
E Proceeding of
Two Days International Conference
on
"Post Covid Trends of Biological Sciences towards Research, Therapeutic, Innovation and Entrepreneurship"
11th- 12th November 2022
(Hybrid Mode- Online and Offline)
Sponsored by
Madhya Pradesh Council of Science and Technology (MPCST)
Organized by
Department of Zoology & Biotechnology
Sri Sathya Sai College for Women,
Bhopal, M.P., India

SRI SATHYA SAI COLLEGE FOR WOMEN, BHOPAL

(An Autonomous College affiliated to Barkatullah University Bhopal, M.P. India
NAAC Accredited "A" Grade)

Zoology and Biotechnology Department

is organizing

Two Days International Conference

on

"Post Covid Trends of Biological Sciences towards Research, Therapeutic, Innovation and Entrepreneurship"

Sponsored by-

M.P. Council Of Science & Technology, Bhopal, M.P. India

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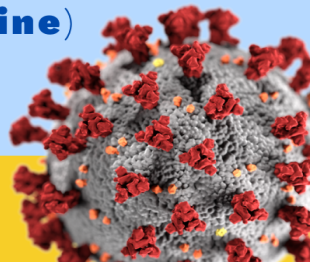
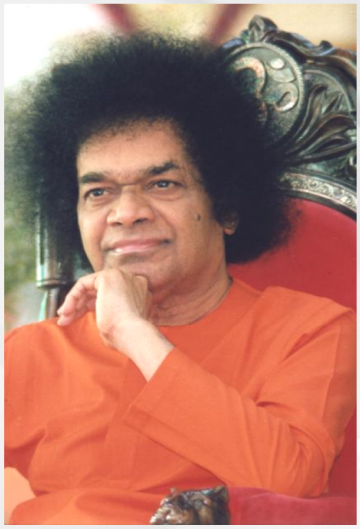


Venue

College Auditorium
Sri Sathya Sai College for Women
Bhopal, Madhya Pradesh India

ABOUT THE INSTITUTION



Sri Sathya Sai (Autonomous) College for Women, Bhopal is an Autonomous College with NAAC Accredited "A" Grade. It is unique amongst the various colleges of Bhopal as it was founded by the grace of Bhagwan Sri Sathya Sai Baba himself on the auspicious day of Guru Purnima (4th July 1974). Currently college offers 21 subjects, at undergraduate level in four faculties (Arts, Science, Commerce, Comp. Sci. and Comp. Application) and 8 postgraduate courses (Hindi, English, Political Sci., Zoology, Biotechnology, Chemistry and Commerce).

We envision the emancipation and empowerment of women through vahie based education, enabling them to participate actively in the work of nation building and social reconstruction. Our Institution have been established not just to enable students to earn a living, but to make them acquire good traits and lead ideal lives. Students thus concentrate, not only on their studies, but also on the development of their character, so that they may serve as examples to others and promote the Sai Ideals by their actions.

ABOUT BHOPAL CITY

Bhopal the capital of Madhya Pradesh also famous as City of Nawab, City of Lakes, Heartland of India is famous for its various natural as well as artificial lakes and is also one of the greenest cities in India. The city get its name from Raja Bhoj, a Great ruler Parmar ruler. It is a wonderful confluence of scenic beauty, old-world charm and urban planning part of the Malwa Plateau in the north-western part of Madhya Pradesh. The stately aura all around endows this town with a distinguishing appeal that never fails to impress even the most discriminating tourists.

ABOUT THE CONFERENCE

The main objective of this conference is to highlight the changes caused by COVID and how they might affect the scope, innovation, research, therapeutic and entrepreneurship activities in years to come. The main goal of this conference is to introduce the current progress in comprehending the working of immune system in combating bacterial and viral infection and this will help students to understand the future scope of Biological Sciences.

Fighting the virus together require cooperation on three things- Research, Knowledge and Warning of future outbreaks. COVID's effects have been extensive, and it would be hard to discuss them in detail in a single conference, it is even harder to predict its long-term consequences, these consequences are also likely to vary from one country to another, thus in this conference we will try to focus on key trends especially scope, innovation, research, therapeutic and entrepreneurship activities towards Biological Sciences.

Chief Patron
Dr. Meena Pimpalapure
Chairman, SSSCW, Bhopal, M.P. India

Patron
Dr. Asha Agarwal,
Principal, SSSCW, Bhopal, M.P. India

Co- Patron
Dr. Jyotsna Galgale
Vice Principal, SSSCW, Bhopal, M.P., India

Chief Guest
Dr. Rajnarayan Tiwari
Director
National Institute for Research in Environmental Health
ICMR-NIREH, Bhopal

Advisory Committee

Dr. Vinoy Shrivastava
Ex-Dean, HOD Bioscience & Examination
Controller, Barkatullah University,
Bhopal, M.P., India

Dr. N Ganesh
Consultant Oncogenetics , JNCH & Research center, Bhopal, M.P. India

Dr. Rajan Dubey
Technical Chief & Strategist at SRS Life sciences, Singapore

Dr. Puneet Gandhi
Head of R&D, BMHRC, Bhopal, M.P., India

Dr. Khushhali M Pandey
Asst . Prof., Dept. of Biotehcnology, MANIT, Bhopal, M.P., India

Dr. B Debkumari
Founder & Exceutive Director
Midas touch (Environmental Conservation organization) Manipur, India

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Ex-Dean, IT and Science, Madhyanchal University, Bhopal, M.P., India

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Dr. Abha Bajpai
Advisory, Autonomous Cell, SSSCW, Bhopal, M.P., India

Dr. Renu Mishra
IQAC Coordinator & HOD Botany & Microbiology, SSSCW, Bhopal, M.P., India

Convener
Dr. Rupa Guha Nandi

Co-Convener
Dr. Sunita Yadav

Organizing Secretary
Dr. Renu Shrivastava
Department of Zoology & Biotechnology

Organizing Committee
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Mrs. Ekta Sabharwal
Ms. Usha Prasad
Mrs. Savita Barmashe

Supporting Team
Mrs. Neelu Shrivastava
Mrs. Seema Sahay
Mrs. Sangeeta Bharti
Ms. Kalpana Bavne

Thrust Areas

1. Post COVID trend of Medical Biotechnology.
2. Scope of Biotechnology for students.
3. Role of Immunotechnology in diagnosis of diseases.
4.Renewable energy technology.
5.Industrial Biotechnology
6. Agricultural Biotechnology
7.Role of Applied Science after pandemic

Our Speakers

Dr. Rajan Dubey
Chief of Global Strategy at SRS Life Sciences, Health Care Scientist, Singapore

Dr. Jaroslava Svarc Gajic
Faculty of Technology
Department of Applied and Engineering Chemistry, University of Novi Sad, Bulevar cara Lazara, Serbia

Dr. Sumit Sachdeo
Senior Research Associate , Mass General Brigham, Boston, USA

Dr. Prashant Sharma
Research Scientist
University of Arizona Biomedical Campus in Phoenix, USA.

Dr. Manoj Kumar Das
Director Projects
The INCLEN Trust International & Adjunct Professor, Clinical Research, Jamia Hamdard, New Delhi, India

Dr. Yusuf Akhter
Assistant Professor
Department of Biotechnology, School of Life Science, Babasaheb Bhimrao Ambedkar University, Lucknow, U.P. India

Dr. C.S. Senthilkumar
Scientist, Central Research Laboratory
Principal Investigator, TNSCST Project, Tirunelveli, Tamil Nadu, India

मंगुभाई पटेल
MANGUBHAI PATEL

सत्यमेव जयते
राज्यपाल, मध्यप्रदेश
GOVERNOR OF MADHYA PRADESH

राज भवन
भोपाल-462052
RAJ BHAVAN
BHOPAL-462052

क्रमांक 811 /राजभवन/2022
भोपाल, दिनांक- 10 नवम्बर, 2022

संदेश

हर्ष का विषय है कि श्री सत्य साईं कॉलेज फॉर विमेन, भोपाल के जूलॉजी और बायोटेक्नोलॉजी विभाग द्वारा **पोस्ट कोविड ट्रेंड्स ऑफ बायोलॉजिकल साइंसेस टुवर्ड्स रिसर्च, थेरेप्यूटिक, इनोवेशन एंड एंटरप्रेन्योरशिप** पर 11 और 12 नवंबर को दो दिवसीय अंतर्राष्ट्रीय सम्मेलन का आयोजन किया जा रहा है।

वैश्विक महामारी कोविड-19 के कारण हम सबका जीवन पूरी तरह से बदल गया है। अदृश्य वायरस ने इस मिथक को तोड़ दिया है कि प्रकृति मनुष्य के अधीन है। जैविक विज्ञान के क्षेत्र में प्रकृति के साथ सामंजस्य पर आधारित प्रौद्योगिकी के अनुसंधान और नवाचार को बढ़ावा देने में महाविद्यालयों की भूमिका बहुत महत्वपूर्ण होती है। वैचारिक विमर्श का आयोजन इस दिशा में सार्थक पहल है।

आशा है कि विभिन्न राज्यों और देशों के शिक्षण संस्थानों के शोधकर्ता, संकाय और छात्रों के लिए सम्मेलन ज्ञान के विनिमय का मंच बनेगा। मानवता के कल्याण के लिए अनुसंधान के पथ का प्रदर्शन करेगा।

शुभकामनाएं,

मंगुभाई पटेल

(मंगुभाई पटेल)

दूरभाष : 0755-2858828, 2858830, फैक्स : 0755-2858832, ई-मेल : mprajbhavan@mp.gov.in

शिवराज सिंह चौहान
मुख्यमंत्री
मध्यप्रदेश

दिनांक:- 13-12-2022
पत्र क्रमांक - 760/22

संदेश

हर्ष का विषय है कि श्री सत्य साईं महिला महाविद्यालय, भोपाल का जीव विज्ञान एवं जैव प्रौद्योगिकी विभाग, 11 और 12 नवम्बर 2022 को **"अनुसंधान, चिकित्सकीय नवाचार और उद्यमिता की ओर जैविक विज्ञान के पोस्ट कोविड रूझान"** पर अंतर्राष्ट्रीय सम्मेलन का आयोजन कर रहा है।

महामारी के पीड़ादायक काल में जीवन बचाने के संघर्ष ने नवीन अनुसंधानों और प्रयोगों के माध्यम से जीवन के नवनिर्माण का सकारात्मक मार्ग प्रशस्त किया है। भारत ने कोरोना महामारी की वैश्विक आपदा के समय अनुसंधान और उद्यमिता के माध्यम से आत्मनिर्भरता के नए अवसरों का निर्माण किया है। इस क्षेत्र में शोध को प्रोत्साहित करने की आवश्यकता है।

अंतर्राष्ट्रीय सम्मेलन के लिए बधाई व शुभकामनाएं।

(शिवराज सिंह चौहान)

Dr. Mohan Yadav
Minister
Higher Education
Government of Madhya Pradesh

Mantralay : Room No. E-216, VB-III, Bhopal
Residence : Vindhya Kothi, Bhopal
Telephone : 0755-2430757, 2430457 (Resi.)
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E-mail : mohan.yadav@mpvidhansabha.nic.in
drmyadavujn@gmail.com

Letter No. 1846 /2022
Date 08.11.2022

MESSAGE

I am very happy to know that the Department of Zoology and Biotechnology, Sri Sathya Sai College for Women, Bhopal is organizing International Conference on "Post Covid Trends of Biological Sciences towards Research, Therapeutic, Innovation and Entrepreneurship" dated 11th and 12th Nov. 2022.

