopecia. Today 70% males and 30% females are suffering from this disorder. Loss of hair is the most common problem of modern societies, which create much economical and psychological effect. Recently, a great effort has been made to treat hair loss or alopecia. The most common types of alopecia are androgenic alopecia and alopecia areata. Alopecia affects approximately 50% of men over 40 years of age and may also affect just as many women. Presently in India minoxidil is marketed as topical solution and finasteride is marketed as tablet for the treatment of alopecia, but due to their side effect reduced their uses. From the last several years Ayurvedic and Herbal therapy is the safest way for the treatment of alopecia. The herbal drug Bhringraj (*Eclipta alba*) which contain various constituents, which is using from so many years for the treatment of alopecia. In the present study topical gel formulations of wedelolactone were prepared by using polymer cabopol-940 in different concentration for the treatment of alopecia. The gels were subjected to characterization of homogeneity, grittiness, extrudability, pH, drug content, viscosity, spreadability, *in-vitro* drug release, stability, skin irritation, qualitative hair growth and hair length studies. The drug content were found to be range from 96.80 to 98.70 %. The viscosity of gels ranged between 31150 to 63870 cps and spreadability were ranged between 15.23 to 42.74 gm.cm/sec. The *in-vitro* release rate of gel was evaluated using Franz diffusion cell containing cellophane membrane with phosphate buffer pH 7.4 as the receptor medium.

Keywords: -Side Effect, Topical formulation, pH, Viscosity, Stability, Skin irritation.

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Trikatu: Transforming Food into Medicines

Rahul Kaushik¹, Jainendra Jain², Akanksha Gupta³

^{1,2} Ram-Eesh Institute of Vocational and Technical Education, Plot No. 3, Knowledge Park- I, Kasna Road, Greater Noida, Gautam Budh Nagar- 201310, Uttar Pradesh, INDIA.

³ Krishnarpit Institute of Pharmacy, Allahabad, Uttar Pradesh, INDIA.

Trikatu, as per Ayurveda's Bhasajyaratnawali is a compound herbal formulation containing three bitter herbs mixed together in equal quantities. Dried fruits of *Piper nigrum* (Maricha) and *Piper longum* (Peepli) and dried rhizomes of *Zingiber officinalis* (Sunthi) are used to prepare this miraculous formulation. It is prescribed in Ayurvedic system of medicine for treatment of tastelessness, digestive impairment, diseases of nose and throat like chronic rhinitis/sinusitis, skin diseases, asthma, cough, frequent urination, obesity and Filariasis. Trikatu is also added in

various Ayurvedic formulations with a view to restore the disturbed 'tridoshas- vatta, pitta and kapha'. It calms down the increased Vatta and Kapha and increases the Pitta. It has pungent (katu) taste, hot (ushna) potency, light(laghu) and dry(ruksha) quality and digestive(amapachaka) therapeutic effect. Modern pharmacological studies revealed that Trikatu posses capability to enhance the bioavailability of various phytoconstituents present in the Ayurvedic and polyherbal formulations and helps in achieving better therapeutic outcomes. Apart from traditionally known health benefits, Trikatu also posses antiviral, expectorant, carminative, hypolipidemic, hypoglycemic, antiemetic, and anti inflammatory potential. Simply, it is concluded that Trikatu has the potential to transform a normal food material into an effective medication by increasing the absorption of nutrients.

Keywords: - *Trikatu, Piper longum, Piper nigrum, Zingiber officinalis, Ayurvedic, Bioavailability.*

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Advantage of Needle Free Injection Technology

Sharmila Maurya¹

¹5th semester B. Pharm., Bundelkhand University, Jhansi

Needle free injection technology (NFIT) is an extremely broad concept which include a wide range of drug delivery system that drive drug through the skin using any forces as Lorentz, shock waves, pressure by gas or electrophoresis which propels the drug through the skin, virtually nullifying the use of hypodermic needle. The future of this technology is promising ensuring virtually painless and highly efficient drug delivery. This technology is not only touted to be beneficial for the pharma industry but developing world to find it highly useful in mass immunization programs, bypassing the chances of needle stick injuries and avoiding other complication including those arising due to multiple uses of single needle. Major advantages of needle free injection are the elimination of broken needles, a more constant delivery of vaccines and drug, and decreased worker safety risk. Other benefits include very fast injection compared with conventional needles and no needle disposal issues. Today, they are an increasingly rising technology that promises the administration of medicine efficient with reduction of pain. This article aims to discuss about the needle free drug delivery and advantages over needle injection.

Keywords:- *Needle free injection, Drug delivery, Drug administration.*

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Significance of Protein and Peptide based Biotechnological Product in Targeted Drug Delivery

Sudhansh Tiwari¹, Prince Yadav², Amar Gupta³, Rahul Singh⁴, Md. Faisal Siddiqi⁵

^{1,2,3,4,5}Department of Pharmaceutics, Krishnarpi institute of Pharmacy, Allahabad

In current years, there have been a lot of advances in the field of protein and peptide manufacturing and an increased consideration of the way in which biological response modifiers function in the body. It is now possible, through the use of biogenetic DNA techniques or by solid phase protein synthesis, to produce on a commercial scale a large kinds of regulatory agents that are therapeutically applicable. The list of these response modifiers is continually increasing and includes interferons, interleukins, monoclonal antibodies, colony-stimulating factors, human insulin of biogenetic DNA origin, human growth hormones, anticoagulants, and agents that have potential in inflammation and contraception. It was point out that presence of many pharmaceutical are biotechnological products (medicine, vaccine) that require transport using temperature controlled system to keep their therapeutic properties (side effect, toxic effect) we are going to describe the peptide and protein drugs which are used as recombinant DNA technology and also involves the use of effective drug delivery system to enhance the physiochemical and biological properties (like temperature, Ph, solubility).

Keywords: - *Biotechnological products, temperature, stability, transport.*

Abstract ID: INCON-MFPA Technology / PP- 84

Pharmacophore Screening of Anticancer Drug Antagonistic to Leprosy Causing Protein Serine Hydroxyl Methyl Transferase via *in Silico* Methodologies

Srinath Pandey¹, Ved Kumar Mishra², Prashant Ankur Jain³

Mycobacterium leprae, the causative agent of Hansen's disease (leprosy). It can affect the nasal mucosa, skin, eyes, and nerves. The nerve damage can cumulate into paralysis, blindness, crippling of hands and feet etc. The gradual development of the disease leads to skin lesions and deformities, affecting earlobes eyes, nose, hands, feet, and testicles. The skin lesions are disfiguring and the infected individuals historically suffer outcasts from society. Being moderately contagious, human-to-human transmission is primarily being reported. Serine hydroxylmethyltransferase (SHMT) protein participate in the different inter conversion pathway of folate coenzymes playing a vital role in cell physiology is the target protein around which present study revolves. The current study aims to investigate *in silico approaches* that can be implemented to screen outpharmacophore of anticancer drug interaction against Leprosy Causing Protein SHMT, homology modeling and its validation. The selected compounds were further analyzed using drug-like filters and ADMET analysis. Finally, 25 hits with different scaffolds were selected for docking studies. These seven hits were predicted to have high inhibitory activity and good ADMET properties; they may act as novel leads for SHMT inhibitors designing.

Keywords: - *Leprosy, Mycobacterium leprae, Serine hydroxyl methyl transferase, Pharmacophore, ADMET properties*

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Selective COX-2 Inhibitors as Promising Anticancer Agents

Vinay Kumar Yadav

National Institute of Pharmaceutical Education and Research S.A.S Nagar Mohali

There are two cyclooxygenases COX-1 and COX-2 which play major physiological and pathophysiological role in body. COX-1 pathway is a housekeeping mechanism involves in maintenance of gastric mucosa, renal blood flow and regulation of platelet aggregation. COX-2 pathway induced by inflammatory mediators which are produced in response to an infection or other abnormal state of the body. Selective COX-2 inhibitors are the drugs which only inhibits the COX-2 enzyme without affecting the COX-1 (protective mechanism). These are the safe drugs in patients with impaired mucosa to treat inflammatory conditions, joint ache and various other pains but these drug shows cardiovascular toxicity which overcomes by the use of small dose of antiplatelet drugs as aspirin. These drugs inhibit the formation of prostaglandins and their subsequent products which may be the cause of colorectal cancer. So we can say that COX-2 inhibitors may be the promising agents for the cancer treatment. In this chapter we will focus on the mechanism of COX-2 pathway leading the cancer and mechanism to inhibit the progression of cancer by use of selective COX-2 inhibitor drugs.

Keywords: - *cyclooxygenases, COX-1, COX-2, antiplatelet, aspirin.*

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Proper uses of over-the-counter (OTC) medications

¹Abhay Raj Tiwari

¹Krishnarpi Institute of Pharmacy, Allahabad

The number of over-the-counter (OTC) medications is using as more prescription medications. Many older adults rely on self-management of medications to treat common medical conditions such as the common cold, pain, diarrhea, and constipation. Many people are unaware of proper dosing, side effects, adverse drug reactions, and possible medication interactions that may not be clearly labeled about major side effects of common OTC medicine and safe OTC medication use.

Keywords: - *over-the-counter (OTC), common cold, diarrhea, constipation.*

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Impurities in Pharmaceutical Products

Abhishek Sahu

Krishnarpi Institute of Pharmacy, Allahabad

Impurities are unwanted chemicals in pharmaceutical that remain with active pharmaceutical ingredients. Impurities occur during formulation of drugs and impurities occur also aging of drugs. These foreign chemical present in trace amount in pharmaceutical products. These unwanted chemicals are influence the quality, efficacy and safety of pharmaceutical products. Now a day's control of impurities is most important and critical issue. It controlled by many of method.

