Virtual

GLOBAL CONGRESS ON SUSTAINABLE GROWTH & DEVELOPMENT – 2021

HEALTH AND LIFE SCIENCES (GCSGD2021-HLS)

08th & 09th OCTOBER, 2021

BOOK OF ABSTRACTS

Jointly organized by

Virtual
GLOBAL CONGRESS
ON
SUSTAINABLE GROWTH & DEVELOPMENT – 2021

HEALTH AND LIFE SCIENCES (GCSGD2021-HLS)
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Jointly organized by

Einstein Research Academy, India

INTI International University, Malaysia

Geomatika University College, Malaysia

VELS Institute of Science, Technology, and Advanced Studies (Deemed University), India

Nilgiri College of Arts and Science, India

Viyen Biotech LLP, India

GCSGD 2021-HLS

In line with the Sustainable Development Goals (SDGs) on protection and promoting sustainable growth and development for our own and future generations, this global congress in health and life sciences provides an international platform to identify the key developments that contribute to a better future in health and life sciences.

Global Congress on Sustainable Growth and Development 2021-Health and Life Sciences aims to:

1. Bring together academicians and experts around the world to present and share their expertise, knowledge and research findings towards sustainability and growth in health and life sciences.

2. Stimulate and strengthen interdisciplinary research links among researchers and stakeholders worldwide to take the bold and transformative steps to shift the world on to a sustainable and resilient path.

Main theme

Moving towards Sustainable Development Goals in Health and Life Sciences

Sub-themes

- Human Health and Well Being
- Sustainable Environment
- Biotechnology and Biological Sciences
- Pharmaceuticals and Nutraceuticals
- Food Security and Sovereignty
- Innovation, Infrastructure and Nanotechnology for Sustainability
- Applied Sciences

All accepted papers will be submitted to the Journal of Experimental Biology and Agricultural Sciences (*Scopus indexed journal), INTI Journal and Journal of Advances in Biological and Health Sciences to consider for publication after peer review.

Message from Advisor

Professor Dr. Wong Ling Shing
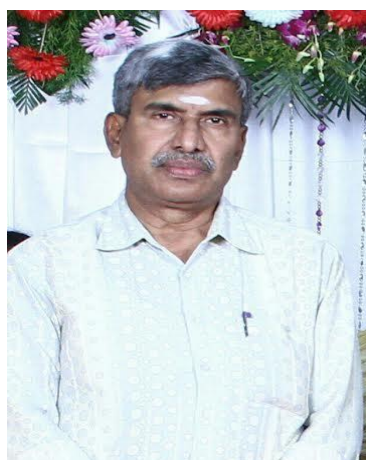INTI International University
Malaysia

Welcome to Global Congress on Sustainable Growth and Development 2021 – Health and Life Sciences (GCSGD 2021 HLS). The year 2021 has been a challenging year, as we have limited access to our offices and research facilities. However, it is my great pleasure to know that many researchers like us are still working day and night to generate knowledge and to help in the advancement in health and life sciences. I am glad to see all of us here in this Global Congress and share our most recent development and information about our research.

We had a very successful Global Congress in 2020, with more than 120 participants joined the event. We decided to keep the momentum rolling by organizing our Global Congress again in 2021 via online platform, with the focus on two interesting fields – health science and life science.

We are glad to announce that Journal of Experimental Biology and Agricultural Sciences continues to support us by accepting and publishing good quality papers generate from our congress. INTI Journal and Journal of Advances in Biological and Health Sciences are supporting us for the first time, to provide more choices to our participants in publishing our papers. To all participants, let us work together with the technical and review committee members to produce high quality papers that meets the requirement of the journals. That will be helpful to ensure smooth publication process later, after our Global Congress.

I wish to take this opportunity to express my gratitude to Einstein Research Academy, INTI International University, Malaysia, Geomatika University College, Malaysia, VELS Institute of Science, Technology, and Advanced Studies (VISTAS), India, Nilgiri College of Arts and Science, India, and Viyen Biotechnology for organizing GCSGD 2021 HLS. To all my committee members, thank you for your hard work, and congratulation for the job well done! I hope with the success that we have achieved; we will continue to organize GCSGD again in 2022.

Message from Convenor

Professor Dr. Senthilkumar Balasubramanian
Thiruvalluvar University
India

On behalf of the organizing committee of the Global Congress on Sustainable Growth and Development 2021-Health and Life Sciences (GCSGD2021-HLS), I take immense pleasure in welcoming all delegates to this Global Congress.

The recent advancement and proliferation of innovative and sophisticated technologies in all disciplines have opened up multitude of opportunities to solve the challenges on sustaining lives on people and planet. This Congress has brought together the knowledge and expertise of great minds from across the globe to share and promote their ideas.