I hope the the International conference will deliberate on the subject and suggest measures for improving the quality of life.

I wish all the very best and congratulate the organizers for the International Conference.

(Dr.Mohan Yadav)

Ujjain Office : 1/1, Munj Road, Freeganj, Ujjain (M.P.) Tel. No. 0734 - 4070900

आई.सी.एम.आर.–राष्ट्रीय पर्यावरणीय स्वास्थ्य अनुसंधान संस्थान
स्वास्थ्य अनुसंधान विभाग, स्वास्थ्य एवं परिवारकल्याण, भारत सरकार
ICMR- National Institute for Research In Environment Health
Department of Health Research,
Ministry of Health and Family Welfare,
Government of India

MESSAGE FROM CHIEF GUEST

I congratulate Sri Sathya Sai College for Women, Bhopal, for organizing a two-day International Conference on "Post COVID Trends of Biological Sciences towards Research, Therapeutic, Innovation and Entrepreneurship," which will be attended by research scholars and academicians across the globe. The all encompassing theme of this conference will be useful to academicians and researchers from all fraternities.

We all witnessed how the entire globe faced the pandemic in the last two years based on their strengths and weaknesses. Now that the pandemic has been controlled in our country through the quick development of a vaccine and the administration of more than 2 billion doses, it is time to look for the newer opportunities opened by the pandemic, particularly in research, innovation, and business. Research on infectious diseases, one health approach, strengthening vaccine development infrastructure, use of telemedicine and drone technology to deliver health services in underprivileged areas, and manufacturing of personal protective equipments are some of the areas to flourish.

I wish the conference all the success and extend full support.

Dr Rajnarayan R Tiwari
Director

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Dr. Anil Kothari
डॉ. अनिल कोठारी
Director General
महानिदेशक

Madhya Pradesh Council of Science & Technology
मध्यप्रदेश विज्ञान एवं प्रौद्योगिकी परिषद्
Vigyan Bhawan, Nehru Nagar, Bhopal-462003 (M.P.)
विज्ञान भवन, नेहरू नगर, भोपाल–462003 (म.प्र.)
Tel : 0755-2671800, Fax : 2671600
E-mail: dg@mpcost.nic.in, www.mpcost.gov.in

MESSAGE

Welcome and greetings to all the participants and invited speakers in International Conference on **"Post Covid Trends of Biological Sciences towards Research, Therapeutic, Innovation and Entrepreneurship"** dated 11th and 12th Nov. 2022, organizing by Department of Zoology and Biotechnology, Sri Sathya Sai College for Women.

Now Biological Sciences is the booming fields for the young scientist, and after Post Covid new Research, Innovation and Entrepreneurship is the need of the time.
Biological Scientists are helpful in improving the quality and standard of life as they have applicable in health.

I am Confident that the basic objective of this International Conference is to bring together acidulations and experts from the different parts of the country to exchange knowledge and ideas and to provide and in-depth analysis of the subjects and update knowledge of the participants is going to be fulfilled on the coming 11th and 12th November 2022.

I offer my best wishes for the success of the conference.

(Dr. Anil Kothari)

Azadi Ka Amrit Mahotsav

बरकतउल्ला विश्वविद्यालय
भोपाल -462026 मध्यप्रदेश (भारत)

प्रो. एस.के. जैन
कुलपति

Prof. S.K. JAIN
Vice Chancellor

Date .....

Message

It is a matter of great pleasure that Department of Zoology and Biotechnology, Sri Sathya Sai College for Women, Bhopal is organizing International Conference on **"Post Covid Trends of Biological Sciences towards Research, Therapeutic, Innovation and Entrepreneurship"** dated 11th and 12th Nov. 2022.

New researches in the area of Biological Sciences, Innovation and Entrepreneurship are taking place. I am hopeful that during the Conference researches, academicians and experts will contribute positively in the form of presentation, discussion and suggest some new ways for the benefit to the society

I congratulate the organizers for the International Conference and wish all the success.

With thanks

(Prof. S. K. Jain)
Vice-Chancellor,
Barkatullah University, Bhopal

Phone : + 91-755-2517001, 2517002 E-Mail : buvcmp@nic.in, Web. : www.bubhopal.ac.in

BARKATULLAH UNIVERSITY, BHOPAL

PROF. VINOY K. SHRIVASTAVA
Ph.D.
● Head, Department of Biosciences
Ex Dean, Faculty of Life Sciences
Ex Dean, Student Welfare (DSW)
Ex Dean, College Development Council (DC DC)

Laboratory of Endocrinology
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No. : ..... Date .....

Message

I am extremely pleased and delighted to know that Department of Zoology and Biotechnology, Sri Sathya Sai College for Women, Bhopal is organizing Two days International Conference on **"Post Covid Trends of Biological Sciences towards Research, Therapeutic, Innovation and Entrepreneurship"** dated 11th and 12th Nov. 2022. Sponsored By Madhya Pradesh Council of Science and Technology. I am sure this type of Conference will provide a common platform to the students and researchers from different part of the country to exchange their scientific ideas.

I hope the technical event will definitely show path for promoting new research and innovative ideas in the field of Biological Sciences among the participants. This will also create an enthusiastic and competitive environment among the students, which motivates and help them to excel, besides widening their biotechnical horizons.

I, therefore, congratulate staff, students and management for organizing International Conference.

I wish grand success for the event.

Prof. Vinoy K. Shrivastava

(Ex-Dean, HOD, Bioscience,
UTD, Barkatullah University,
Bhopal-462026)

Resi. : TF-20, Teacher's Quarters, Barkatullah University Campus, Bhopal-462 026. Ph. : 0755-2454035 (R), 0755-2517128 (O)

ॐ श्री साई राम OM SRI SAI RAM

श्री सत्य साई महिला महाविद्यालय
SRI SATHYA SAI COLLEGE FOR WOMEN

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Phone : 0755-2451119, 2456308

NAAC Re-Accredited A GRADE

Established in 1974

NO.: SSSC \ \

MESSAGE BY CHAIRMAN

It is a matter of great pleasure that Department of Zoology and Biotechnology, is organizing an International Conference on "Post Covid Trends of Biological Sciences towards Research, Therapeutics, Innovation and Entrepreneurship"

New researches in the area of Biological Sciences are taking place after covid 19 pandemic. Immediate and purposeful action to save lives and livelihoods should include extending social protection towards universal health coverage and income support for those most affected pandemic.

I am hopeful that during the conference researches, academicians and experts will contribute positively in the form of presentations, discussions and suggest some new techniques which will be beneficial for the society for future.

I extend my best wishes for the success of this International Conference to all the members of Organizing Committee and volunteers for giving such a platform to all of us to raise the issues & go through the solutions of such a burning issue.

I wish you all the best, Thank you all for your presence & participation. I thank the organizing committee and volunteers.

Meena Pimpalapure

DR. MEENA PIMPALAPURE

ॐ श्री साई राम OM SRI SAI RAM

श्री सत्य साई महिला महाविद्यालय

SRI SATHYA SAI COLLEGE FOR WOMEN

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Phone : 0755-2451119, 2456308

Established in 1974

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NO.: SSSC \ \

Welcome Message by Principal

Welcome and greetings to all the participants and invited speakers from Sri Sathya Sai College for Women, Bhopal on the occasion of International Conference on **"Post Covid Trends of Biological Sciences towards Research, Therapeutic, Innovation and Entrepreneurship".**

After Covid-19 Biological Science is the booming field for the young scientist. Biological scientist are helpful in improving the quality and standard of life as they have application in healthcare, medicine, agriculture, pharmaceutical, Immunotechnology etc.

I am confident that the basic objective of this International Conference is to bring together experts from the different parts of the country to exchange knowledge and ideas and to provide an in-depth analysis of the subjects and update knowledge ofthe participants is going to be fulfilled on the coming **11 th to 12 th November 2022.**

I wish all the very best and congratulate the organizers for the International Conference.

Dr. Asha Agarwal

Message By Organizers

On behalf of the organizing committee it is indeed a great pleasure for us to welcome you all to the International Conference On "Post Covid Trends of Biological Sciences towards Research, Therapeutic, Innovation an Entrepreneurship". Sponsored By Madhya Pradesh Council of Science and Technology (MPCST). We all understand the importance of science, technology, innovation and entrepreneurship in our day today lives and the way in which they are transforming the world.

The main aim of this conference is for the betterment of all the students and their future scope in biological sciences after pandemic. The conference also aims to explore new developments and recent advancement in the area of biological sciences. There is a need to provide a comprehensive understanding of current trend and use this information to exercise it.

We expect that the technical session will encourage the students, researchers and scientist to take a further research in this area and exchange information on emerging trends to benefit the country and the world at large.

We believe that by participating in the international conference we are in the right place and the right time. Together let us accelerate the exchange of ideas and sealing up of good practice. We hope that researches, faculty and students from different institution will be benefited by this conference and this will be a memorable one for all of us.

Dr. Rupa Guha Nandi
Convenor

Dr. Sunita Yadav
Co-Convenor

Dr. Renu Shrivastava
Organizing Secretary

Summary given by Keynote Speaker

Dr. Rajan Dubey

Chief Global Strategy at SRS Life

Sciences, Health Care Scientist, Singapore

How We Envision trends in Technology

In simple slides with graphs and pictures I will try to bring notice of participants to have an overview of areas that will see maximum potential. This potential will not only be what areas will come to interest of investors, but also where most researchers are looking at.

In various aspects of biology – Agriculture, Veterinary, Environmental Sciences and Human medicine, this presentation largely is focused on Human Medicine aspect of biotechnology.

This presentation to young researchers and students of Biology in different field will serve to investigate biotechnology world in more holistic way. This presentation aims to serve as some decision making to decision makers and teachers to see which area the students based on their aptitude should focus to maximize opportunities for them.

The presenter firmly believes these are the most exciting times to be alive for biology students. More challenges will be solved by Biologists in the next two decades as have not been done in last 2000 years. In this window that presenter looks as a sneak peak with same enthusiasm as students is excited to share for a common greater good of advancement of human Medicine.