Keywords: - *pharmaceutical, active pharmaceutical ingredients.*

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Laetrile / Vit. B17: A Lighting Future of Cancer Treatment

Devesh Kumar Tiwari

Krishnarpi institute of Pharmacy, Allahabad

In the field of disease treatment cancer is one of the most formidable disease with exorbitant treatment cost, rendering the patients helpless, a condition in which alternative therapies come in picture. From many of the cancer treating agents a drug "Laetrile" also known as "Amygdalin" comes in front with a promising role in making a cancer free world. It is the most controversial subject in the medicinal history, because the effectiveness of this drug, however, is crucially questionable. It is a cynogenic glycoside obtained from the kernels of apricots and species of genus prunus. The ambiguity of the nature of this drug has led to turmoil amongst the oncologists and the suffering patients. This article the informational content about Laetrile also known as Vitamin B17.

Keywords: - *cancer, laetrile, amygdalin, Vit.B17.*

Abstract ID: INCON-MFPA Technology / PP- 89

Component identification of Euphoria hitra for Dengue treatment

Arpita Yadav¹, Avadh Biharee², Ranjeet Yadav³, M.K.singh⁴, Parjanya kr.Shukla⁵

^{1, 2, 3, 4, 5} Krishnarpi Institute of Pharmacy, Allahabad, (U.P.).

The endemic area for dengue fever extends over 60 countries, and approximately 2.5 billion people are at risk of infection. The incidence of dengue has multiplied many times over the last five decades at an alarming rate. In the endemic areas, waves of infection occur in epidemics,

with thousands of individuals affected, creating a huge burden on the limited resources of a country's health care system. While the illness passes off as a simple febrile episode in many, a few have a severe illness marked by hypovolemic shock and bleeding. Iatrogenic fluid overload in the management may further complicate the picture. In this severe form dengue can be fatal. Euphorbia hirta (Asthma herb or Dugadhika) is medicinal herb which is used in various countries for treatment of diseases. It is a succulent herb with white latex and soft hairs. In India and South East Asia, it is found throughout the warmer region as weed. Euphorbia hirta decoction is very effective in treatment of Dengue fever treatment. This is very effective herb to increase platelets and treating dengue fever. Traditionally decoction prepared from Dudhi is used for treating-Respiratory problems, Digestive problems, Female disorders, and also used in:- Dengue fever, kidney stones, diabetes and in conjunctivitis. Anti-asthmatic activity due to choline and shikimic acid. Shikimic acid and choline showed relaxant and contracting properties on guinea-pig ileum.

Keywords: - *Dengue fever, Dugadhika herb, Shikimic acid, Choline.*

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Spirulina: The Human Health Benefits

Ajitesh Kumar Pandey¹, Shivanshu Srivastav², Dr. Parjanya Kumar Shukla³

^{1, 2, 3}Department of Microbiology, Krishnarpi Institute of Pharmacy, Allahabad, U.P. India.

Spirulina is an organism that grows in both fresh and salt water. It's a type of bacteria i.e. Cyanobacteria, which is often referred to as blue-green algae. There are two species, *Arthrospira platensis* and *Arthrospira maxima*. Spirulina appears as long, thin, blue-green spiral threads. The odor and taste of spirulina is similar to seaweed. Its biochemical composition includes protein, essential fatty acids, vitamins, minerals, photosynthetic pigments. Dried spirulina contains 5% water, 24% carbohydrates, 8% fat and about (50-70%) protein. It's a complete protein source containing all essential amino acids. Phycocyanin is the main active component of spirulina and gives it the unique blue-green colour. It's a nutrients food that also happens to be beneficial to your health in a variety of different ways. Spirulina is consider as an excellent food, lacking toxicity and have anticancer, antiviral, immunological properties and it also act as a potent antioxidant.

Keyword: - *Arthrospira, Phycocyanin.*

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Anti-bacterial effect of black pepper with special reference on their mode of action

Abhishek¹, Avadh Biharee², Parjanya Kumar Shukla³

^{1,2,3}Krishnarpit Institute of Pharmacy, Allahabad (U.P)

Black pepper (*Piper nigrum* L.) is a flowering vine of the Piperaceae family that is cultivated for its fruit, which is usually dried and used as a spice and seasoning. Black pepper (*Piper nigrum* L.) native of south India popularly known as "king of spices". Pepper is mostly used in the curry recipes as masalas and also as ingredient in the prescriptions of folk medicine, Ayurveda and traditional medicinal systems. The spicy tang of pepper is due to the presence of piperamides which are the pungent bioactive alkaloids accumulate in the skin and seeds of the fruit. Among them piperine is the major chemical constituent responsible for the bitter taste of the black pepper. In the present study piperine was evaluated for its antimicrobial activity against *Staphylococcus aureus*, *Bacillus subtilis*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Alternaria alternata*, *Aspergillus niger*, *Aspergillus flavus* and *Fusarium oxysporum*. The extract of black pepper were evaluated for antibacterial activity by disc diffusion method. The minimum inhibitory concentration was determined by tube dilution method and their mode of action is leakage of membrane of bacteria. The active constituent piperine is responsible for anti-bacterial effect on gram positive and gram negative bacteria, leakage of nucleic acid materials and protein from bacterial membrane.

Keywords: - Antibacterial, Leakage of membrane.

Abstract ID: INCON-MFPA Technology / PP- 92

Ranjeet Kr. Yadav¹, Avadh Biharee², Akanksha Gupta³, Parjanya Kr. Shukla⁴

^{1,2,3,4}Krishnarpit Institute of Pharmacy, Allahabad, (U.P).

Annona muricata Linn which comes from Annonaceae family possesses many therapeutic benefits, it has been used in many cultures to treat various ailments including headaches, insomnia, and rheumatism to even treating cancer. However, *Annona muricata* Linn obtained from different cultivation area does not necessarily offer the same therapeutic effects towards cancer (in regards to its bioactive compound production). In this study, anti proliferative and anti-cancer effects of *Annona muricata* crude extract (AMCE) on breast cancer cell lines were evaluated. Malignancies constitute a wide variety of disorders having high mortality and morbidity rates. Current protocols for management include surgical intervention, chemotherapy, and radiation which possess numerous adverse effects. Many phytochemicals are available with anticancer properties similar to anticancer drugs. Major benefit of these compounds is apparent lack of toxicity to normal tissues. Graviola (botanical name: *Annona Muricata*) contain bioactive compound "annonaceous acetogenins" known for anticancer activity on cancer cell lines. The effects of an extract from the tropical tree *Annona Muricata*, commonly known as Graviola, was evaluated for cytotoxicity, cell metabolism, cancer-associated protein/gene expression, tumorigenicity.

Keywords: - cytotoxicity, Graviola, Malignancies, insomnia.

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Probiotic: Role in Human Health

Shubham Srivastava¹, Anoop Tiwari², Parjanya Kumar Shukla³

^{1,2,3}Krishnarpit Institute of Pharmacy, Iradatganj, Allahabad

The term probiotic was derived from the Greek, meaning "for life." The term probiotics is defined by a United Nations and World Health Organization Expert Panel as "live microorganisms which when administered in adequate amounts confer a health benefit on the host. The general population's growing interest in natural remedies, including probiotics; the enlarged scientific and clinical strength of certain probiotic products. To define the term probiotics, to indicate how to identify products that have been proven beneficial, and to assess the quality of evidence regarding probiotics. Probiotics are live nonpathogenic microorganisms. Many of these microorganisms are part of the normal human gut flora, where they live in a symbiotic relationship. Probiotics have been used to treat gastrointestinal (GI) and non-GI medical conditions. However, the data supporting their use are often conflicting, especially for non-GI-associated illnesses. The strongest evidence supporting the use of probiotics is related to the treatment of acute diarrhea and pouchitis. A few studies support the effectiveness of specific probiotics for certain diagnoses. For most so-called probiotics, however, weak or no evidence supports their effectiveness. Specific probiotics taken for certain indications improve health and have few side effects. Limited but good evidence supports the role of certain probiotics in medical practice.

Keywords: -probiotics, nonpathogenic, gut flora microbes, human beneficial.

Abstract ID: INCON-MFPA Technology / PP- 94

Optimization of L-Glutamic Acid production using Artificial Neural Network linked Genetic Algorithm followed by External Loop Air-Lift Reactor study

Abhimati Shukla¹, Zainab Mahmood², Rabab Anjum³, Lalit Kumar Singh⁴

^{1,2,3,4}Department of Biochemical Engineering, School of Chemical Technology, Harcourt Butler Technical University, Kanpur-208002 (UP), India

The amino acids produced by microbial route are highly beneficial and purely optically active. L-Glutamic acid is a non-essential acidic amino acid. L- Glutamic acid is produced by a gram positive bacterium *Corynebacterium glutamicum*. Various diseases such as mental capacities, ulcers and schizophrenia, etc. can be cured by Glutamic acid so it is called as nature's brain food. Monosodium glutamate (MSG), sodium salt of L-Glutamic acid is used as flavor enhancer in various food processing industries. By using *Corynebacterium glutamicum* approx 1.9 million tones of MSG is being produced worldwide. The ANN linked genetic algorithm optimization technique was used to predict and optimize the process parameters viz. temperature, C/N ratio and inoculums size for production of L-Glutamic acid. The optimized values of the parameters

were found as: temperature 32.3°C, C/N ratio value 3.77 and inoculum size 0.95%. These optimized values were used for the production of L-Glutamic acid in the 2 L self constructed external loop air-lift reactor with approximately twice the diameter of raiser than that of the downcomer. The maximum production of L-Glutamic acid was found to be 35.8 g/l using external loop air-lift reactor under optimized conditions.