Our sincere thanks to the organizers, eminent speakers, reviewers, academicians, research scholars and graduate students for their presence and enthusiastic participation in coming together to interact with the pioneers.

I express my heartfelt gratitude to the organizing committee members for their dedication and hard work without whose meticulous effort and support this GCSGD 2021-HLS would not have been organized in a befitting manner.

I wish that GCSGD2021-HLS will be of great success.

VAZHGA VALAMUDAN

Message from Chair 1

Er. Kannan Ponkoodalingam
Cyber Security Trainer & VP
Einstein Research Academy
India

On behalf of the organizing committee, I am delighted to welcome all delegates to the annual conference of Einstein Research Academy, the "Global Congress on Sustainable Growth and Development 2021-Health and Life Sciences (GCSGD2021-HLS)". I am excited about the wide variety of ideas that scholars and practitioners will bring into our fold. With knowledgeable insights, this richness of ideas bodes well for the Health and Life Sciences field.

The theme for this year's conference "Sustainable Development Goals on protection and promoting growth" in the field of Health science is most appropriate at this moment which is dedicated to creating our future. During this adversity, as the pandemic ravaged the globe and holding a live conference is impossible, our community have taken this unprecedented challenge and ready to share our knowledge using online platform. With preparedness and safety at the forefront of our minds, we look forward to engaging virtual event experiences and flexing our muscles in hybrid formats to cautiously embrace the joy of knowledge sharing.

As a conference chair of GCSGD 2021 HLS, I do 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, hence deepfelt appreciations to them. In particular, I would like to thank all of our co-organizers for providing their generous support. With this great success, hope to see all of you again in GCSGD 2022.

Message from Chair 2

Dr. Sinouvassane Djearamane
Universiti Tunku Abdul Rahman
 Malaysia

On behalf of the organizing committee, it is our prodigious honour to invite and welcome everyone to the "Global Congress on Sustainable for Growth and Development 2021-Health and Life Sciences (GCSGD2021-HLS)". This global congress is jointly organized by Einstein Research Academy, Vels Institute of Science, Technology and Advanced Studies (Deemed University), Nilgiri College of Arts and Science & Viyen Biotech LLP. from India, and INTI International University & Geomatika University College from Malaysia.

This event aims to bring together academicians and world experts to present and share their expertise, knowledge and research findings towards sustainability and growth, and also to motivate and strengthen interdisciplinary research links in health and life sciences among researchers and stakeholders worldwide to take the bold and transformative steps to shift the world on to a sustainable and resilient path.

As the organizing chair of this event, I would like to thank the organizers for their valuable support, reviewers for evaluating the conference papers, distinguished speakers for sharing their treasured knowledge, and all the presenters in sharing their scientific novel as well as innovative findings. Further, I am indebted to all the members of the organizing committee, scientific session chairs and master of ceremonies for their obligation and meticulousness to make this event memorable and successful.

CONTENTS

Keynote Speaker

Technical Sessions

HLS2111	BIOSYNTHESIS OF SILVER NANOPARTICLES USING WHOLE PLANT EXTRACT OF *CINERARIA MARITIMA* L, AND THEIR ANTIBACTERIAL ACTIVITY *D. Moorthy, S. Santhoshkumar, Narendhirakannan R. T, R. Ranjithkumar, Ling Shing Wong, Sinouvassane Djearamane and T. S. Mohamed Saleem*	17
HLS2113	IMPACT OF METALLIC NANOPARTICLES ON THE NUTRITIONAL VALUES OF *SPIRULINA* *Raveenderan Sithambaram, Sinouvassane Djearamane, Sharolynne Xiao Tong Liang, Ling Shing Wong, R. Ranjithkumar, Senthilkumar Balasubramanian and Christopher Amalraj*	18
HLS2117	METALLIC NANOPARTICLE: EFFECT ON MICROALGAE IN AQUATIC ENVIRONMENT *Arularasi Thenarasu, Chai Mee Kin, Wong Ling Shing and Sinouvassane Djearamane*	19
HLS2118	DNA VACCINES IN PRE-CLINICAL TRIALS AGAINST COVID – 19 A REVIEW *Dinesh Kumar Lakshmi Narayanan, Shivkanya Fuloria, Saminathan Kayarohanam, Sinouvassane Djearamane, Vetriselvan Subramaniyan, Mahendran Sekar and Neeraj Kumar Fuloria*	20
HLS2121	POTENTIAL COVID -19 THERAPEUTICS IN CLINICAL TRIALS A BRIEF REVIEW *Dinesh Kumar Lakshmi Narayanan, Sankara Kumaran Pandian, Saminathan Kayarohanam, Ashok Kumar Janakiraman, Sinouvassane Djearamane, Pradeep Balakrishnan and Vinodhkumar Ramalingam*	21
HLS21A1	MYCOSYNTHESIS OF GOLD NANOPARTICLES AND ITS ANTICANCER ACTIVITY *Farzana Fathima M.R and Usha Raja Nanthini A*	22
HLS21A2	SCIENCE AND QUALITY EDUCATION FOR SUSTAINABLE DEVELOPMENT IN LIBYA *Mahmoud M. Dboba, W. Astiata, and SP Bindra*	23
HLS21A3	IMPACT OF LIFESTYLE INTERVENTION AMONG PREDIABETES PATIENTS *Grace Janet Mary Ann R and K. Karthiga*	24
HLS21A6	PRODUCTION OF FOOD GRADE PIGMENTS FROM MICROBIAL SOURCES *Gopal Mayakkannan and Selvakumar Dharmaraj*	25