Summary given by Invited Speakers

Dr. Jaroslava Svarc Gajic,

Faculty of Technology, Dept Of Applied And Engineering Chemistry, University of Novi Sad, Bulevar Cara Lazara, Serbia

Subcritical Water as an Innovation Tool in Research

Post Covid Trends of Biotechnological Sciences Towards Research, Therapeutic, Innovation and Entrepreneurship Water at room temperature good solvent for polar compounds. Polarity decreases drastically with heating . Solubility of non-polar compounds increases for one order of magnitude with temperature increase of 50 °C . Extraction of phenols from vine shoots1 – development of functional cosmetic products. Extraction of brown seaweed – development of functional cookies with exhausted seaweed. Ginger based functional coffee substitutes. Extraction of stevia (*Stevia rebaudiana*) resin – cosmetic industry

Antimicrobial and cytotoxic activity of the Ginger extracts. The presentation shows the influence of reaction time, catalyst concentration, pressure, phenol concentration, Development of functional products Food products: confectionary and bakery products with bioactive extracts of plant biowaste and algae. Functional cosmetic products, medicinal cosmetic products. Development of customized cosmetic formulations

Dr, Sumit Sachdeo, Senior Research Associate, Mass General Brigham, Boston, USA

The Exciting Future of Biotech in a Post-COVID World

We are living in very exciting times. This presentation will introduce you to some of the amazing advancements that are happening all around us. From mRNA vaccines, we are now looking at mRNA therapeutics. We will briefly talk about stem cells, and their enormous potential in medicine. We will discuss transplantation medicine and how it is on the verge of a radical breakthrough. Finally, we will touch upon how technology is impelling medical science into the future.

Dr. Prashant Sharma, Research Scientist,

University of Arizona, Biomedical Campus

In Phoenix, USA

ZnO nanowires are a potential candidate for intracellular delivery of biomacromolecules and cancer immunotherapy

Engineering and application of nanomaterials have recently helped advance various biomedical fields. Recent advances in nano-engineering technologies enable the generation of ZnO nanocomposites with unique three-dimensional structures and surface characteristics that are optimally designed for in vivo applications. In this presentation, I will talk about my research in a nutshell. I will explain the topics of my research in different sections like the dynamics of the cytotoxic activity of cells that mediate intranuclear delivery of exogenous biomolecules through ZnO nanowire arrays which leads tous our next project where we specially designed ZnO nanowire–PLLA nanocomposites to induce anti-tumor immunity via intracellular delivery of associated tumor antigens and stimulation of innate immunity. Then I will talk about the recent research on molecular and functional similarities between SVF cells from the adipose tissue and the fibroblastic reticular cells (FRCs) of lymph nodes which leads to the development of SVF cells as a structural scaffold toward a novel cancer immunotherapeutic design.

Dr. Manoj Kumar Das,

Director Projects , The INCLAN Trust

International and Adjunct Professor, Clinical

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Evolution and innovations in healthcare and diagnostics triggered by COVID pandemic challenge

COVID-19 pandemic has an unprecedented impact on global, regional, and national health systems, businesses, educational and social aspects across countries. Both public and private sectors engaged in healthcare and diagnostic sectors struggled and still continue to struggle responding to the impact of the pandemic. The struggle is not only about adopting diverse healthcare responses in terms of cutting-edge technological tools and innovations in the areas of public health, medicine, diagnostics and wellness to take prompt decisions to address the pandemic by flattening the disease curve but also to revisit and reopen the realm of "digital and technology health" in the policy and public discourse.

In normal situations, usually the innovation takes an average of 12 years to develop a new pharmaceutical drug from bench to market. Similarly, other new technologies and methodologies in healthcare also take years and several millions or billions of dollars before they are ready for public use. But, the global pandemic, swept through the population,

spurring everyone to create innovative healthcare and technological solutions for the current problem. Duringthese uncertain times, one thing was certain and evident: the collaboration from the global population focusing on a real-world problem for developing healthcare and diagnostic innovations at an unprecedented speed. For the first time, the world demonstrated bona fide evidence and actionable methods to achieving global healthcare and diagnostics innovation. Several of these innovations and/or solutions to help cope with COVID-19 have been produced at an extraordinary pace, with the added bonus of being relatively inexpensive to implement and a large share of these were made available as open-source designs. Innumerable researchers, engineers, clinicians, patients, nurses, and citizen scientists applied and are still applying their diverse skills as data analysts, developers, mathematicians, psychologists, designers, and makers toward the same goal of saving lives. Crucially, these solutions are cost-effective, open to the public, and solve fundamental problems.

Although these innovations in the technologies span across various fields and sectors, these can be summarised under the eight broad categories.

1. **Diagnostics: For the COVID-19 diagnosis, we observed an unprecedented evolution in availability of the COVID diagnostics, especially the molecular diagnostics and the rapid point of care diagnostics.**
   1.1. **Molecular diagnostics tests: The development of RT-PCR diagnostic kits and point of care diagnostics kits was done at phenomenal speed. The technology transfer to industries in developing countries enabled the mass-scale production at a cheaper cost. The World Health Organization's (WHO) COVID-19 Technology Access Pool, an initiative allowed expansion of equitable access to COVID-19 health products, providing a global platform for developers to share knowledge, intellectual property and data. This technology transfer and support has far-reaching impact on the capacity of the researchers, developers/innovators and industry in developing countries for the other diagnostics for existing diseases and possible future conditions.**
   1.2. Point of Care diagnostics: The technology advancements in the ELISA, antibody-mediated and microfluidic technologies have demonstrated theirutility in COVID case screening and diagnosis and also expanded the future possibilities for using the similar platforms/technologies for other infectious diseases of clinical and public health relevance.

2. **Vaccines:**Vaccines are one of the greatest public health innovations, proven critical for infectious disease control and eradication. The benefit of COVID-19 vaccines in saving lives is a living example, especially for the adults and in emergency situation. While, in normal times, development and deployment of any vaccine usually spans over 10-12 years. But during the pandemic, we witnessed the development of the COVID vaccines at lightening speed and deployment at an unprecedented pace.
   2.1. **New vaccine platforms:** The critical part of the vaccine develop was also adoption of newer vaccine platforms like the DNA, mRNA, protein subunit vaccines and viral/virus like particle vector based vaccines. Although some of these developments were fuelled by the earlier work during SARS, MERS, Zika and Ebola epidemics, the global technology support and sharing allowed accomplishment of the task in a record time.
   2.2. **New vaccine administration routes:**Not only the vaccine platforms, the new modalities of vaccine transfer/administration like painless intradermal and intranasal routes are also a reality. There are ongoing efforts for thermostable vaccines, which may further simplify the vaccination in future. Indian innovators and industry have been phenomenal in adopting a wide range of vaccine platforms and manufacturing the largest share of global COVID vaccine.
   2.3. **Using in-silico mode of detection of antigen targets:** The pandemic also saw adoption of in-silico models of detecting the target proteins/antigen units for vaccine development and testing the hypothetical efficacy. This technology has potential to benefit for future efforts for new vaccine development.
   2.4. **Regulatory approvals:** The regulatory review and approvals of vaccines saw an evolution towards collaborative and/or cooperative effort through continued engagement and rollingbasis and conditional approvals/authorisations for emergency usage.

3. **Drug development:**The new drug development usually requires at least 10-12 years for transition through the different phases of development and testing along with huge investments. The pandemic fuelled several modalities of drug repurposing explorations through in-silico and other technology driven models. The in-silico mechanism and repurposing assisted in telescoping the molecule detection and assisted in reducing the time needed for development.

4. **Artificial Intelligence and Big Data analytics:** Artificial Intelligence (AI) allows the healthcare, diagnostics and biotechnology services and businesses to automate a wide range of activities, allowing them to scale up their operations. AI allows speed up the drug discovery process,

application in proteomics, genomics, and glycomics to decipher the structures and sequencing of these varied sets of proteins, which help development of biomedical research, diagnostics, vaccine,immunotherapeutics and gene therapy.

Big data analytics is changing the healthcare, diagnostics, public health surveillance, development of drugs, vaccines, proteins and therapeuticsrapidly in the domains ofcancer, infectious diseases, genetics,

AI simplifies the lives of patients, doctors and hospital administrators by performing tasks in less time and at a fraction of the cost. The big data, data mining, machine learning, deep learning and other analytictechnologies allows linking various sources and forms of data and interpret them through complex, lengthy and demanding process.

5. **Medical technologiesand clinical care**
   - 5.1. **Robotics: Robotic technologies have been utilized in many ways during the pandemic period including: (a) to communicate between patients and doctors for non-physical contact; (b) to disinfect surfaces with UV light; (c) to deliver essential medical supplies; (e) to monitor vital signs; (f) to remind people of infection prevention measures; and (g) to scale-up production of diagnostic tools, drugs and vaccines.The robotics could revolutionise the clinical care in several areas in future.**
   - 5.2. **Monitorand wearables: The development and adoption of various vital monitors saw a rapid spurge to meet the demand from clinical care of the patients at the hospitals, home and transit. The wearables with integrated sensors also assisted in the quarantine, self-monitoring and guided monitoring of the patients along with ensuring the social distance and ensuring non-contact care. These innovations are expected to further revolutionise the clinical and remote care, especially the infectious disease patients and remote/telemedicine care.**
   - 5.3. **Solar powered oxygen concentrator and devices:**The need for various oxygen generating devices saw a rise during the COVID times. The power dependence was a limitation for several areas. The solar powered oxygen concentrators and other devices and/or monitors could assist the clinical care of the patients.

6. **Tissue Engineering and regenerative medicine:** The development of advanced techniques in bioprinting and microfluidics allow formation of autologous tissue grafts for various purposes such as organ transplantation, treating burns, skin ulcers and regenerative medicine.Furthermore, tissue engineering provides alternatives to surgical reconstruction, transplants and other medical devices that are used to repair damaged tissues. The tissue

cultures also allow to engineer tissues as an alternative to prepare laboratory meat and laboratory leather etc., which may spare the animals.

7. **Precision Medicines:** Precision medicines are one of the biotechnology megatrends, thanks to recently developed advanced tools like CRISPR gene editing and enhanced gene sequencing techniques. Precision medicines, as opposed to conventional medicines, allow for individualized treatment based on the patients'/person's genetics. This also opens the possibilities of applying the mRNA technology to oncology, which means that mRNA-based cancer vaccines can be used to detect and eradicate tumour cells.

8. **Materials development:** The infectious diseases demand more consumption of disposable materials for patient care, laboratory procedures and personal use, which increased the biomedical waste volume by multiple folds. These increased demand for disposablespush development and use of biodegradable, human and environment friendly materials in these activities. There has been efforts for development of the biodegradable and ventilated PPE kits for use by the healthcare and laboratory personnel. To allow development of customised and personalised items, the 3D printing technology is also being applied.

The COVID-19 pandemic is a disruptive event in our history. It is a "reset" on the way we live and do things. Even though the pandemic has had a negative impact on the world, it has given our scientists, engineers and innovators a challenge and motivation to create solutions to the problem. Humans survive because of their creativity, innovations, and ability to create new solutions.Today, with the technological advancements in computing power, new materials, advanced manufacturing, rapid prototyping, robotics, and state-of-the-art tools and techniques, MedTech innovators can now provide much faster, more efficient, safe and effective solutions to medical conditions today and in the years to come.