Keywords: - *L-Glutamic acid, ANN-GA, Corneybacterium glutamicum, Air lift reactor.*

Abstract ID: INCON-MFPA Technology / PP- 95

Pharmacophore Screening of Anticancer Drug Antagonistic to Leprosy Causing Protein Serine Hydroxyl Methyl Transferase via *in Silico* Methodologies

Srinath Pandey¹, Ved Kumar Mishra², Prashant Ankur Jain³, Raghvendra Raman Mishra⁴

^{1&2}Department of Biotechnology, Naraina Vidya Peeth Engineering and Management Institute, Naraina Group of Institution, Gangaganj, Panki, Kanpur, Uttar Pradesh

³Department of Computational Biology and Bioinformatics, Jacob Institute of Biotechnology and Bioengineering, (SHUATS), Allahabad, Uttar Pradesh

⁴Department of Medical Laboratory Technology, Deen Dayal Upadhyay Kushal Kendre, Banaras Hindu University (BHU), Varanasi, Uttar Pradesh

Mycobacterium leprae, the causative agent of Hansen's disease (leprosy). It can affect the nasal mucosa, skin, eyes, and nerves. The nerve damage can cumulate into paralysis, blindness, crippling of hands and feet etc. The gradual development of the disease leads to skin lesions and deformities, affecting earlobes eyes, nose, hands, feet, and testicles. The skin lesions are disfiguring and the infected individuals historically suffer outcasts from society. Being moderately contagious, human-to-human transmission is primarily being reported. Serine hydroxylmethyltransferase (SHMT) protein participate in the different inter conversion pathway of folate coenzymes playing a vital role in cell physiology is the target protein around which present study revolves. The current study aims to investigate *in silico approaches* that can be implemented to screen outpharmacophore of anticancer drug interaction against Leprosy Causing Protein SHMT, homology modeling and its validation. The selected compounds were further analyzed using drug-like filters and ADMET analysis. Finally, 25 hits with different scaffolds were selected for docking studies. These seven hits were predicted to have high inhibitory activity and good ADMET properties; they may act as novel leads for SHMT inhibitors designing.

Keywords: - *Leprosy, Mycobacterium leprae, Serine hydroxyl methyl transferase, Pharmacophore, ADMET properties.*

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Discovery of layered double hydroxide nanohybrid: An excellent biomaterial for joint prosthesis

Raghvendra Raman Mishra

Department of Biotechnology, ASHOKA Institute of Technology and Management, Varanasi

Poly(methyl methacrylate) based bone cement and its nanocomposites with layered double hydroxide (LDH) have been developed with greater mechanical strength and biocompatibility as grouting material for total joint arthroplasty. Bivalent magnesium has been replaced with trivalent aluminium with various mole ratios, keeping the layered pattern of the LDH intact, to cater the effect of varying substitution on the property enhancement of the nanocomposites. The intercalation of polymer inside the LDH layers makes them disordered and mechanically stiffer and tougher by more than 100%. The thermal stability of bone cement has increased by more than 30 °C in presence of 1wt% of nanoLDH homogenously distributed in the matrix bone cement by creating inorganic thermal barrier out of LDH dispersion. The improvement in properties of the nanocomposites has been explained in terms of strong interaction between nanoLDH and polymer. The superior bioactivity and biocompatibility of the nanocomposites as compared to pure bone cement has been established through hemolysis assay, cell adhesion, MTT assay and cell proliferation fluorescence imaging. The developed nanocomposites have been used as grouting material and significant improvements have been observed in fatigue behaviour with gradual increment of Al substitution in Mg:Al mole ratio in nanoLDH, demonstrating real use of material in biomedical arena.

Keywords: -Bone cement, Layered double hydroxide, Nanocomposites, Biocompatibility, Fatigue.

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Bala-The Subjugator of Vitiated Doshas

Sapna Chaudhary

Ph.D. Scholar, Department of Dravyaguna, I.M.S, B.H.U, Varanasi, Uttar Pradesh, India

Bala is the ability/capacity to carry out various activities. It is derived from ojas, the sara of seven dhatus. Bala, in the form of vyadhi kshamatatwa prevents the occurrence of a disease on one hand and on the other abates the severity of the same. The importance of bala in the period of convalescence, after having afflicted from jwara, is explained in the phrase "balam hi alm dosha nigrahaya" which conveys that the bala is the factor that controls the activity of aggravated doshas. Through this article, an effort is made, to establish a link between the concepts of bala-vyadhikshamatwa and vikara vighat bhava. Dravya which increases vitality or strength or bala of body known as "Balya". Some strength promoting drugs are Ashwagandha, Satavari, Shalaparni, Kapikacchu etc.

Keywords: - *Bala, Dosa, Vyadhikshamatwa, Ashwagandha.*

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Phytochemical Screening, HPTLC fingerprinting and clinical examination of Panchavalkala (A Polyherbal Ayurvedic Formulation) for diabetes Management

Ruchita Tripathi¹, Rajesh Kumar Singh², Anil Kumar Singh³

^{1,2,3} Department of Dravyaguna, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005, India

Ayurveda holistic approach for the treatment of disease and based on the property of drugs i.e. rasa, guna, virya, vipaka, and doshkarma. *Panchavalkala* was one of the Ayurvedic formulation which is a combination of five astringent drugs named: *Nyagrodha (Ficus bengalensis Linn.)*, *Udumbara (Ficus glomerata Roxb.)*, *Ashvatha (Ficus religiosa Linn.)*, *Parisha (Thespesia populanea Soland ex correa)* and *Plaksha (Ficus lacor Buch-Ham.)* and evaluated clinically for diabetes. *Panchavalkala* had properties like anti-inflammatory, antiseptic, antidiabetic, antioxidant, immune-modulatory, antibacterial, antimicrobial wound healing and astringent properties. Most of the drugs *panchvalkwath* are kashay in rasa,ruksha in guna,sita in virya and katu in vipaka and have kaphapitta samaka property.All the drug of *panchavalkal* have mutrasangrahana property which helps in the reduction of symptom prabhutamootrata which is considered as the cardinal feature of the disease madhumeha .The present study aims to examine the phytochemical and HPTLC profiling for standardization and also examine the glucose lowering efficacy of this antidiabetic polyherbal Ayurvedic formulation i.e. *Panchavalkala*. The kwath of the formulation (*Panchavalkala*) was prepared as per standard protocol described in Ayurvedic Pharmacopoeia of India and followed by Preliminary phytochemical screening and HPTLC studies using CAMAG HPTLC system equipped with Linomat V applicator, TLC scanner and WIN CATS-4 software. In clinical examination 90 patients were examined according to signs and symptoms of type 2 Diabetes mellitus. The blood glucose levels were estimated by reported methods initially and then after 15 days on OPD basis upto 90 days. The phytochemical screening of the *Panchavalkala* kwath showed the presence of phenol, triterpenoid, flavonoids, tannins, saponins, and carbohydrate.The HPTLC fingerprinting analysis revealed distinct band pattern which will help in proper identification and standardization of the formulation. Tha clinical examination of *Panchavalkala* has shown marked glucose lowering effect. The results scientifically validate the use of *Panchavalkala* kwath for diabetes management in the traditional medicine and its HPTLC fingerprinting along with phytochemical profiling can be used for its identification and standardization. The result reveals that *Panchavalkala* can be a safe, acceptable and effective alternative or adjuvant to the conventional oral hypoglycaemic drug.

Keywords: - *Panchavalkala, Antidiabetic, Polyherbal Ayurvedic formulation, HPTLC fingerprinting, Clinical evaluation*

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Bryonia Laciniosa Linn. (Shivlingi) Seeds: Application in Male Infertility

Prof. Anil Kumar Singh¹, Ravi Bhushan², Vivek Pandey³, Anima Tripathi⁴, Pawan K. Dubey⁵

¹Department of Dravyaguna, Institute of Medical Sciences, Banaras Hindu University

^{2, 3, 5}Centre for Genetic Disorders, Institute of Science, Banaras Hindu University

⁴Department of Zoology, MMV, Banaras Hindu University

Despite the advancements in diagnostic techniques and therapeutic interventions, medical science has failed to keep the incidence of infertility under control. Ayurveda, the ancient Indian medical system has given due emphasis on infertility and proposed various measures to cure infertility. Infertility varies across the regions of the world and it has been estimated to affect 8 to 12% couples worldwide. The WHO has estimated the overall prevalence of primary infertility in India to be between 3.9 and 16.8% suggest that there is need to intervene increasing rate of infertility. *Bryonia laciniosa* Linn. (Cucurbitaceae) plant is an annual herb, which has been included in *Vrishya rasayana* category in Ayurvedic texts. The seeds of *B. laciniosa* are known as 'Shivlingi' because the upper surface of seeds has a marking and morphology, which resembles 'Shivling', icon of Lord Shiva. According to Ayurveda, Shivlingi seeds are best in cases of impotence and oligospermia if the patient has excess Kapha Dosha or symptoms of increased or aggravated Kapha. Shivlingi reduces blockage of several channels in the body by clearing the excess Kapha and Ama. This mechanism also improves the supply of nutrients to the testes and blood flow to male reproductive organs, which ultimately helps to improve the process of spermatogenesis and treat impotence. Shivlingi seeds are also recommended by ayurveda practitioners as a potent aphrodisiac because of their androgenic activity. The exact mechanism by which it controls the infertility is not known, however, animal studies suggest that *Bryonia laciniosa* influence the hypothalamic-pituitary-gonadal axis to increase the release of luteinizing hormone (LH), which subsequently increases testosterone production. However, there is currently very little research into bryonia's impact on testosterone and subsequent male infertility. Therefore, it may explore the therapeutic potential of *Bryonia laciniosa* Linn seed for the control and treatment of infertility in human.