HLS21A8	COVID-19 VACCINE HESITANCY AMONG THE MALAYSIAN POPULATION *Azri Hazirah Azizan, Geetha Subramaniam, Lalita Ambigai Sivasamugham, Sharmini Gopinathan, Murali Raman and Wong Ling Shing*	26
HLS21A9	EVALUATION OF ANTIMICROBIAL ACTIVITY OF PAPAYA (VAR. RED LADY) PEEL AGAINST GRAM POSITIVE AND GRAM NEGATIVE BACTERIA *Roshni A.S, Lubaina A.S and Praveen Kumar*	27
HLS21A10	A COMPARATIVE HPTLC FINGERPRINTING OF METHANOL EXTRACTS OF CARICA PAPAYA L. VAR. RED LADY PEEL AND SEED *Roshni A.S, Vijitha V and Lubaina A.S*	28
HLS21A11	EFFECT OF CRY PROTEIN BASED DIET ON THE INTESTINAL MOTILITY AND HISTOPATHOLOGICAL CHANGES IN MALE ALBINO RATS *Arpita Rani Khamrai and Tanushree Tulsian Samanta*	29
HLS21A14	PREVALENCE OF MUSCULOSKELETAL PAIN AND ITS ASSOCIATION WITH COMPUTER WORKSTATION ERGONOMIC AMONG UNDERGRADUATES IN MALAYSIA *Kong Yi Ling, Ong Jun Hui and Sangkar Nath Rao*	30
HLS21A15	PREVALENCE OF RESPIRATORY SYMPTOMS AND ASSOCIATED RISK FACTORS AMONG STREET FOOD VENDORS IN KLANG VALLEY, MALAYSIA *Agnes Pang Jia Yi, Sumedha and Vinodhkumar Ramalingam*	31
HLS21A16	STUDIES ON NFkB DOCKING WITH COMMON BIOACTIVE COMPOUNDS PRESENT IN *PUNICA GRANATUM* PEEL AND *VITIS VINIFERA* SEEDS *Ashok Kumar Krishna Kumar, Vijayalakshmi Krishnamurthi, Saruniyadevi Moorthy and Jayanthi Malaiyandi*	32
HLS21A17	BIO CHARACTERIZATION VIA FT-IR AND GC-MS IN CUCURBITA VARIETY (YELLOW AND WHITE PUMPKIN) *Gowtham K, Jayanthi M, Thenmozhi M, Saruniyadevi M, and Gopiesh Khanna V*	33

HLS21A18	PARTIAL PURIFICATION OF EXTRACELLULAR AMYLASE FROM HALOTOLERANT ACTINOMYCETES *STREPTOMYCES BRASILIENSIS* MML2028 *Abirami G, Ramprasath C, Suganthi. M, Abinaya Devi E and Mathivanan N*	34
HLS21A19	OPTIMIZATION AND CHARACTERIZATION OF FLORISYNTHESIZED SILVER NANOPARTICLES (AgNPs) FROM *SOLANUM PUBESCENS* *Arulmathi Ramalingam and N. K. Udaya Prakash*	35
HLS21A20	MOLECULAR IDENTIFICATION OF SCALE INSECT *(EULECANIUM GIGANTEUM)* IN *HIBISCUS ROSA-SINENSIS* *Suganthi M, Logeshwaran R, Abirami G, Rupa Shree B, Anandaraj P and Senthilkumar P*	36
HLS21A21	MDCK CELL LINE PERMEABILITY OF CURCUMIN LOADED PHYCOCYANIN NANOSPONGES - *IN VITRO* STUDY *Manjuladevi Kasirajan, Ramaiyan Velmurugan and A. Vijayalakshmi*	37
HLS21A22	IMPROVE THE GERMINATION RATE AND DEFENSIVE ENZYME ACTIVITY NATURALLY BY THE EXTRA CELLULAR POLYMERIC SUBSTANCES PRODUCED FROM *SPIROGYRA* SPP. *Saravanan Devarajan and Manjunathan Jagadeesan*	38
HLS21A23	MOLECULAR METHODS IN DETERMINING RHIZO-BACTERIAL DIVERSITY *Saikiruba Radhakrishnan, Suresh Dhanaraj, Henry Allen John, K. Ashok Kumar and Dhandapani Ramamurthy*	39
HLS21A24	A STUDY TO IDENTIFY THE PHYTOCHEMICALS IN *PASSIFLORA EDULIS* F. *EDULIS* AND *PASSIFLORA EDULIS* F. *FLAVICARPA* AND TO MAKE A COMPARATIVE SENSORY STUDY ON THE ATTRIBUTES TO CREATE A COMMERCIALLY VIABLE PRODUCT *Poornima Jeyasekaran and M. Deepa*	40
HLS21A26	AN OVERVIEW OF *CEROPEGIA JUNCEA* ROXB.: REVIEW *Bhuvaneswari. M and Chitravadivu. C*	41
HLS21A27	EVALUATION OF ANTIOXIDANT AND ANTIBACTERIAL ACTIVITIES OF BUBBLE BELLY MASSAGE OIL *Jeyasharlina Ganesan, Sit Nam Weng and Sangeetha Arullappan*	42