Dr. Yusuf Akhter,

Assistant Professor, Dept. of Biotechnology,

Babasaheb Bhimrao Ambedkar University

Lucknow, UP, India

Post COVID-19 trends in Drug discovery against infectious diseases

COVID-19 has changed the way biomedical research and drug discovery against various metabolic and infectious diseases has been conducted and developed in last one century. In this lecture, I will discuss how this trend is evolving in the post-COVID-19 era. I will discuss how drug discovery differs between metabolic diseases and infectious diseases. The lecture will also cover the standard drug discovery process and its timelines. This will also cover, why discovering anti-viral agents is more difficult than discovering drugs for other ailments, therefore immunisation is being preferred against the COVID-19 pandemic while drug discovery efforts are underway. The presentation will also go over the fundamentals of SARS-COv-2 host-pathogen interactions and how new drugs against such viruses can be developed.

Abstracts

Immunotherapeutic Importance of *Withania somnifera* and *Ocimum tenuiflorum* against COVID-19

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ABSTRACT:

Due to the COVID-19's rapid global spread and the SARS-CoV-2 coronavirus's many fatalities, the World Health Organization (WHO) designated it as a pandemic disease. There are various studies being conducted to investigate vaccines and already available medications in an effort to develop a cure for the COVID-19. Numerous medicinal herbs have been shown to be effective against COVID-19 when used as pure active components or as crude extracts, according to studies. This review article's main goal is to demonstrate how medicinal plants' phytochemicals can prevent COVID-19 infections.

Keywords- *Withania somnifera*, *Ocimum tenuiflorum*, Withanolides, Secondary Metabolites.

Investigation Of Protective Role of *Phyllanthas amarush & Sida acutea*. Against Drug Toxicity.

Abhiruchi Sable, Renu shrivastava, Rajendra chouhan

MVM college Bhopal , Sri Sathya Sai college for women Bhopal.

Abstract:

The level of damage that a compound can cause to an organism is referred to as drug toxicity. A drug's toxic effects are dose-dependent and can affect an entire system, such as the CNS, or a specific organ, such as the liver. Due to their wide range of medicinal properties both *Sida Acute & Phyllanthus Amarus* are believed to have protective roles against the toxicity caused by the anticancer drug doxorubicin. This study aimed to evaluate the protective action of dosed plant The current study sought to investigate the same potential of these herbal medicine. Phytochemical studies will be done by processing of Hydro alcoholic extraction of phytochemicals by Soxhlation method. Preliminary phytochemical analysis, TLC analysis, estimation of total flavonoids & total phenols in the plant extract . Hydroalcoholic extract of *P amarus* had higher percentage yield as compared to *S acuta*. Hydroalcoholic extract of both *P. amarus* & *S. acuta* both have reported substantial amounts of polyphenol and flavonoid content. For thousands of years, nature has been a source of medicinal agents, and an impressive number of modern drugs have been isolated from natural sources. Presence of substantial amounts of polyphenol flavonoid content in both P. amarus & S. acuta indicate that these may have therapeutic roles and can prevent toxicity.

Keywords: Drug toxicity, TLC analysis, Soxhlation method , Medicinal agents.

Post Covid Syndromes in People Diagnosed with COVID-19 : A Review

Aditi Kushwaha & Dr. Rupa Guha Nandi

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Abstract

The journey from a virus leading to a pandemic, coronavirus is still a major participant of our lives till now. British National Institute For Health and Care Excellence has characterized a 3 stages of Covid-19 recovery, "Acute Covid" , "Ongoing Covid" and "Long Covid", the long lasting effects of the Covid-19 is called long covid or "Post Covid Syndrome" and the people experiencing the symptoms are called"Long Haulers". Point to be noticed is these Chronic Covid, Long Term Covid, or Post Covid Syndromes have reseaches on effects which have just started to begun and so a final conclusion can not be drawn on this problem. The studies represent/highlights only the initial findings. The post covid syndorme are fairly common. In October 2020, U.K, National Institute For Health and Research announced 10-20% people effected by this virus continued to have symptoms or complications one month after diagnosis. One study in Italy suggested that 87% of people affected by the same virus continued to have symptoms 60 days after the initial symptom started. Post Covid Syndrome aren't justified with accurate reason of infection and symptoms or its future effect reasons but it clearly depending on once immunity system, the common symptoms are fatigue, Cardiopulmonary, shortness of breath, neurological issues, sensory loss of vision, hearing, taste, smell , mobility challenges and amnesia . Tremors and Cognitive impairment. Cough and pain . because it is correctly not cleared what may be causing these prolonged symptoms, once other cause for these prolonged symptoms are ruled out reseaches should specialise in the symptoms and study the relationship between Covid-19 and Post Covid effects.

Keywords : Virus, Pandemic, Symptoms, Syndrome, Fatigue, COVID-19 .

Lowering of Cholecalciferol (V-D3) leads to the Immunodeficiency disorder of an essential Reproductive Endocrine Gland (Testis) and their associated Hormone (i.e. Testosterone) of Male Mice *Mus musculus* (p).

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Abstract

Our present will be based upon the changing the prevailing conditions of the persons which are from the northern regions of the globe. They are living in that area where the real impinging of the sunrays will not be done. So due to this prolong situation of being deprived the persons healthy condition will be becomes deteriorated day by day on their chemical messenger system, (Endocrine system) it will also not properly working. Due to this, they were termed to be lowering the levels of sun Cholecalciferol (i.e. Vitamin-D3) then our study is on its reproductive endocrine gland (Testis) of the male mice (Mus musculus). In this study, the researcher also reveals all the deficient factors on the male mice initially first. And the same will be applicable to the human beings also who are currently deficient by this life threaten vitamin this can be noticed by examining their blood serum level which is present is their blood samples which are to be taken randomly among all my groups of the selected sample. Then we got the good results over this little piece of research work which will be able to get rid of such a high risk evolving factor of being deficient condition of Vitain-D3 among the whole northern region globally. Nowadays, this deficiency will also become higher to become a pandemic one day, it must be overcome as soon as possible from such a life threatening hindrance.

Key Words: Supplementation, Reproductive Hormone, and Immune-disorder.

Side effects on Patients affected with Covid during Pandemic. A Review

Anchan yadav

Global School of Excellence, Bhopal

ABSTRACT

Coronavirus disease (COVID-19) outbreak has caused unprecedented global disruption since 2020. Approximately 238 million people are affected worldwide where the elderly succumb to mortality. Post-COVID syndrome and its side effects have popped up with several health hazards, such as macular degeneration, vision loss, from lung disease to systemic disorder, severe acute respiratory syndrome and long term effects on liver, kidney, mental health, the endocrine system, the nervous system, the cardiovascular system during the path to recovery. We aimed to assess the current evidence on the long-term symptoms in COVID-19 patients. The multifaceted understanding of all aspects of the COVID-19 pandemic, including these long-term symptoms, will allow us to respond to all the global health challenges, thus paving the way to a stronger public health. Herein, we review the long-term impact of COVID-19 on different organ systems reported from different clinical studies. Understanding risk factors and signs and symptoms of long-term consequences after recovery from COVID-19 will allow for proper follow-up and management of the disease post recovery.

Investigation of Anticancer Potential of *Fumaria parviflora* in Swiss Albino Mice

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***Madhya Pradesh Council of Science and Technology, M.P., India**

Abstract

Background: The aim of the study was to investigate the anticancer potential of *Fumaria parviflora* extract. The topical application of 7,12-dimethyl benz(a) anthracene (DMBA) induced skin tumor, promoted by croton oil in Swiss albino mice. The extract was orally administered at two different concentrations (200 mg/kg and 400 mg/kg body weight) continued three times weekly for 16 weeks. Biochemical analysis of blood and histopathology of skin was assessed to evaluate the chemopreventive potential of the extract.

Results: The extract effectively reduced the development of tumor and suppressed the oxidativestress. Histological findings further supported the protective effects of *Fumaria parviflora* extract against DMBA & Croton oil induced damage in skin. A significant decrease in the activity of serum enzymes was also observed in the animals treated with the extract. Conclusions: The findings of the present study revealed that *Fumaria parviflora* extract possess considerable chemopreventive potential against skin carcinogenesis. The results of the study could form the basis of further studies needed to confirm the anticancer activity of FPE which might lead to the production of plant-based anticancer drugs.

Keywords: *Fumaria Parviflora*; Swiss albino mice; Anticancer agent; LPO; GSH.

Medicinal Importance of Indian Gooseberry (*Phyllanthus emblica*) in Post-Covid Treatment: A Review

Anusree S Nair, Poonam Baghel, Dr. Renu Mishra

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***Associate Professor, Sri Sathya Sai College for Women, Bhopal, M.P, India**

Abstract

The COVID-19 disease is caused by SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). Following an acute COVID-19 infection, most Covid infected patients recover completely within a few weeks but a considerable number of people develop lasting and persistent symptoms, called Post-Covid-19 symptoms (National Institute for Health and Care Excellence). The common Post-Covid symptoms include tiredness, breathlessness, common fever, myalgia, cough, and multi-organ damage mainly the heart, lungs, and brain. The Directorate General of Health Services (EMR Division) of the Ministry Of Health & Family Welfare has issued a Post-Covid Management policy about taking daily supplements which includes Immunity boosting AYUSH medicine like Ayush kwath, Samshamani vati or Giloy powder, Ashwagandha ghanavati or Ashwagandha powder and Amla fruit /Amla powder. Herbal medicine and dietary therapy could be complementary preventive therapy for COVID-19 (SARS-CoV-2). According to Ayurveda, an ideal diet should be Shadrasatmaka (with all six tastes) and may include ginger, turmeric, pepper, cinnamon, Amla (Indian gooseberry), and mint in their diet to boost immunity. Medical sciences across the world are giving more importance to boosting immunity and that is the heritage of Ayurveda The potential of medicinal plants, chiefly, Amla as a better and an overall effective option in treating Post-Covid-19 symptoms has gained attention in recent years.

This review article was carried out to highlight the importance of medicinal plants, especially Amla (*Phyllanthus emblica*) which is common in traditional medicinal sciences of different Asian countries and is now popularized for the treatment and management of Post-Covid-19 symptoms. We have also summarized the influence of COVID-19 on health, as well as, listed the curative properties of Amla.

Keywords: *Phyllanthus emblica*, Post-Covid-19 Symptoms, Vitamin C, AYUSH Medicine

Potent Phytochemical For The Recovery Of Covid Induced Anosmia And Ageusia

Anusree S Nair and Dr. Rupa Guha Nandi

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Abstract

By the end of 2019 the world has witnessed the spread of deadly virus named Coronavirus which is highly contagious viral illness caused by Severe Acute Respiratory Syndrome SARS-CoV2. The pathogenic viruses have infected millions of people around the world. One of the most frequently associated symptoms with SARS- CoV2 is the loss of chemical senses i.e, smell and taste. Different methods are being used for the recovery of the olfactory senses such as smell training and drug repurposing. Apart from that, herbal medicine as an adjuvant therapy may be one of the efficient strategies to fight against COVID-19 as well as Post COVID syndrome. Studies conducted by researchers and scientist suggest that the metabolites present in the medicinal plants have properties in recovering Covid 19 and it's after effect. This present review paper suggests the usage of phytochemical compounds of *Curcuma longa* and *Allium sativum* which contain bioactive properties with immunomodulatory, anti-inflammatory and anti-viral effects, which may helps in the recovery of anosmia and ageusia.