Keywords: -*Ayurveda; Infertility; Shivlingi, Treatment*

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Molecular characterization of the 14-3-3 gene family in rice and its comprehensive expression studies under different abiotic stress

Niti Yashvardhini¹, Dibyendu Narayan Sengupta³

Plants being sessile developed complex mechanism to adjust physiological response towards environmental stress. 14-3-3 proteins are a large family of small acidic proteins (~30kD), which are highly conserved even between kingdoms and typically function as dimers. Plant 14-3-3 genes are reported to be involved in response to environmental stress, metabolism or nutrient stress and in biotic/pathogenic stress. Involvement of 14-3-3 isoforms in mitigating abiotic stress has been a primary focus of research in plants. These proteins are known to interact with Sucrose Phosphate Synthase, Nitrate Reductase, Hd3a, SOS1, H⁺ATPase, and many CDPKs and regulate their function. These are multi gene proteins (15 in Arabidopsis, 8 in rice). Our studies included in-silico characterization with alignment and syntenic analysis of 14-3-3 isoforms in different plant lineages including *Arabidopsis* and Rice for a comprehensive phylogenetic study of 14-3-3 gene and their protein structure. In-silico expression analysis of 14-3-3 isoforms was done using expression dataset from Massively Parallel Signature sequencing (MPSS) and Microarray from publicly available expression database of *Arabidopsis* and Rice. Moreover the expression pattern of two important 14-3-3 isoform one each from non-epsilon group (Os14-3-3f) and epsilon group (Os14-3-3g) was studied under abiotic stress and at different stages of development in some indica rice cultivars which differ in tolerance to abiotic stress both at mRNA and protein level. The upstream analysis of the f and g genes from different indica rice cultivars have been done and further discussed. These findings shed light on the regulation of selected 14-3-3 f and g isoforms by abiotic stress and its further implications on other pathways involved in abiotic stress.

Keywords: - 14-3-3, Abiotic stress, Expression studies, Indica rice.

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Analysis of Heavy Metals (Fe, Cd, Cu, Pb, As and Cr) in Green leafy vegetables sold in open markets of Kathmandu valley and public health prospect.

Padam Shekhar Bhatt¹, Rupesh Sonam², Chandra Raj Sapkota³

¹ Teaching Assistant, Ayurveda Campus, Institute of medicine (IOM), Tribhuvan University (TU)

² Internship Student, Ayurveda Campus, Institute of medicine (IOM), Tribhuvan University (TU)

³ Professor, Ayurveda Campus, Institute of medicine (IOM), Tribhuvan University (TU)

Heavy metals are considered potent environmental and nutritional contaminants capable of causing health defects when consumed in higher doses in human. The present study was conducted to evaluate the content of five heavy metals Iron (Fe), Copper (Cu), Lead (Pb), Chromium (Cr), Cadmium (Cd) in five different types of green leafy vegetables viz., Fennel (*Foeniculum vulgare*), Mustard (*Brassica campestris*), Fenugreek (*Trigonella foenum-graecum*), Spinach (*Spinacea oleracea*) and Leaf mustard (*Brassica juncea*) commonly available in Kathmandu valley. The obtained values of heavy metals were compared with the permissible levels set by the FAO/WHO. Atomic absorption spectrophotometer was used as the instrument

to measure the heavy metals present in the sample of these GLV. The concentration of Fe is found to be greater than Cu, Pb, Cr and Cd. Among five GLVs. concentration of iron is highest in Leaf Mustard (2200.59 mg/kg) and Cu is highest in Spinach (28.28 mg/kg), whereas Pb, Cr and Cd are not determined in all samples. Concentration of Fe is almost five times greater than the WHO/FAO permissible value, whereas Cu, Pd, Cr and Cd are in safe limit in rest of the samples. Below detection level of Pd, Cr and Cd in all the samples are indicators of lower metal contaminations. The higher concentrations of Fe are potentially harmful for the human health causing range of clinical disorders like gastrointestinal discomfort, skin diseases, respiratory problems, cardiac arrest and even cancer. The results of the present study signal for the proper routine test of GLV for possible heavy metals presence.

Keywords: -Heavy metals, green leafy vegetables, concentration.

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Studies on the impact of cypermethrin on various physiological and biochemical parameters of Earthworm, *Eudrilus eugeniae*

Rishikesh K. Tiwari¹, Shikha Singh², Ravi S. Pandey³

^{1,2,3} Biochemistry Laboratory, Department of Zoology, University of Allahabad, Allahabad-211002, India

The increasing applications of pesticides and chemicals in the agricultural farms have adverse impact on flora and fauna of the soil ecosystem. The importance of the earthworms in the agricultural practices is well known since they immensely contribute in increasing the quality and fertility of soil. Thus, it acts as a bioindicator species for the ecotoxicological analysis of pesticide induced soil pollution. Present study was aimed to explore the effect of cypermethrin (pyrethroid) on earthworm, *Eudrilus eugeniae*. *E. eugeniae* were exposed to different concentrations of cypermethrin for 48 h by paper contact toxicity method. The LC₅₀ for commercial grade cypermethrin was found to be 0.020 µg/cm². In order to study the effect of cypermethrin, *E. eugeniae* were exposed to 5% and 10% of LC₅₀ of cypermethrin. Alterations in morpho-behavioural patterns like coiling, clitellar swelling, mucus release, and bleeding followed by segmentation of body in earthworm were observed and photographed during experimentation. Upon sacrifice blood was collected for haematological study and small portion of tissue from pre-clitellar, clitellar and post-clitellar regions were fixed in 10% Neutral Formalin and was further processed for histo-pathological studies. Acetylcholinesterase (AChE) activity was assayed in pre-clitellar, clitellar and post-clitellar regions of body segment. Significant ($p < 0.05$) decrease in AChE activity was recorded particularly in pre-clitellar region followed by other regions upon exposure. Reduced AChE activity indicates the effect at neuronal level supporting the behavioural changes. Our preliminary study conclude that exposure of the earthworms to these pesticides in excess amounts is likely to cause irreparable damage to these animals and severely hamper their ecological functions. Further, biochemical and molecular studies are underway to have insight into the mechanism of action of cypermethrin.

Keywords: -AChE activity, behavioral response, chlorpyrifos, *Eudrilus eugeniae*, hematology and histopathology.

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Studies on toxicological assessment of fertilizer industry effluent and its impact on histological studies, hematological parameters and acetylcholinesterase (AChE) activity in a fresh water teleost *Heteropneustes fossilis*.

Upma Singh¹, Ravi S. Pandey²

^{1,2} Biochemistry Laboratory, Department of Zoology, University of Allahabad, Allahabad-211002, India

Industrial discharges contaminate many natural resources including soil, water and air. Though many industries are warranted to release their discharges (type I or type II) after proper treatment, but in most of the cases their claims are gaudy. Thus, the study was aimed to determine the level of toxicity of both untreated as well as treated industrial effluents and their impacts on a fresh water teleost *Heteropneustes fossilis*. Fishes of almost same length (length 18 ± 2 cm) and weight (48 ± 2 g) were procured and were acclimated under ambient laboratory conditions with *ad libitum* access to commercially available fish palette. The fishes were divided into 4 groups (control, low, medium and high concentrations, n=10) and were exposed to different concentrations of effluent for 96h. Immediately after exposure, the fishes were euthanatized and the desired tissues (brain, liver, kidney, gill and muscles) were collected on chilled PBS and blood was collected in heparinized vial. Immediately after collection, blood was processed for hematological (TLC, DLC, %LC, %Hb, MCV, MCH and MCHC) estimations and AChE activity in desired tissues was estimated by standard biochemical protocol. Part of liver, kidney and gills were fixed in 10% Neutral Formalin and were processed for histopathological observations. Significant decrease in TLC, DLC, %Hb, MCV, MCH and MCHC levels ($p < 0.05$) was noted with a sharp increase in Neutrophil level ($P < 0.01$). Significant decrease ($p < 0.05$) in the specific activity of AChE was noted after exposure to pre-treated effluent in order as Brain > Gills > Muscles > Liver > Kidney with altered behavioural pattern. Significant degradations in histo-architecture were observed in kidney, gills and liver of treated fish in comparison to control. Thus, our preliminary study has suggested the immunomodulatory and altered behavioural pattern (in terms of AChE activity) in fishes which may be a threat to their mortality upon prolonged/chronic exposure.

Keywords: -Acetylcholinesterase, Hematology, *Heteropneustes fossilis*, Histo-pathology, Toxicity.

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Sweet Potato: Plethora of Nutritional Benefits

Aakriti Bhatnagar¹, Ved Kumar Mishra², Srinath Pandey³, Prashant Ankur Jain⁴

^{1,2,3} Department of Biotechnology, Naraina Vidya Peeth Engineering and Management Institute, [Affiliated to Dr A P J Abdul Kalam Technical University (AKTU Code-429), Lucknow, Uttar Pradesh, India], Naraina Group of Institution, Gangaganj, Panki, Kanpur, Uttar Pradesh, India-208020.

⁴ Department of Computational Biology and Bioinformatics, Jacob Institute of Biotechnology and Bioengineering, Sam Higginbottom University of Agriculture Technology and Sciences (SHUATS), Allahabad, Uttar Pradesh, India-211007

Ipomoea batatas (i.e. Yams, Sakharkanda, Mitha Aloo) is scientific name of Sweet potato. Member of Convolvulaceae or morning glory family. It also exists in potato class *Solanum tuberosum* but not belong to nightshade family (i.e sometimes poisonous but sometimes edible). It has nutritional value, high fibre as well as medicinal properties. Used as anti-cancer, anti-diabetic, anti-inflammatory, help in decreasing obesity, digestion, stomach ulcers, boost immunity etc. It also helps in quitting an addiction like smoking, drinking. It comprises of vitamins and minerals like vitamin A, Vitamin C, Vitamin B6, Vitamin D, magnesium, iron, protein, zinc, potassium etc.