Keywords:- Anosmia, Ageusia, phytochemicals, smell training and immunomodulatory

Risk of Nosocomial Infection Within the Patient Who Survived After Covid 19 -A Review Article

Bhawna Kurmi & Dr. Sunita Yadav

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Abstract

Nosocomial infections, pose a serious challenge to healthcare professionals globally during the Coronavirus disease 2019 (COVID-19) pandemic, and is also known as hospital-acquired infections, Nosocomial infection of COVID-19 directly impacts the quality of life of patients, as well as results in extra expenditure to hospitals. It is observed that COVID-19 is more likely to transmit via close, unprotected contact with infected patients. Moreover, current preventative and containment measures tend to overlook asymptomatic individuals and superspreading events. Because the mode of transmission and real origin of COVID-19 in hospitals has not been fully clarify, minimizing nosocomial infection in hospitals remains a difficult but urgent task for healthcare professionals. Healthcare workers globally should form an alliance against nosocomial COVID-19 infections. The fight against COVID-19 may provide valuable lessons for the future prevention and control of nosocomial infections. The present review paper will discuss some of the key strategies to prevent and control hospital-based nosocomial COVID-19 infections.

Keywords-Nosocomial infection, Covid-19, Healthcare, Asymptomatic,Professional and Control

THE IMPACT OF COVID-19 ON SCIENTIFIC RESEARCH OF LIFE SCIENCES

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Abstract: -

Covid-19 has affected all our lives in different manner. For some industries it appears to be like messiah where as to some industries it was like the worst nightmare of their lives. But research industries were at the centre of the pandemic, as there were new researches going on for, how to get rid of the virus. Each and every life scientist was trying their best to find the solution for this virus. The impact of the virus on the research enterprise itself is something which has been closely examined. In this paper we will be discussing about the impact of covid-19 on scientific research that too specially on life sciences

Effect of Chromium on Morphology and Physiological attributes of Soybean *(Glycine max L)*

Gazala &Arpana Alia

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*** Rajeev Gandhi College Bhopal (MP), India.462016**

Abstract

Chromium is a transition element with the ground-state electronic configuration of Ar 3d5 4s1 that belongs to the periodic table's group VI-B. The trivalent Cr (III) and hexavalent Cr (VI) species are the most stable forms of Cr, though there are a number of other valence states that are unstable and short-lived in biological systems. Cr (VI) is the most toxic form of Cr, and it is found as chromate (CrO4 2) or dichromate (Cr2O7 2) oxyanions in the presence of oxygen. Cr (III) is less mobile, less toxic, and is primarily found in soil and aquatic environments bound to organic matter. Cr and other heavy metals are known to produce ROS and induce oxidative stress in certain plant species. In the present study different concentrations of Cr were given to plant of soybean (*Glycine max L*). The treated plants of soybean were studied in different intervals for morphological and physiological attributes in comparison to control which shows that both morphological and physiological attributes shows reduction in proportion to dose of Cr.

Key words: Cr, Glycine max and antioxidant enzymes.

Post Covid Trends in Geopolitics and India's Policy Prospective

Hariom Singh Sisodia & Dr. Shriji Seth

*** Research Scholar ,Political Science**

*** Assistant Professor, Political Science, SSSWC, Bhopal**

ABSTRACT:-

In recent years, India has experienced a massive coronavirus outbreak, with daily new cases reaching all-time highs. It deteriorated India healthcare system and hurt the country's economy with several restrictions and lockdowns at different places. The second wave of coronavirus and its dreadful consequences led to the restructuring of India's role in the global order. India's claim of being an important regional player has been a major hit. It has to play to its strength as a member of several rule-making bodies and an active member of global governance.

The coronavirus pandemic has put a strain not only on the economic sector but also on the political and social structure of the country. India must deal with challenges within and outside the world to be on the table, not on the menu. It is the time to be at the forefront of our philosophy of Vasudhaiva Kutumbakam.

To cope with future health challenges, India has to boost spending on healthcare, sanitation, and

preventive medicine. This research paper would aid in getting the gist of the change in geopolitics after the coronavirus pandemic and what lies ahead for India's foreign policy challenges.

Keywords: coronavirus, lockdowns, global order, governance

Immunity After Covid 19 And Vaccine – A Review

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Sri Sathya Sai College For Women's Bhopal (M.P)

Abstract

The CoronaVirus disease 2019 (COVID-19) pandemic caused by severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) is the most formidable challenge to humanity in a century. It's widely believed that pre-pandemic normalcy can never come back till a secure and effective immunogen strategy becomes accessible and a World Wide vaccination program is enforced with success. Developing a secure and effective COVID-19 immunogen may be a world priority to finish this pandemic. Here we tend to discuss immunity when COVID-19 on the idea of medicine ways. Coronavirus illness (COVID-19) is a communicable disease caused by the (SARS-CoV-2) Severe Acute Respiratory Syndrome Virus. Most of the people infected with the Virus can expertise delicate to moderate respiratory disease and recover while not requiring special treatment. However, some can become seriously sick and need medical attention. Anyone will get sick with COVID-19 and become seriously sick or die at any age the simplest way to stop and prevent transmission is to be informed regarding the illness and the way the Virus spreads. Defend yourself and others from infection by staying a minimum of one meter aside from others, carrying a properly fitted mask, and laundry your hands or exploiting an alcohol- based rub often. Get vaccinated once it's your turn and follow the guidance provided by the govt.

This present review is based on "Immunity In People After COVID 19 And Vaccine" which tell us how our body reacted during these plague.

Key Words – Syndrome, Formidable, Pandemic, Vaccination, Immunogen, Infectious diseases Plague.

Medicinal Herbs Helpful to Promote Recovery From Post Covid : A Review

Jyotsana Singh Chandravanshi & Dr. Sunita Yadav

Sri Sathya Sai College For Women, Bhopal

Abstract

A medicinal plant also called medicinal herbs: - is any plant which, in one or more of its organs, contains substances that can be used for therapeutic purposes or which are precursors for the synthesis of useful drugs. Herbal medicines have been actively used as complementary medicine treatments of COVID-19. Many countries have conducted clinical trials and research studies on COVID-19 to find a cure as quickly as possible. A major part of these studies also included herbal medicine as an adjuvant along with Western medicine or alone and reported somewhat better results. In India, more than half of the COVID-19 related studies registered are from herbal medications. With the outbreak of COVID-19, the uses of medicinal plant and their product or traditional herbal preparation increased dramatically around the world. There are some common medicinal herbs such as *Ocimum gratissum* (Van tulsi), *Ocimum sanctum* (Shyama tulsi), *Eucalyptus globules* (Niligiri), *Azadiracta indica (*Neem), *Cuscuta reflexa* (Amerbel), *Aloe barbadensis* (Aloe vera) and *Menthe arvensis* (Mint), *Withania somnifera*(Ashwagandha). G. *amygdalinum,* more commonly known as V. amygdalina or bitter leaf, is another plant that has shown immune enhancing effects as adjunct to vaccines. This plant was reported to be traditionally used to relieve fever, diarrhoea, cough, and headache. Aqueous extracts of *G. amygdalinum* showed positive effects in enhancing immune response by increasing the levels of white blood cells and CD4+. The leaves of neem (*A. indica*), a popular Indian plant, is traditionally boiled and consumed for treatment of fever , with reported anti-inflammatory effects in animal studies . In vitro and in silico docking studies demonstrated that neem leaves extracts and its phytochemicals such as flavonoids and polysaccharides have direct antiviral effects against various viruses including dengue and Hepatitis C Virus. Specific to SARS-CoV-2, molecular docking studies have demonstrated that the neem derived compounds nimbolin *A, nimocin*, and cycloartanols have the potential to bind to envelope and membrane glycoproteins of the SARS-CoV-2 and act as inhibitors. As for immune modulatory effects, both neem seeds and leaves reported positive effects in enhancing immune response in animals.

Keywords: Medicinal herb, Inflammatory, Docking, Extract, Phytochemicals, Flavonoids, Antiviral, Modulatory

Impact of Zingiber officinale (GINGER) and Cinnamomum verum (CINNAMON) on Post Covid Syndrome

Lakshmi Pandey, Sanjana Singh & Dr.Rupa Guha Nandi

***(B.Sc 2 nd year Biotechnology)**

Sri Sathya Sai College For Women, Bhopal, MP, India

Abstract

The whole world is entangled by the Coronavirus disease (COVID-19) Pandemic which was spread by the end of 2019 which is caused by Severe Acute Respiratory Syndrome CoronaVirus 2 (SARS-COV-2). This contagious Virus has taken many lives till date and most of the infected people are still suffering from its after effect such as psychological and neurological disorders. Although several therapeutic molecules are being tested, no effective vaccines or specific treatments have been developed. Studies suggest that medicinal plants have the efficacy to cure most of the symptoms of Post Covid. This present review suggest the usage of medicinal plants and its phytochemicals in curing Post Covid Syndromes. From greater part of medicinal plants we focused on most common ayurvedic spices *Zingiber officinale* and *Cinnamomum verum* having science based benefits for Post Covid Syndrome .

Comparative analysis of hexavalent chromium removal using spent tea and *Lantana camara*

Manju Dubey

Rajeev Gandhi College, Bhopal

Abstract:

In past there was no significant comparative analysis between tea waste and *Lantana camara* for chromium removal were performed, and also activation of low cost adsorbent tea waste and *L. camara* by soxhlet was not done. Hence the objective of this work was comparative adsorptive removal of hexavalent chromium by acid activated and soxhlet activated tea waste and *L. camara*. Adsorption experiments were carried out for different parameters such as contact time, metal ion concentration and adsorbent dosages. In case of contact time other parameters such as metal ion concentration and adsorbent dosages were fixed. Similarly in adsorbent dosages and metal ion concentration other parameters were fixed and optimized from previous experiment. This result identified tea waste and *L. camara* as a suitable low cost biosorbent for chromium (VI) removal in batch experiments. The adsorption process was depended on, initial Cr (VI) concentration, and contact time and adsorbent mass. The optimum time, optimum metal ion concentration and optimum adsorbent dosages were 25 minute, 100mg/L and 0.4gm respectively for biosorption of chromium (VI) from aqueous solution.

Key Words: Tea ash, Egg ash, Adsorption, Chromium

Post Covid trends of Enhanced Di(2- Ethylhexyl) Phthalate Invasion in Humans and Role of Vitamin-C as Immunity Booster

Meenakshi Soni & Vinoy Kumar Shrivastava

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ABSTRACT

Studies project that by 2030, the amount of plastic litter (including micro- and nano-sized plastics) will have doubled, posing a serious threat to human health and natural ecosystems.

However, due to the COVID-19 pandemic and the increased usage and consumption of single- use plastics (including personal protective equipment like masks and gloves), such projections are likely to be made worse. Di(2-ethylhexyl) phthalate, DEHP, is the most frequently used plasticizer to make flexible plastic. It is a well-known endocrine disruptor chemical and reprotoxicant. Unfortunately, during the COVID-19 pandemic, the invasion of DEHP in human bodies and environment enhanced multifold due to the extensive use of flexible, single use plastic packaging used for food takeaways, online purchases and home deliveries of essentials and groceries. This review attempted to provide a thorough analysis of COVID-19's effects on microplastic pollution, exposure of DEHP and its possible repercussions on environment and human health, taking both short- and long-term scenarios into account. It also addressed key issues and discussed potential solutions considering role of vitamin-C for boosting immunity to fight against the adverse effects of di(2-ethylhexyl) phthalate in humans.

Keywords: DEHP Exposure, COVID-19 pandemic, Vitamin-C, endocrine disruptor chemical, reprotoxicant.

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Impact of Post Covid On Healthcare System : A Review

Muskan Dhakar & Dr. Rupa Guha Nandi.

Sri Sathya Sai College For Women, Bhopal, MP, India.

Abstract

In history for the First time, a health crisis has shut down the entire global economy, painfully demonstrating how inseparable healthcare and the economy have become. Across the globe, healthcare systems were not designed to deal with this crisis: an Uncertain, large-scale health challenge that requires urgent mobilization of resources and affects the whole population. Debating these systems, ability and efficiency to deal with it is therefore not relevant itself. Covid-19 pandemic heavily impacted health services across all countries: the increase in morbidity and mortality due to SARS-COV-2 infection caused an important consumption in hospital resources. Emerging evidences from many countries shown that there are variations in healthcare utilization patterns due to Covid-19. The ambulatory services switched to tele- medicine and several elective admissions were postponed. Covid-19 is a fluctuating circumstance, Due to this many elective procedures have continued to be delayed as Covid-19 cases increase and virtual care remains a large component for many outpatient practices. The Pandemic and resultant lockdowns have taken a large psychological toll on many in India, exacerbating symptoms of anxiety and depression. Inspite of the reduction in outpatient service and elective surgeries, patients would presumably still require inpatient management for their acute and chronic medical conditions requiring admission through the emergency department.

Objectives of this present review . This concludes that the impact of the emergency measures on overall hospital use is uncertain.

Keywords : Covid -19, Healthcare , Hospital management , Healthcare services , Sustainability, Public health , Health system

Role of Natural remedies in the pathophysiology of COVID-19

Neetu Patel , Renu Shrivastava & Vinoy K. Shrivastava

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***Zoology Department, Sri Sathya Sai, College for Women, Barkatullah University, Bhopal, Madhya Pradesh 462024, India**

Abstract:

COVID-19 has significantly altered the lives of public and healthcare delivery systems and has become a worldwide public health emergency affecting 223 nations and territories. Although several recommendations to prevent COVID-19 infection and to support the use of telerehabilitation have been made. International health systems were neither well prepared for nor able to respond quickly enough to the COVID-19 epidemic. Although the development of efficient vaccinations has provided governments, scientific groups, and members of the public with a potential cure for the pandemic, For the prevention and treatment of COVID-19, effective pharmaceuticals, such as immunotherapy, have not yet been identified. Internationally but some natural therapeutic medicine played a vital role to prevention of COVID -19. Natural remedies may have a lot of potential in the battle against COVID-19, but their efficacy and safety cannot be determined until thorough clinical research is conducted. In-depth investigation and clinical investigations are required to achieve this aim. Collaboration between scientists, doctors, governments, and traditional healers in the quest for the development of safe and efficient treatments from natural products for the treatment of COVID-19 might be a possibility.

Key words:- immunotherapy, therapeutic, COVID-19.

Immunological aspects of SARS CoV 2 infection

Dr. Nishi Yadav

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Abstract

The global pandemic of Coronavirus disease 2019 is caused by severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2). This novel variant of Corona virus has emerged from Wuhan in China. The disease significantly impacts the world economy and daily life. COVID 19 presents a wide spectrum of clinical manifestation, which ranges from an asymptomatic infection to a severe pneumonia accompanied by multisystem failure that can lead to patient's death. By binding to the angiotensin-converting enzyme 2 receptor, SARS- CoV-2 can enter and replicate in the host cell, exerting a cytotoxic effect and causing local and systemic inflammation. Considerable works are going on to establish the relation between immune parameters and viral replication that, might alter both innate and adaptive immune system of COVID 19 patient by up riding a massive cytokines and chemokines secretion. Immunotherapy has consistently attracted attention because of its essential role in boosting host immunity to the virus and reducing overwhelming inflammation. This review mainly gives an account the immunological mechanisms underlying the spectrum of immune response to SARS CoV 2 infection. And also summarise the immunopathogenic features of COVID-19 and highlight recent advances in immunotherapy to illuminate ideas for the development of new potential therapies.

KEY WORDS: Immunotherapy, COVID 19, SARS-CoV-2, pneumonia, immunity

Advancement of Artificial Intelligence in Biotechnology after Pandemic- A Review

Orjit Nandi & Rupa Guha Nandi

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Abstract

Artificial intelligence is the most trending field of computer science. To understand the idea behind Al, you should think about what distinguishes human intelligence from that of other creatures-our ability to learn from experiences and apply these lessons to new situation. We can do this because of our advanced brain power, we have more neurons than my animal species. Today's computers don't match the human biological neural network-not even close. But they have one significant advantage over us their ability to analyse vast amounts of data and experiences much faster than humans could ever hope.

Biotechnology is another one of such upcoming and promising fields. It aims to provide environmental alternatives to the major environmental crisis of depleting resources which mainly involves the usage of organisms and living systems to develop or accumulate products. This paper will aim to analyse the intriguing cross-section of the two most developing and spellbinding fields of Biotechnology and Artificial Intelligence by analysing the advancement of Artificial Intelligence in the different branches of Biotechnology to improve precision and speed in drug development.

This paper would further indulge more in-depth into the various applications of Artificial Intelligence being used in the field of Industrial Biotechnological by focusing on the application of artificial neural networks in producing Biofuel. This technology can be used to predict that which drugs are more likely to be effective against a specific target without causing severe side.

Keywords:- Artificial intelligence, Artificial neural networks, drug development, Machine Learning and biotechnology

Empowering Entrepreneurship Practices through Relief in Taxation after Covid-19

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purnimaj1095@gmail.com

Abstract-

For the progress of any Nation, the growth of Industries and Trades are very essential. But Industries and Trades need Men, Materials, Machines, Money, and Knowledge for their survival. Entrepreneurs have the courage, intelligence, imagination, and foremost the skill required to run an industry. Due to the pandemic, many people lost their jobs and it was very difficult for them to overcome the financial crises. It is a need time now to develop skills to get self-employed and simultaneously provide jobs to others. It is only possible through becoming an entrepreneur. Here, in this paper, an attempt has been made to identify the reliefs in taxation which entrepreneurs needed after the devastating tragedy-Covid 19.

Key Words- Entrepreneurship, Industry, Trades, Taxation, Reliefs.

The importance of Biotechnology using transfer of foreign genes by physical method – Electroporation and particle gun method to producing Transgenic crops and transgenic animals

Dr. Reena Upadhyay, Anjali Bhargava & Reeta Tripathi

Department of Barkatullah University & Ravindranath Tagore University, Bhopal

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ABSTRACT

Today recombinant DNA technology and tissue culture method have been emerges important for Genetic manipulation process to producing genetically modified organism both plants and animals. Biotechnology helps to solve problem of Human health, food production and producing vaccines, genetically modified valuable crops in agriculture field. There variety of applications has been discovered by our scientist to involve transfer of foreign genes by using vector or vectorless method to producing new desirable traits – such as Herbicide resistance, Insect resistance, Transgenic plants Abiotic and Biotic stress related to environment which give rise new GM modified crops. Examples – Tobacco, Petunia, Maize, Rice, Wheat Genetically improved varities prepared. Electroporation is one of important technique of physical method of Gene transfer which is used deliver foreign genes into sterlized plant cells, Callus, explant, root tips, shoot tip, leaf disc. In the production of Maize and Sugarbect cells are resulted in low levels of transient expression. Because cells are present in this tissue are meristenatic in Nature having capacity to regenerate whole plant. BT Brinjal, Potato (Protein rich potato contains 60% more protein). Vit A rich GM variety has been prepared in agriculture field. Particle gun method or Biolistic Technique has been used to produce stable gene transfer process in Cotton, Maize, Rice, Sorghum, Soyabean, Sugarcane, Tobacco, Wheat plant varities. There is uptake of foreign DNA or transgenes by plant cells is a important application in field of biotechnology. We can produces important Genetically modified crops from plant cell, tissues, very small explants such cell, tissue organs are continuously developed in vitro (laboratories) or they passes through variable phase or through plant tissue culture is valuable tool in field of producing genetically modified useful crop. By using various gene transfer method our researcher producing increases milk production in cattle and increase growth of fish, GM modified Cow, Goat, Chicken, Sheep, Rat, Mice, have been produced in nature.

Keywords:- Transgenes, Biotechnology, Bioreactors, Recombinant proteins, Tissue culture, Genetically modified.

Impact of Covid-19 on Global Agriculture

Ritu Sharma

CSIR-AMPRI, Bhopal, MP, India.

Abstract

Covid-19 has threatened the world by claiming lives which on today's date we don't want to count. Due to immediate lockdowns and quarantine imposed during the Covid-19 to curb the transmission of the virus has greatly disturbed the agro-economic chain of the world, by directly impacting the availability of agricultural labor, crop protection products, fertilizers causing increased pest attacks, decreased crop yield, disruptions in transportation and supply chains, eventually leading to global food insecurity. However, in India, forced labor migration lead to intense pressure on agriculture without an increase in output. The overall climate change and the commercialization of agriculture have only worsened the condition by making plants more susceptible to diseases, and water scarcity and limiting their geographical stretch. The disruptions caused by the Covid-19pandemic have negatively impacted global sustainable goals by increasing food prices, poverty, hunger, inequality in resource distribution, and climate destruction.

This review paper presents an overview of the Covid-19 pandemic on global agriculture and calls for the resilience of agriculture by strengthening global efforts in Biotechnology, Transgenic Technologies, and Bio-securities for dealing alike scenarios in near future.

A Review: Effect of Probiotic on COVID-19

Rinisha Peter

PhD scholar

Sam Global University

Abstract: -

Probiotics are made of good live bacteria and/or yeasts that naturally live in your body. You constantly have both good and bad bacteria in your body. When you get an infection, there are more bad bacteria, knocking your system out of balance. A good bacterium helps eliminate extra bad bacteria, returning the balance. Probiotic-supplements are a way to add good bacteria to your body.