Keyword: - *Ipomoea batatas*, *Convolvulaceae*, *Solanum tuberosum*.

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Epidemiology & Etiology of leaf curl virus on *Nicotiana tabacum*

Akash Tripathi¹, Shyam Sundar Kumar²

^{1, 2} Department of Biotechnology, Naraina Vidya Peeth Engineering and Management Institute, Gangaganj, Panki, Kanpur, Uttar Pradesh, India-208020

Tobacco leaf curl virus is the most destructive pathogen for tobacco also known as Begmavirus. It is isolated from *Lonicera japonica* (honey suckle). The veins of leaves become thickened and petioles of leaves get twisted by the infection of this virus. The main vectors for this disease are whiteflies, *Bemisia tabaci*. It requires multiple hosts for its survival and is not able to infect the sap or seed. Methodologies employed for analysis are based on the principles of biotechnology, i.e Isolation of DNA, Gel electrophoresis, and The PCR (Polymerase chain reaction) is involved in amplifying process of fragments of DNA. Begmavirus exhibit closest relationship with Ageratum yellow vein virus (Zimbabwe), i.e strain of TLCV from South Africa.

Keyword: - *Begmavirus*, *Leaf curl disease*, *Ageratum yellow vein virus*.

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A Survey on Grain Storage Methods Employed By Farmers in Bihar

Alok Kumar¹, Jahanara², Srinath Pandey³, Ved Kumar Mishra⁴, Prashant Ankur Jain⁵

^{1,2}Department of Agriculture Extension Education & Communication, Allahabad school of Agriculture, Sam Higginbottom University of Agriculture Technology & sciences, Allahabad - 211007 (U.P.).

^{3,4}Department of Biotechnology, Naraina Vidya Peeth Engineering and Management Institute, Panki, Kanpur, Uttar Pradesh, India-208020.

⁵Department of Computational Biology and Bioinformatics, Jacob Institute of Biotechnology and Bioengineering, SHUATS, Allahabad, Uttar Pradesh, India-211007.

A study on Evaluation of grain storage methods adopted by farmers was carried out in the year 2013-2014. Sixty farmers adopting improved method and sixty farmers adopting traditional method of grain storage formed the sample for the study. The data was elicited through the personal interview method using pre-tested schedule. The study revealed that the socio-economic status of the respondents was medium level. Pucca koti was most preferred method by farmers adopting improved method and farmers adopting traditional method with first rank. The study also reported that cereals were threshed by machines, while pulses machine and in oil crops by manually. Grain loss was observed maximum when grains were transported manually compared to bullock cart and tractor. Over 47 % of maize and mustard growers used gunny bags for storage. Higher percentage (46.00%) of paddy growers used Pucca koti for storage of grains. Highest loss (20.90%) was observed in case of fertilizer bag of paddy crop, while in case of gunny bags and earthen pot, the loss was about 7.38 and 7.71 %, respectively. Minimum loss of grains was observed in metal bin (5.98%). Farmers reported that pre-storage loss during drying and cleaning was higher than the loss during the storage. By applying Chi-square (χ^2) test the association between independent variables and knowledge of the respondents results implied that Age ($\chi^2 = 0.223$), Education ($\chi^2 = 1.845$), and Farm size ($\chi^2 = 0.541$) Annual Income ($\chi^2 = 1.612$), Social participation ($\chi^2 = 9.24$), and Mass Media Exposure ($\chi^2 = 7.226$) have significant association with the knowledge level of respondents. The average storage cost per quintal per year was highest (Rs. 21) in gunny bags and lowest (Rs. 11) in case of metal bin. It is concluded that the socio economic condition of the respondent was medium level, the respondent preferred pucca koti and metal bins for grain storage. The major problem faced by the respondent in grain storage, where losses due to rats, insects, moisture and incognizance of scientific storage method. It was found that perceived loss of grain during storage where maximum in fertilizer and gunny bags.

Keywords: - *Storage methods, preferences, problems, storage losses, post-harvest losses.*

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Genic marker based differentiation and maintenance among maize variants

Ankit Malik¹, Alok Abhishek², Vipin Kumar Malik³, Vijay Kumar⁴, Chikkappa G. Karjagi⁵

¹Division of Genetics, ICAR-Indian Agricultural Research Institute, New Delhi-110012

^{2,5}ICAR-Indian Institute of Maize Research, New Delhi-110012

^{3,4}Department of Genetics and Plant Breeding, BHU, Varanasi Uttar Pradesh

Over the last decade, maize (*Zea mays* L.) has been emerged as world's leading crop among the cereals with highest production and productivity. In India, maize is third important food crop after wheat and rice but its productivity is almost half to the world average. Therefore, maize stands uncompetitive to wheat and rice due to low productivity in addition lower minimum support price. To bring maize competitiveness, the only avenue is to explore the maize variants like sweet corn, popcorn etc. In present scenario, the demand for maize variants is increasing with exponential rate due to changing food habits with upsurge in income status of consumers. To get the premium price of these types of corn, purity maintenance is utmost important, but differentiation at phenotypic level before grain maturity is not possible. Molecular marker has been identified as effective and additional tool for varietal identification and description. However, these molecular markers have technical differences with respect to cost, speed, amount of DNA needed, degree of polymorphism, precision of genetic distance estimates and statistical power of tests. In this context, single nucleotide polymorphism (SNP) markers offer the promise of higher map resolution, higher throughput, lower cost and no recombination with target gene. For differentiating the maize variants specific SNP genic marker for target gene can be designed like mutant gene *su1* is responsible for sweetness in sweet corn. Therefore, designed primers for this gene would be much more helpful in differentiating the sweet corn from normal maize before maturity. Likewise primers of target gene for particular variant can be designed and employ for differentiating the variants.

Keywords: - Maize, DNA, single nucleotide polymorphism (SNP).

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Agro Biotechnology

Km. Dimpal¹, Ved Kumar Mishra², Shrinath Pandey³

^{1,2,3}Department of Biotechnology, Naraina Vidya Peeth Engineering and Management Institute, [Affiliated to Dr A P J Abdul Kalam Technical University (AKTU Code-429), Lucknow, Uttar Pradesh, India], Naraina Group of Institution, Gangaganj, Panki, Kanpur, Uttar Pradesh, India-208020.

The requirement of the increasing population and minimizing the burden on the natural environment, the biotechnology of plant production has to be mixed with high degree of variety and manipulation in gene such as insertion, deletion, duplication then produce great

achievement in agriculture productivity. Agro biotechnology through herbicide tolerant crops, insect resistance crop, increase agricultural productivity, improved nutritional value, better flavor, delayed fruit ripening. Agro biotechnological through produce new variety and improved variety are benefit and a cost effective or the meaning of increase productivity, quality, and easily shelling in market. Agro biotechnology through, scientist are using gene identified and transfer technology to increase smell, size and improve the color and all the other properties of the flower. Now agro biotechnology can be used in for fuel production. Agro biotech directly contributed to the reduction in the release of greenhouse gases from particle of agro.

Keywords: - *Biotechnology, Insect resistance crop, Gene, Greenhouse gases.*

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Agro Biotechnology: A Tool of Crop Improvement

Km. Dimpal¹, Anu², Ved Kumar Mishra³, Srinath Pandey⁴, Prashant Ankur Jain⁵

^{1,2,3,4} Department of Biotechnology, Naraina Vidya Peeth Engineering and Management Institute Gangaganj, Panki, Kanpur, Uttar Pradesh, India-208020.

⁵ Department of Computational Biology and Bioinformatics, Jacob Institute of Biotechnology and Bioengineering, SHUATS, Allahabad, Uttar Pradesh, India-211007

The requirement of the increasing population and minimizing the burden on the natural environment, the biotechnology of plant production has to be mixed with high degree of variety and manipulation in gene such as insertion, deletion, duplication then produce great achievement in agriculture productivity. Agro biotechnology through herbicide tolerant crops, insect resistance crop, increase agricultural productivity, improved nutritional value, better flavor, delayed fruit ripening. Agro biotechnological through produce new variety and improved variety are benefit and a cost effective or the meaning of increase productivity, quality, and easily shelling in market. Agro biotechnology through, scientist are using gene identified and transfer technology to increase smell, size and improve the color and all the other properties of the flower. Now agro biotechnology can be used in for fuel production. Agro biotech directly contributed to the reduction in the release of greenhouse gases from particle of agro.

Keywords: - *Biotechnology, herbicide tolerant crops, Insect resistance crop, Gene, Greenhouse gases.*

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Water Restoration and Conservation

Joram Yakin

M.Sc. (Ag) Soil Science, Soil and Water conservation, Department of Soil Science and Agriculture Chemistry, R.G.S.C. BHU. Barkachha, Mirzapur.

Providing clean and affordable water to meet human need is a grand challenge of the 21st century. Worldwide, water supply struggles to keep up with the fast growing demand, which is exacerbated by population growth, global climate change, and water quality deterioration. More than a billion people around the world have no reasonable access to fresh water. Most of the diseases in developing countries are associated with water causing millions of death (a child is estimated to die from diarrhea every 17 seconds). The vast majority of our water is found in the oceans. Only 3 % is fresh and can be used for farming and drinking, and in any case most of this is frozen in glaciers and polar ice cap, that means just 0.5% of the earth's water is accessible and, of this, more than two third is used in agriculture. Worldwide, just over a third 37% of the land that could be used to grow crop is currently used. Potential farmland is available, but it's not developed due to lack of infrastructure and conservation methods. As of now water scarcity is a worldwide problem adversely affecting socio-economic and environmental condition. We have to focus on making our farms more sustainable and efficient. With the global population still growing, we will need to produce ever more crops using less water, in less agricultural land. We have to come up with a solution to global water use fast, before water scarcity becomes a major cause of international conflict. Soil and water conservation plays an important role in restoring as well as conserving water. It refers to the practices that are carried out to prevent loss of the two resources and aims to increase the sustainable agricultural productivity of a unit area, thereby enhancing socio-economic and environmental benefits.