Role of Immunotechnology in Detection and Diagnosis of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2)/COVID-19

Sanskriti Shiwani

***Department of Biotechnology, School of Life Sciences, Mahatma Gandhi Central University Motihari, Bihar, India- 845401.**

ABSTRACT

End of the second decade in the 21st century witnessed the most prominent disease outbreak caused by Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2)/ COVID- 19. This infectious disease has been spread worldwide and caused a great threat to global public health and economic sectors. Therefore, the first step in combating SARS CoV-2 is to get a timely and accurate diagnosis. There are various methods for diagnosis of COVID-19, like molecular technique, immunological technique, artificial intelligence, CRISPR based, differential diagnosis, tomography, lungs ultrasound etc. Out of these immunotechnology is the most recent approach for diagnosis which mainly focussed on the detection of immunoglobulin-M and G (IgG and IgM) from the serum of COVID-19 patients. The immunological-based techniques include- ELISA, ELISPOT, Lateral flow type immunoassay, immunofluorescence assay, Western blotting analysis, etc. that can detect antiviral antibodies or viral antigens in clinical samples. For the diagnosis of SARS-CoV-2, ELISA is the most widely used technique due to its high sensitivity as well as high specificity. The biggest challenge concerning serological tests is cross-reactivity. Also the antibody amounts produced on the first few days of the infection may be insufficient for the detection. Instead of these demerits, Immunotechnology is proved to be a robust diagnosis and surveillance tool. In developing countries, the availability of immunotechniques cannot be termed as widely spread, despite it being inexpensive and easy to perform in comparison with other methods. As a result, scientists, researchers and clinicians are working hard to develop good quality and inexpensive serological (immunological) tests that can be accessible in developing countries.

Keywords: - SARS-CoV-2, ELISA, COVID-19 diagnosis, Immunological technique, Antibodies.

Efficacy of Metal Nanoparticles in Mitigation of *Withania somnifera* Leaf Spot Disease: A Review on Biotechnology Approach

Sahare Sheetal, Mishra Renu, Snehi Sunil Kumar, Kushwaha Ram Prasad

Abstract

The highly valued medicinal plant *Withania somnifera* has tremendous therapeutic properties and produces numerous secondary metabolites including steroids (withanolides, glycowithanolides), alkaloids, flavanoids, and polyphenolics. Leaves of *W. somnifera* are also great sources of secondary metabolites are Withanone and Witheferin A which treat many human diseases including Covid-19 and Cancer. W. somnifera is easily affected by various pathogens and pests under natural as well as field conditions. The most prominent Leaf spot disease in W. somnifera is caused by Alternaria alternata destroying leaves of the plant which are a plentiful source of essential metabolites and pharmaceutically bioactive compounds.

Leaf spot disease modifies the reducing sugar, phenolic, and secondary metabolite production in leaves, which may reduce the quality of crude herbal medicine. To mitigate this problem nanotechnology is a potent technique against factors affecting plant health. Metal Nanoparticles due to their small size, ease to handle, easy to transport, durability, and high efficiency, make them the finest choice for agronomists over other traditional practices. Nanotechnology can promote solutions to overcome plant diseases, agricultural problems, and environmental issues by developing nano pesticides, nano biopesticides, nano fertilizers, and much more stuff for managing plant health. This could be accomplished by applying environment-friendly metal nanoparticles to enhance the quality of chemicals and bioproducts at low concentrations. This study of agricultural nanotechnology and its techniques can improve plant productivity, increases bioactive compound, and reduce the effect of pathogenic diseases on the plant.

Keywords: *Withania somnifera*, Withanolides, Leaf spot disease, Alternaria alternata, Bioactive compounds, Crude herbal medicine, Plant health, Metal Nanoparticles, Nano pesticides, Nano biopesticides, Nano fertilizer, Environment friendly, Low concentrations, Plant productivity.

Role of nanotechnology in drug delivery system: Post COVID-19 scenario

Shreya Tiwari & Dr. Rupa Guha Nandi,

Lifespan Biotech, Mandideep,M.P.

Abstract

COVID-19 has fundamentally altered the drug development landscape in ways that are both transformational and far-reaching. From the integration of powerful technologies to assist with the discovery and development of promising new drug candidates, to the adoption of novel, decentralized clinical trial designs, which reduce the burden on patients participating in clinical studies, the drug development enterprise has met the challenge of COVID-19, and is embracing new operational and business models to maximize productivity. Recent progress had been made in the use of next-generation nano-enabled vaccines, including delivery of DNA or RNA templates, viral subunits and peptides by custom-designed lipid nanoparticles or viral-like nanoparticles. Manufacturing of vaccine requires design strategies, including the nucleic acid structure, are key for generating effective viral neutralizing antibodies and T-cell responses. Different fields of science and technology have contributed in this battle against coronavirus. Nanotechnology has also played a crucial role in making technologically advanced equipment and devices. Deeper insights regarding interface between nanotechnology and coronavirus can further direct the scientists and researchers towards a new era for the impeccable design and repurposing of drugs, vaccines and detection method for COVID-19. Entering the era of Nanotechnology-SARS CoV2 interface will not only be critical in counteracting COVID-19 but also be vital in the management of future pandemics.

Keywords : COVID-19, Sars-protein, nanotechnology, drug delivery, antigenicity, nanomedicine, nanovaccine

Post Acute Sequale of COVID-19 (PASC) :- Recapitulation

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Sri Sathya Sai College For Women Bhopal, India

Abstract-

Severe acute respiratory syndrome Coronavirus -2 (SARS-CoV-2) is associated with a sequale of persistent symptoms affecting every day life, known as post acute sequale of COVID-19(PASC) or long COVID. It is an unwelcome crusade troubling millions of people all over the world. People who suffered from acute covid-19 or asymptomatic COVID are still living with long COVID, lingering for months or years.More than two hundred symptomps have been associated with the syndrome like fatigue, brainfog, muscle weakness,hairloss, joint pain, palpitations, sorethroat,headache, smell and taste disorders, anxiety disorders and mobility issue. Common cardiac issues in patients from COVID-19 include labile heartrate and bloodpressure responses to activity, mycocarditis, cardiac failure, and sudden cardiac death. There is no proven treatment against long COVID till date. This review article aims at presenting an insight into the sequale of various symptoms associated with the disease and information about long COVID therapies underway.

Key words:- COVID-19, PASC, long COVID

Green synthesis of Silver Nanoparticles of *Withania somnifera* L. Dunal Roots and its applications: A Review Article on Phyto-Nanobiotechnology

Supriya Gupta & Dr. Renu Mishra

***Research Scholar, Barkatullah University, Bhopal**

***HOD, Department of Botany and Microbiology, Sri Sathya Sai College for Women, Bhopal**

Abstract

Innovative developments in science and technology have progressed human towards great advancements. Nanotechnology is gaining tremendous impetus due to its ability to modulate metals into their nanosize, which efficiently changes their chemical, physical and optical properties. Phyto- Nanotechnology is an new emerging field which comprises synthesizing nanoparticles using plants. Phytonanotechnology is considered superior as compared to chemical nanoparticles due to its high efficiency, target drug delivery, high-speed, eco-friendly, cost-effective, nontoxic and biocompatible etc. *Withania somnifera* (L.) Dunal (Ashwagandha), a potent magical drug widely used in Ayurveda, Unani and other Medical therapies since a long time ago because of its safety and effectiveness Studies indicate that *Withania somnifera* possesses anti-tumor, anti-stress, anti-oxidant, anti-inflammatory, antiparkinsonian, antimicrobial, hypocholesterolemic, hemopoietic, immunomodulatory, hypoglycemic properties.

In this review paper, we compiled all the current investigations on Synthesis of silver Nanoparticles using roots of *Withania somnifera* and its applications with special reference to Covid-19 pre and post symptoms management. Currently many studies are undergoing to explore more fields of plant based Nanotechnology like Nanonutraceuticals, Biomedical Nanomedicines, Nanoremediation, Nanoherbicides, Nannopesticides etc.

Keywords: Nanobiotechnology, Phytonanotechnology, *Withania somnifera,* Ashwagandha, Anticancerous, Nanoneutraceuticals, Nanoremediation etc

Effectiveness of COVID-19 Vaccines : A Review

Yashomi Bourasi & Dr Rupa Guha Nandi

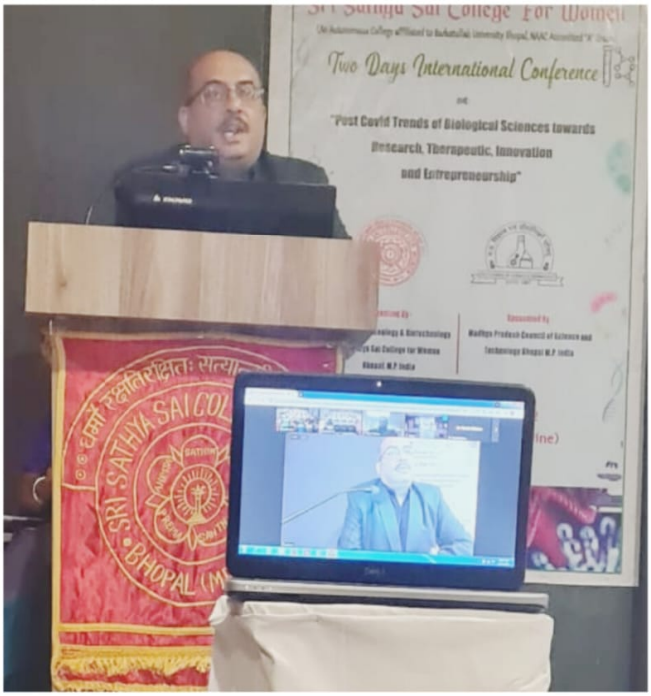
Sri Sathya Sai College for women Bhopal , MP

Abstract

At the end of 2019, a new disease recognized such as severe acute respiratory syndrome (SARS). This disease was caused by an unknown SARS coronavirus 2 (SARSCoV2); a virus is characterized by high infectivity among humans as well as the different adverse effects that they can cause to individuals..Vaccines have save many lives. There are currently many vaccines that have received Emergency Use Authorization by the WHO that can offer some protection to the world's population during the COVID-19 pandemic. The literature shows that these vaccines are highly effective in protecting the population from severe disease and death, but there are some issues concerning safety and adverse effects. For the further use of this vaccines on living it has to pass clinical trails. Covishield and covaxins have the effectiveness of the Covishield vaccine is nearly 90% as per the global reports and Covaxin's 81% according to interim 3rd phase trial results. vaccine. The World Health Organization (WHO) list of Emergency Use Authorization (EUA)-qualified COVID-19 vaccines (as on 20 December, 2021) contains eight vaccines, namely the three adenoviral-vectored vaccines ChAdOx1 nCoV-19 (University of Oxford/AstraZeneca), Ad26.CoV2.S (Janssen), Covishield, CrAdOxI, nCoV-19 (Serum Institute of India), two whole-inactivated coronavirus, which are the Covilo/BBIBP-CorV (SinoPharm/Beijing Institute of Biological Products), CoronaVac (Sinovac) and Covaxin, BBV152 (Bharat Biotech), and the messenger RNA (mRNA) vaccines mRNA-1273 (Moderna) and BNT162b2 (Pfizer-BioNTech) .