Keywords: - *Climate change, Water scarcity, Water Restoration, Sustainable Agriculture, Soil and Water conservation.*

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Exogenous application of nitrogen reduces salt stress toxicity in *Solanum melongena* seedlings by regulating ascorbate-glutathione cycle

Madhulika Singh¹, Sheo Mohan Prasad²

^{1,2}Ranjan Plant Physiology and Biochemistry Laboratory, Department of Botany, University of Allahabad, Allahabad

The present study was aimed to investigate adaptation in the physiology and biochemistry of the *Solanum melongena* seedlings under NaCl (NaCl₀; 0.0 g NaCl kg⁻¹, NaCl₁; 0.3 g NaCl kg⁻¹ and NaCl₂; 0.5 g NaCl kg⁻¹ sand) stress, simultaneously supplemented with different (Deprived; 0 kg ha⁻¹, LN; 25 kg ha⁻¹, MN; 75 kg ha⁻¹ and HN; 150 kg ha⁻¹ sand) levels of nitrogen (N). NaCl at the both doses causes significant loss in growth attributes of *S. melongena* seedlings. Further, exogenous supplementation N influences the growth of the test seedlings, that attains maximum growth in HN followed by MN, LN and deprived N conditions. In contrast to this, NaCl treatment enhanced the level of oxidative stress biomarkers: superoxide radical (O₂⁻), hydrogen peroxide (H₂O₂), in leaf as well as root system of the brinjal seedling despite of enhanced activity of enzymes participating in the AsA-GSH cycle viz. APX, DHAR and GR. Overall, results suggest

that HN supplementation successfully alleviates NaCl induced toxicity in test seedlings which was mainly due to the up-regulation of the AsA–GSH cycle,

Keywords: -Ascorbate glutathione cycle, Nitrogen, Salt, Solanum melongena.

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Phytoremediation of lead in water and soil pollution

Manisha Sharma¹, Pragya Sinha², Dr. Komal Mathur³

^{1,2,3}Amity Institute of Biotechnology, Amity University, Noida, Uttar Pradesh, India

Increased urbanization and industrialization is one of the major causes of environmental pollution. Lead is the most toxic pollutant, having hazardous effect on living beings including animals and plants. Even as low as 5 microgram/dl blood concentration of lead can cause severe health problems in humans like cardiovascular, nervous, blood, and renal disorders. It is really important to remove the excess levels of lead from the environment. One of the promising approaches is phytoremediation, which involves use of green plants based system to remediate contaminated soil and water. Purification technologies used for removal of contaminants are not only costly but also have a negative impact on the ecosystem. Phytoremediation is an economically viable alternative to expensive cleanup methods. Around 400 plant species have been identified having potential for soil and water remediation. Plant species like *Brassica juncea* help in chelate assisted lead phytoextraction, *Agrotis tenius* in phytoextraction and *Alyssum murate* in continuous lead phytoextraction. *Plantago major* which is a troublesome weed all over the world may be considered as a bioaccumulator for lead and can be used as bioindicator of pollution with lead. The objective of this article is to study the current state of phytoremediation as a potential and innovative technology in the remediation of lead contaminated water and soil.

Keywords: -Lead pollution, phytoremediation, phytoextraction, phytostabilization, *Plantago major*, *Agrotis tenius*, *Brassica juncea*, *Alyssum murate*.

Abstract ID: INCON-MFPA Technology / PP- 113

Soil and Water Conservation

Pooja Tamuk

¹M.sc.(ag), Soil Science-Soil and Water Conservation, Institute of Agricultural Science, RGSC, Banaras Hindu University, Barkachha, Mirzapur, Uttar Pradesh

Composting has been used as a means of recycling organic matter back into the soil to improve soil structure and fertility. The composting process has received much attention in recent years because of pollution concerns and the search for environmentally sound methods for treating waste. Waste volumes continue to rise, which leads to loss of resources and increased environmental risks. When dry solid waste is burned (incinerated) on the open land wherever

available, which reduces the waste to ash and release potentially hazardous gases into the air causing public health risk, open dumping and sanitary landfill is a major method for waste disposal. The Land filling of biodegradable waste is proven to contribute to environmental degradation, mainly through the production of highly polluting leachate¹ and methane gas. Composting aims to stabilization of waste for land filling, volume and mass reduction of solid waste and return of organic substances to the natural cycle. The primary objective is to create an optimum environment for the microorganisms doing the decomposing. Bacteria are the first to break down plant tissue. Fungi and protozoan soon join the bacteria. Composting is an environmentally friendly method rather than directly dumped into earth and its method is useful to convert organic waste to useful products and that would otherwise have been land filled. This paper reviews information on the composting for treating waste as a means of addressing the environmental pollution concerns.

Keywords: - *Environmental pollution, public health, microbial environment, solid waste and composting.*

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Studies on the impact of triazophos on stress parameters of Earthworm, *Eudrilus eugeniae*

Shikha Singh¹, Rishikesh K. Tiwari², Ravi S. Pandey³

^{1,2,3}Biochemistry Laboratory, Department of Zoology, University of Allahabad, Allahabad-211002, India

Hundreds of pesticides of varying chemical structures are extensively used to control wide variety of agricultural pests. The remarkable proportion of these pesticides reaches to soil ecosystem results into immense disruption of ecological balance of soil. Earthworms may deposit 60% - 80% of the total soil biomass which get affected adversely upon exposure of these pesticides. Present study was aimed to assess the impact of triazophos on stress physiology of *Eudrilus eugeniae*. *E. eugeniae* were exposed to different concentrations of triazophos (organophosphate) for 48h by paper contact toxicity method. The LC₅₀ value for commercial grade triazophos was found to be 0.076µg/cm². Alterations in morpho-behavioural patterns like coiling, clitellar swelling, mucus release, and bleeding followed by segmentation of body in earthworm were observed and photographed during experimentation. To assess the changes in the stress parameters (such as Super Oxide Dismutase; SOD, Catalase; CAT, Glutathione-S-Transferase; GST, Glutathione Reduced; GSH and Lipid peroxidation; LPO) earthworms were exposed to 5% and 10% of LC₅₀ of triazophos for 48 h. Upon sacrifice tissue of pre-clitellar, clitellar and post-clitellar regions were collected, homogenized in buffer for biochemical estimations of stress parameters. Significant ($p < 0.05$) decrease in level of SOD and CAT were noted while significant increase ($p < 0.05$) in GST, GSH and MDA levels was recorded. Our results encompass the pesticide induced stress in earthworm, however, further histopathological, molecular and other biochemical studies are underway to clear the view.

Keywords: - *Behavioural response, Earthworm, stress parameters, triazophos.*

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Prospects of Genomic Selection in Maize Breeding Pipeline

Kumari Shikha¹, Vaibhav Singh², Saurabh Singh³

¹Research scholar, Genetics and Plant Breeding, Banaras Hindu University

^{2,3}Research scholar, Horticulture, Banaras Hindu University

To meet the spiralling demand of maize and to minimise the economic losses due to aberrant climatic condition, genomic selection is revolutionary approach over traditional breeding. Genomic selection (GS) alleviates rapid selection of superior genotypes based on genome wide marker data and also accelerates the breeding cycle. It is an extension of marker assisted selection which is congruous for improving both large and small effect QTLs with low heritability. In this review we will address the history, principles, applications and future prospects for enhanced GS used in plant breeding. It utilizes two types of population: a training population and a breeding population. The training set subjected to extensive phenotypic evaluation over a range of environmental conditions, genotypic data estimation covering the whole genome and pedigree or kinship estimation. By using certain statistical model, marker effects estimated based on training population i.e. used for predicting genomic breeding values (GEBV) of new genotypes in breeding population. The breeding set comprises the related or unrelated population that have been only genotyped using the same set of markers and superior lines selected based on marker effects estimated in the training set. These selected lines can be used as a new variety or parents of new improved hybrids in maize. Thus, we conclude that by implementing GS in the breeding pipeline of maize would not only intensify the genetic gains but also help us to deliver improved, higher yielding, broadly adapted, and stable genotypes at a much faster rate.

Keywords: - *Genomic Selection, Genetic Gain, Marker Pedigree, QLTs, Statistical Model.*

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Biomarkers: Natural Sleuths of the Environment

Srinath Pandey¹, Ved Kumar Mishra², Prashant Ankur Jain³, Divyanshu Bajpei⁴, Arjun Kumar⁵, Raghvendra Raman Mishra⁶

^{1,2,4,5}Department of Biotechnology, Naraina Vidya Peeth Engineering and Management Institute, Gangaganj, Panki, Kanpur, Uttar Pradesh, India-208020.

³Department of Computational Biology and Bioinformatics, Jacob Institute of Biotechnology and Bioengineering, SHUATS, Allahabad, Uttar Pradesh, India.

⁶Department of Medical Laboratory Technology, Deen Dayal Upadhyay Kushal Kendre, Banaras Hindu University (BHU)

Biomarkers estimate the pollutant's effect and response of host pertaining to molecular, cellular and biochemical perspective. Biomarkers are the first sentinel's tool for environmental quality assessment. Biomarkers insinuate us of adverse biological effects. Their working mechanism features electron transmission and reception. Chemical-based monitoring has its limitations while biomarkers can indicate biological effects. Biomarker is specific in their mode of application. They reveal toxicities of complex mixtures. They discern between contaminants and the organisms. Biomarkers elucidate alteration of ecosystems pollutant wise. They prevent irreparable damage to environment. They identify routes of exposure in context of trophic levels. Biomarkers are a shortcut which emphasizes the mode of action & its consequent monitoring, vis-à-vis monitoring all the implicated chemicals having specific mechanism of operation. Hence the number monitored parameters can be significantly reduced.

Keywords: - *Pollutants, Environmental monitoring, biological, chemical.*

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Organic Agriculture

Sonu Dey

Department of Agronomy (Agroforestry), Institute of Agriculture Sciences, RGSC, Banaras Hindu

In the ancient time, agriculture was practiced without the use of artificial chemicals. The use of artificial chemicals such as fertilizers and pesticides came into picture during the mid 19th century. This kind of agricultural practice was causing harm to the environment. With the rapid change in farming practices, organic farming came into existence in the 20th century. It made use of environment friendly practices by avoiding the use of artificial chemicals and making use of organic matter to raise crops. Organic food is beneficial to human health and the practice of organic farming keeps the environment clean. Agro-forestry is an approach to sustainable land use system which incorporates trees and shrubs into the farming system can increase the organic matter of the soil and the fixation of nitrogen. Select fast growing and deep rooted trees or shrubs (*Acacia* spp, *Albizia lebbek* etc) that can be pruned or looped more frequently to provide organic matter. Organic farming is a great alternative to conventional farming practices. It follows eco-friendly agricultural practices without making use of harmful chemicals. It helps in maintaining human health as well as protects our environment from harmful chemicals used to raise crops in a field. Going organic is a great way of preventing chemicals and protecting our health and environment but there are a lot of challenges in this field. Due to the high price of organic food, people are not yet accepting the use of organic food. The other challenge in the field of organic farming is to meet the world's demand for food as the growth of organic crops is slow.

Keywords: - *Organic farming, artificial chemicals, Pruned, looped, eco-friendly.*

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Oppurtunities in Farm and Rural Enterpreneurship

Ashutosh Yadav

Institute of Agricultural Sciences, Banaras Hindu University

Entrepreneurship is an important engine of growth in the economy. Rural entrepreneurship has an important role to play in the development of Indian economy. Rural entrepreneurship is now a days a major opportunity for the people who migrate from rural areas or semi - urban areas to Urban areas. On the contrary it is also a fact that the majority of rural entrepreneurs is facing many problems due to not availability of primary amenities in rural areas of developing country like India. Lack of education, financial problems, insufficient technical and conceptual ability it is too difficult for the rural entrepreneurs to establish industries in the rural areas. The present paper focuses on opportunities and challenges of rural entrepreneurship in India.

Keywords: - Rural Entrepreneurship, Economy, Developing Country, Rural Areas.

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Toxicity response of cadmium on agricultural field cyanobacterium (*Phormidium foveolarum*).

Nidhi Verma¹, Sheo Mohan Prasad²

^{1,2}Ranjan Plant Physiology and Biochemistry Laboratory, Department of Botany, University of Allahabad, Allahabad- 211002, India.

Cyanobacteria occupy an important position in aquatic ecosystem particularly in semi aquatic ecosystem of paddy fields. Cyanobacteria augment the crop productivity by enhancing the soil fertility through nitrogen and biomass addition. Aquatic ecosystems are highly susceptible to contaminants like heavy metals, released by rapid industrialization. Out of several heavy metals, "Cadmium" is a non-essential metal for microorganisms and plants and a serious pollutant in diverse environment conditions. Heavy metal contamination of aquatic ecosystems has become a serious environmental concern throughout the world through rapid urbanization and industrialization. The present study was conducted to study the responses of an aquatic organism *i.e. Phormidium foveolarum* exposed to Cd (Cadmium), by monitoring growth behaviour. Different concentrations of Cd *i.e.* 2, 4, 6, 8 and 10 μ M were used in the present study to analyse the growth pattern of *Phormidium foveolarum*. Results clearly showed that Cd in concentration dependent manner declined the growth of *Phormidium foveolarum*. As the result decreasing trend under Cd stress was observed due to its higher bioaccumulation ability. Therefore, the study will focus on impact of cadmium on agricultural field cyanobacteria.

Keywords: -Cyanobacteria, Heavy metal, Growth pattern, Cadmium.

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Turning Science and Technology into Better Farming

Brijesh Kumar Yadav

CEO, SuBiCo™, Biofertilizer Pvt. Limited, E/87, Road no.4, SIDA, Satharia, Jaunpur-222202, Uttar Pradesh, India

Indian Agriculture plays a vital role in our economy and principal means livelihood for millions of farmers. Approximately 15 percent of our GDP is covered by agriculture areas. Over 58 per cent of the rural households depend on agriculture for their livelihood. For several centuries, Indian farming is been developed utilizing environmentally available products such as farm yard manure and other ecologically stable fertilizers. However, with the advent of Green Revolution and associated use of chemical fertilizers over the past half a century has not only improved our agriculture productivity, but also improved our food security. On the other hand, over utilization of chemical fertilizers has resulted in soil degradation and lower long run productivity. But unfortunately demand is still same; even more yield is required in our agriculture land therefore next generation of fertilizers i.e Biofertilizers (microbial inoculants) are introduced in our country using latest technology. Bio-fertilizers are the only way to resolve the problems coursed by chemical fertilizers in our crop productively and sustainable development.

Keywords: -GDP, Fertilizers, Soil Degradation, Biofertilizers, Green Revolution.

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Impact of Pesticide on Biofertilizer of Lowland Rice Ecosystem

Santwana Tiwari¹, Sheo Mohan Prasad²

^{1,2}Ranjan Plant Physiology and Biochemistry Laboratory, Department of Botany, University of Allahabad

The major problem across the world is continuous increase in population and fulfillment of food requirement to these populations will also be a foremost challenge for human being. The production of necessary food for the world's population will be possible only if agriculture shall be based on high-tech seeds and low-tech farming practices. Rice is the most important cereal crop in the developing world including India and a basic food for more than half of the world's population. To fulfill the requirement of it, application of pesticides in rice field became very often to get rid of weeds allowing rice plant to grow and gain a competitive advantage is one of the strategies but its heavy use results in serious environmental contamination threatening the integrity and stability of lowland ecosystems. Indiscriminate use of it is posing severe threat to flora and fauna of our agro-ecosystems. There are evidences that pesticides pose a potential risk to the beneficial soil microorganisms including cyanobacteria which have an inherent capacity to fix atmospheric nitrogen in paddy fields where they assist in fertility of the rice field as biofertilizer making them ecologically, economically and sustainably important. The cyanobacteria, being an important component of microbial community in rice field ecosystem. Among different cyanobacterial species, *Nostoc muscorum* one of the major species

responsible for increasing the soil fertility. With this context the present experimental study is based upon the assessment of pesticide (cypermethrin) stress on growth and development of *N. muscorum*. Different concentration (2 ppm, 4ppm and 6 ppm) of cypermethrin were selected and result showed that after exposure of cypermethrin for 96 hrs, the algal growth (measured in the form of exponential phase) was found to be decreased by 10%, 30% and 50% respectively as compared with control. However the use of pesticide is necessary but its heavy dose should not be used in agricultural field frequently which directly harm the fertility of soil as well as cyanobacterial growth which may disturbs the lowland ecosystem.

Keywords: -*Cyanobacteria, Rice field, Cypermethrin, Growth, Biofertilizer.*

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Salinity and its Impact on Agronomics

Abreeq Fatima¹, Sheo Mohan Prasad²

^{1,2}Ranjan Plant Physiology and Biochemistry Laboratory, Department of Botany University of Allahabad , Allahabad 211002, India

Salinity is a global issue which comprises almost 20% of total irrigated agricultural lands which have become arable due to different types to salinity. Soil salinity is an important factor contributing to the concern of loss of productivity. Its day by day increase is a threat to agronomics. The factors which contribute to the salinity are change in climate, extensive use of low quality water, in irrigation accompanied with intensive farming and drainage system. The effect of salinity on plant water relation is very important, as it inhibits leaf expansion and accumulates ion in the shoot system of the plant. These factors result in poor seed germination and growth which ultimately culminates into poor productivity which is the most countable effect. The severe inhibitory effects of salinity on fertility may be due to differential competition in carbohydrate supply. On the other hand tendency to enhance the efficiency of irrigation water use, due to the scarcity of water can lead to the accumulation of salts in the soil since the leaching fraction is reduced and the salts are not leached enough. Since India is an agricultural country reduction in grain yield of rice varieties, soybean and, cotton etc comprises to the chief loss as it makes up the larger part of the economy of our country.

Keywords: -*Salinity, Irrigaion, Intensive Farming, Leaching.*

Abstract ID: INCON-MFPA Technology / PP- 123

5-aminolevulinic acid (ALA) as a potential phytohormone to restrain various abiotic stresses in plants

Divya Gupta¹, Sheo Mohan Prasad²

^{1,2}Ranjan Plant Physiology and Biochemistry Laboratory, Department of Botany, University of Allahabad, Allahabad- 211002 India.

5-aminolevulinic acid acts as an essential biosynthetic precursor of all organic heterocyclic tetrapyrrole molecules, including chlorophyll, vitamin B₁₂, billins, heme, and other specialized machinery in higher plants as well as in animals. It is a potent plant growth regulator to alleviate stress-induced adverse effects on different crop plants by regulating a variety of physiobiochemical processes such as photosynthesis, chlorophyll biosynthesis, nutrient uptake, antioxidant metabolism, and protein synthesis, which are directly or indirectly involved in the mechanism of stress tolerance. It is also seen that the enzymes involved in the synthesis and breakdown of ALA primarily regulate the synthesis of chlorophyll in plants. Of various environmental factors, salinity, drought, and extreme temperature (low or high) considerably diminish plant growth and yield by modulating endogenous levels as well as signaling pathways of this phytohormone. In agriculture, in addition to growth-promoting effects, ALA can be used as a herbicide as well as a pesticide. Establishing the role played by 5-aminolevulinic acid by genetic manipulation of plants with the goal of attaining increased production of ALA under stress conditions is an important challenge for the future.