Key Words :- Vaccines, Covid 19, WHO, Pandemic, Covaxin, Covisheild.

Glimpse of the International Conference



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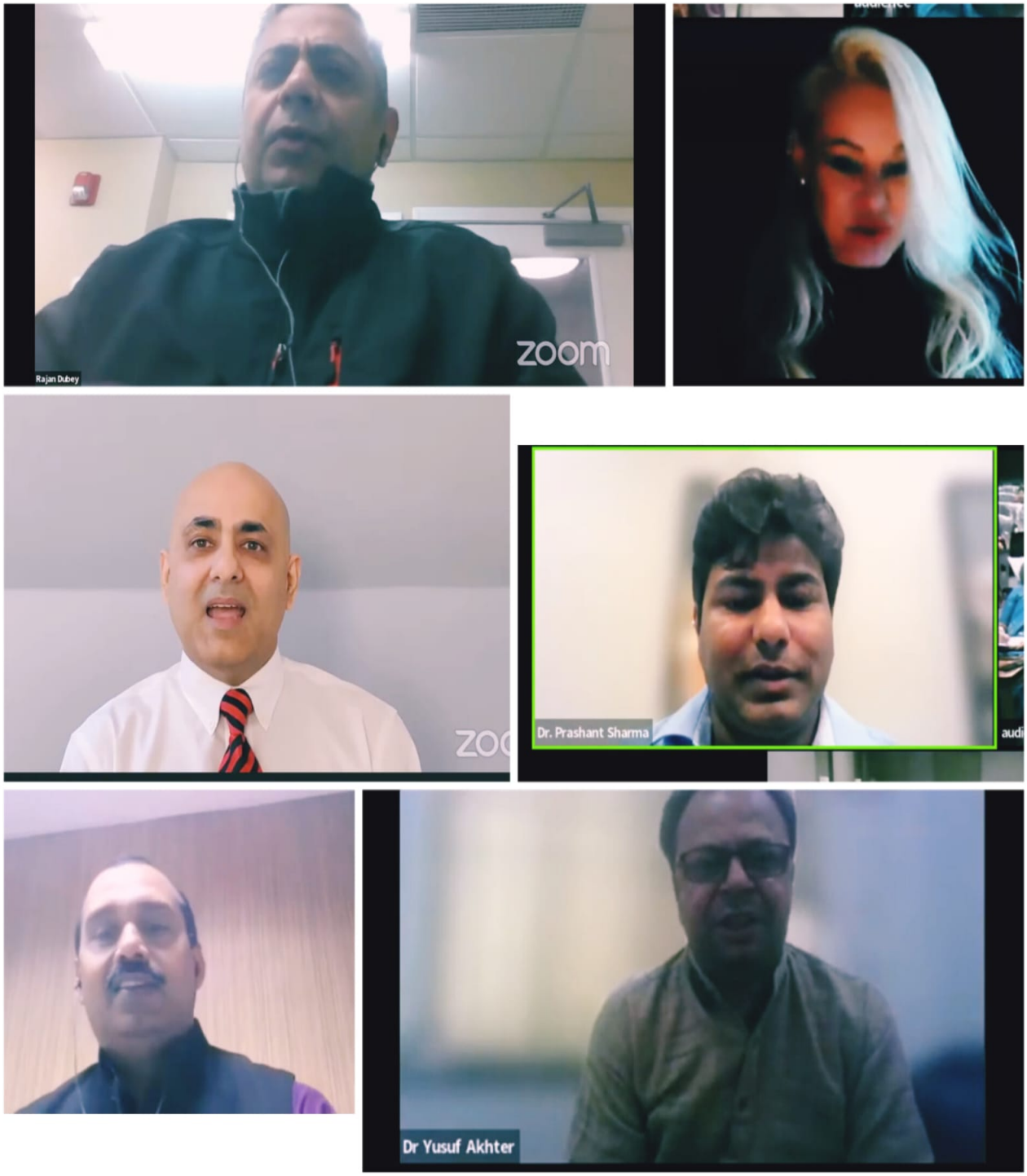

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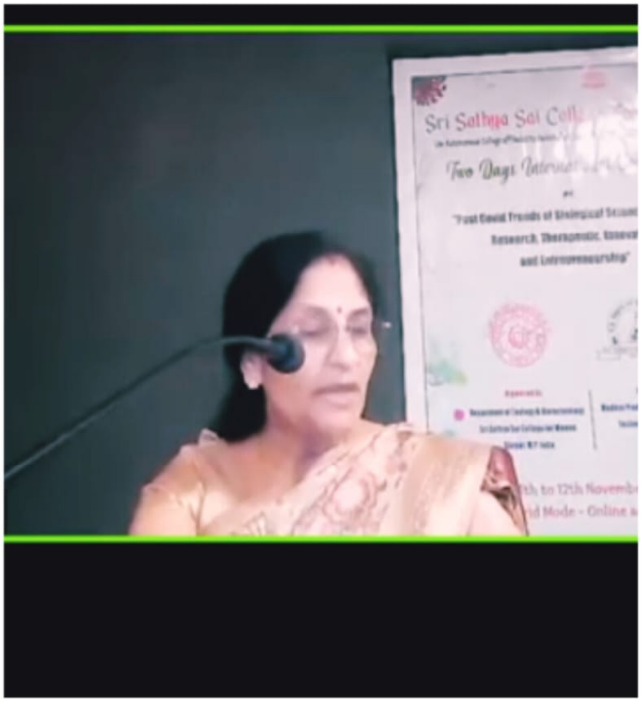
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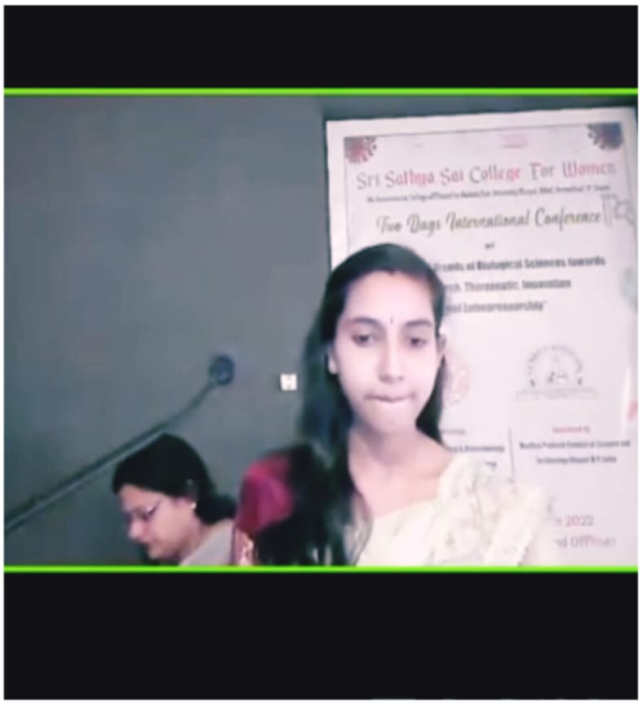
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Two Days International Conference
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and Entrepreneurship"


Sri Sathya Sai College For Women
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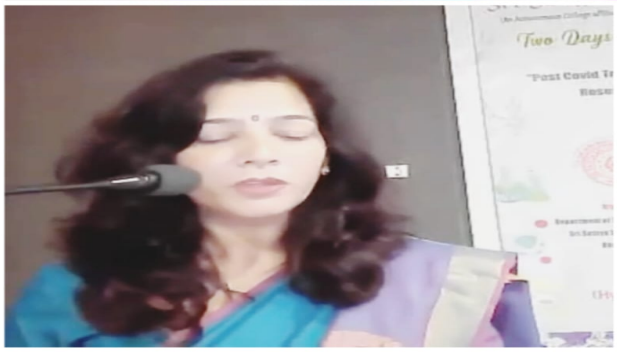

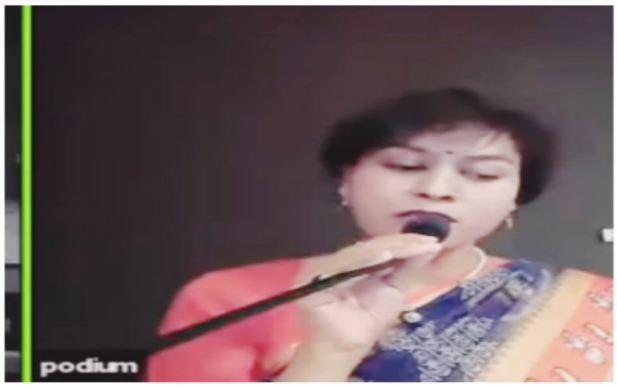
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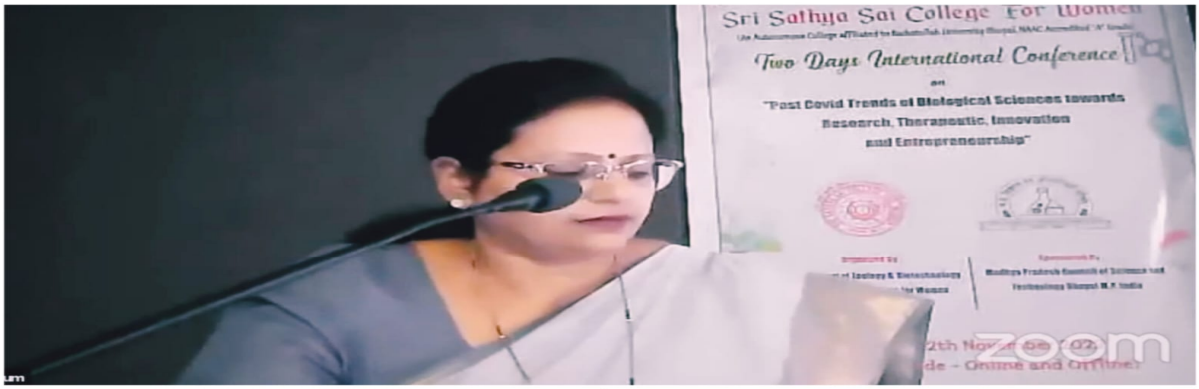
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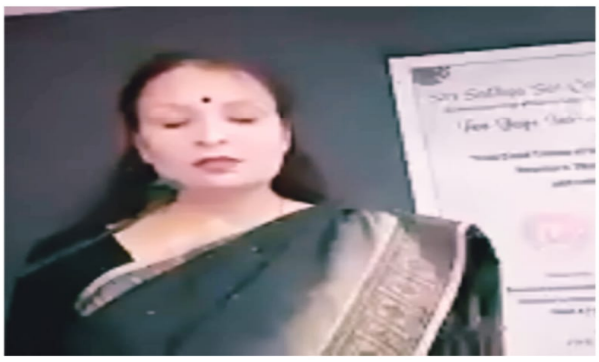

Poster Presentation

Paper Presentation


Sri Sathya Sai College
Principal

Valedictory and Award Ceremony

Thank you

on behalf of the Organizing Committee of the International Conference held on 11th-12th November 2022