Keywords: -5-aminolevulinic acid, chlorophyll, phytohormone, pesticide.

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Impact of Salinity on Growth Behaviour of *Solanum Melongena* Seedlings

Aman Deep Raju¹, Sheo Mohan Prasad²

^{1,2}Ranjan Plant Physiology and Biochemistry Laboratory, Department of Botany, University of Allahabad, Allahabad- 211002 India.

Solanum melongena is one of the important vegetable crops grown all over the world. Increasing population has led to over demanding requirements for the production of this crop. One of the major stress the plant faces is salinity stress. During the experiments, *Solanum melongena* seedlings were exposed to salt stress at various concentrations: 1, 5, 10, 15, 20, and 25 mM. The parameters of growth i.e. fresh weight, shoot length and root length were studied. Results suggested that with increasing salt concentrations all the studied parameters were found to decline while, at highest concentration i.e. 25 mM, plant died losing the capacity to survive further.

Keywords: - *Solanum melongena*, seedlings.

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Simultaneous exposure of Sulphur and Calcium regulate growth of As stressed *Brassica* seedlings

Rachana Singh¹, Sheo Mohan Prasad²

^{1,2} Ranjan Plant Physiology and Biochemistry Laboratory, Department of Botany, University of Allahabad, Allahabad- 211002 India.

Present investigation was carried out to assess the detoxification of negative effect of arsenic (As; 50 μ M and 100 μ M) supplemented with calcium and sulphur (12 mM Ca + 3 mM S) simultaneously, by analyzing the growth parameters which were measured in terms of fresh and dry weight, leaf area, photosynthetic pigments contents (Chl *a* and Chl *b*) and photosynthetic activity of *Brassica* seedlings. The results confirmed that As at its tested doses sharply declined the photosynthetic pigments contents and consequently the photosynthetic activity that caused reduction in fresh and dry weight and leaf area of the Indian mustard seedlings. In contrast, coapplication of Ca and S to As stressed *Brassica* seedlings noticeably ameliorated the above referred traits thereby suggesting their positive role in plant growth and metabolism. Thus, from this study it can be concluded that coapplication of Ca and S is effective in managing As toxicity in *Brassica* and other crops as well suffering from different environmental stimuli.

Keywords: -*Brassica*, Growth, Photosynthetic pigments, Photosynthetic performance, Sulphur, Calcium

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Potential of Marine Algae: : A Consolidated Review

Himanshi¹, Pankaj Kumar Sonar², Pushpraj S Gupta³

^{1,3} School of Pharmacy, Faculty of Health Sciences, Department of Pharmacology, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad - 211007, Uttar Pradesh, India.

² Pharmacy College, Baba Raghav Das Medical College Campus, Gorakhpur-

In recent years, survey has been conducted along the coast of Goa, Tamilnadu, Gujarat, Maharashtra, Kerala, and Lakshadweep, indicating the moderately rich resource marine flora along Indian coast. Marine algae harvest along Indian coast is about 100,000 tonnes (wet weight). They are potential renewable resource in marine environment. Marine flora growing in intertidal zone has to survive in highly competitive environment. Therefore, they have to develop different metabolic pathways and defence strategies resulting in tremendous diversity of compound. Recently, drug research from natural sources has shown that marine flora are promising to furnish novel bioactive compounds. Scientist throughout the world has been searching for appropriate, nutritional, healthier and eagerly available supplement. Since ancient times, marine flora have been used as food, fodder, fertilizer and as the source of medicine.

Studies have been done on marine flora found on the Indian coast line, reported to possess a wide range of biological activities like anti-coagulant, anti-oxidant, anti-microbial, anti-bacterial, anti-fungal activity, etc. It has been also reported that polysaccharides derived from marine algae possess cardioprotective and anti-viral activities. More emphasis was needed from all the stakeholders for algal exploitation as the considerable amount of different algal species would be a good alternative source of macro and micronutrients with high potential medicinal value.

Keywords: - *Marine flora, Marine algae, Biological activity, Medicinal value*

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Effect of arsenic on antioxidant capacity and nutritional value of *N.muscorum*.

Anuradha Patel¹, Sheo Mohan Prasad²

^{1,2} Ranjan Plant Physiology and Biochemistry Laboratory, Department of Botany, University of Allahabad, Allahabad- 211002 India.

Arsenic contamination in aquatic ecosystem emerges as an acute and severe problem in various countries like Bangladesh, West Bengal (India), Nepal, China, and others. The presence of arsenic in natural bed rock creates arsenic contamination in ground water and surface water. Among the various forms of arsenic occurrence like, As^(V), and As^(III), arsenite form of arsenic is considered as the most toxic which is also the most soluble form (Lim et al., 2014). Contaminated aquatic system posing great threat to Cyanobacteria, which are valuable tools for the study of metal toxicity, they also have the property to cope up with the unfavorable environment. Arsenate and arsenite at tested doses significantly inhibited the growth and nutritional value (protein and carbohydrate) of tested cyanobacteria and increase the antioxidant capacity by accumulate the heavy metals. In summary, the present study explored the potential application of cyanobacteria as an ecofriendly and sustainable option for detoxification of arsenic contaminated natural water with value-added product generation.

Keywords: - *Arsenic, Cyanobacteria, Antioxidants.*

Abstract ID: INCON-MFPA Technology / PP- 128

Effect of Chromium on antioxidant capacity and nutritional value of *Nostoc muscorum*

Sanjesh Tiwari¹, Sheo Mohan Prasad²

^{1,2} Ranjan Plant Physiology and Biochemistry Laboratory, Department of Botany, University of Allahabad, Allahabad- 211002, India.

Chromium occurs in aquatic environments under two main redox forms, namely Cr(III) and Cr(VI), with different geochemical and biochemical properties. Cr(VI) readily crosses biological

membranes of living organisms and once inside the cells it undergoes a rapid reduction to Cr(III). The present study demonstrates the adverse impacts of hexavalent chromium (Cr(VI)) on growth, antioxidants capacity and nutritional value compounds of *Nostoc muscorum*. Exogenous supplementation of Cr(VI) at tested doses 75, 125, and 175 μ M progressively inhibited growth and nutritional value of tested cyanobacteria by inhibiting the protein, carbohydrate and TPC content and increased the antioxidant capacity. So the present study was undertaken to evaluate the toxicity assessment in microbial population of paddy fields under chromium stress.

Keywords: - *Cyanobacteria, Chromium, Antioxidants.*

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Impact of UV-B on nutritional quality of *Luffa* seedlings

Parul Parihar¹, Sheo Mohan Prasad²

^{1,2} Ranjan Plant Physiology and Biochemistry Laboratory, Department of Botany, University of Allahabad, Allahabad- 211002 India.

UV-B is only a minor component of the total solar radiation (less than 0.5%), due to its high energy, its potential for causing biological damage is exceptionally high and even small increase could lead to significant biological damage. Sunlight is indispensable for photosynthetic organisms and therefore they are inevitably exposed to UV-B radiation. Here in this study, we have studied the impact of UV-B on the nutritional aspects i.e. carbohydrate, flavonoids, and phenolic contents of *Luffa* seedlings. Results suggested that UV-B posed negative impact on carbohydrate content, while flavonoids and total phenolics were enhanced under UV-B exposure. This enhancement in both the contents could be the result of defence mechanism adapted by seedlings under UV-B stress.

Keyword: - *UV-B, Flavonoids, Carbohydrate, Total phenolics, Luffa.*

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Influence of Chlorpyrifos on the growth, pigments, reactive oxygen species in palak (*Spinacia oleracea* L.) and their toxicity alleviation by soil amendments in tropical croplands.

Pratibha Singh¹, Sheo Mohan Prasad²

^{1,2} Ranjan Plant Physiology and Biochemistry laboratory, Department of Botany, University of Allahabad, Allahabad- 221001, India.

Pesticides application in agriculture had been advocated in order to protect crops from pests' manifestation. Recently concerns have arisen on the side-effects of pesticides and understanding the mechanisms within. Impact of pesticides as chlorpyrifos (C), alone and in

combination with different soil amendments like chemical fertilizer (C + NPK), farmyard manure (C + FYM) and combination of 50% chemical fertilizer and 50% farmyard manure (C + NF) on the growth, photosynthetic pigments, reactive oxygen species and their consequent damage on lipids in terms of malondialdehyde equivalents and electrolyte leakage, and different antioxidant enzymes activity like superoxide dismutase, peroxidase, catalase, glutathione-s-transferase, ascorbate peroxidase and glutathione reductase were assessed in a field experiment in palak (*Spinacia oleracea*) grown widely in tropical croplands. Recommended dosages of pesticides were used and fertilizers used were @ 100kg Nha⁻¹. Conspicuous increase in SOR and H₂O₂ was found which led to marked oxidative damages due to pesticides application resulting in decline in growth characteristics and yield. The combined application of various soil amendments led to consistent increase in levels of antioxidant system along with the amelioration in oxidative damage indices which was comparable across the combined treatments. The photosynthetic pigments, yield, antioxidants were maximum in case of C + NF. It was apparent from the results that the application of C + NF might led to development of new eco technology to be recommended in tropics as it alleviates oxidative damages while maintaining high quality of plant and yield with no negative impact on global population.

Keywords: - pesticides, reactive oxygen species, chemical fertilizer, oxidative damages, antioxidants