HLS2119	PREPARATION AND CHARACTERIZATION OF CALCIUM PHOSPHATE CHITOSAN NANOCOMPOSITE AS PLANT GROWTH PROMOTER *L.S. Niranjana, M. Mathankumar, Karthikkumar.D, B. Chandar Shekar, Ling Shing Wong and Sinouvassane Djearamane*	52
HLS2120	SYNTHESIS AND CHARACTERIZATION MAGNESIUM DOPED FERRIC SULPHATE (Mg-doped Fe_2SO_3) NANOPARTICLES FOR AGRICULTURE APPLICATIONS *Karthikkumar.D, B. Divya, R. Ranjithkumar, B. Chandar Shekar, Ling Shing Wong and Sinouvassane Djearamane*	53
HLS2115	SUPPORT LINEAR EVOLUTIONARY METHOD FOR DIMENSIONALITY REDUCTION IN BLOOD PRESSURE DETECTION *P. Patchaiammal, R. Thirumalaiselvi and Durai Mutharasan*	54
HLS2116	A SENTIMENT-BASED SPAM DETECTION MODEL FOR COVITWEET USING MACHINE LEARNING APPROACH *P. Gunasundari, Durai Mutharasan and R. Thirumalai Selvi*	55
HLS2107	A REVIEW ON THE EFFECTS OF DIFFERENT SUBSTRATES ON THE GROWTH AND NUTRITIONAL COMPOSITION OF *PLEUROTUS OSTREATUS* *Muskan Karmani, Geetha Subramaniam and Lalita Ambigai Sivasamugham*	56
HLS21A12	FACTORS DETERMINING THE CUSTOMERS' INTENTION TO PURCHASE OTC PRODUCTS THROUGH E-PHARMACIES *Krishnadas. R and Renganathan. R*	57

BIOBASED INNOVATION IS THE KEY FOR HEATH AND LIFESTYLE PUBLIC HEALTH

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Abstract

Sustainable aquaculture yield sustainable food for people. Feed the people with the right nutritious food and it is safe and free from antibiotics, pathogens and chemical pollutants are the key factors in ensuring healthy living. Aquaculture products ranges from fish, shell fishes and seaweeds are now trending as health products for all as the generation of sustainable aquaculture will ensure food at the table. Biobased innovation is the key to ensure the value chain for aquaculture will not only generate income in the whole value chain analysis. Today I will speak on few biobased innovations that proved the success to this field and moreover the primary goal is safe and healthy living. We will discuss the latest technology such as nano sensors, gene editing, data science, synthetic biology, epigenetics and genomics have paved way to the latest findings in the field of area of the blue economy. Focus of the talk is the humble Shrimp or sometimes we call prawns which we have worked on for the past 20 years. This strategy ensures the biosafety validity of cultured shrimps as they are crucial aquatic food sources. The assurance of good shrimp health condition is important for downstream food processing industry and human consumption.

Keywords: Sustainable, threats, biobased innovations, shrimp health diagnosis

NANOTECHNOLOGY FOR SUSTAINABILITY

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Abstract

The world is facing great challenges in meeting rising demands for basic commodities (e.g., food, water and energy), finished goods (e.g., cell phones, cars and airplanes) and services (e.g., shelter, healthcare and employment) while reducing and minimizing the impact of human activities on Earth's global environment and climate. Nanotechnology is a collective definition referring to every technology and science which operates on a nanoscale. During the past decades, nanotechnology has globally become a core technology, projecting the future direction of science and engineering as well as the industry. Nanotechnology has emerged as a versatile platform that could provide efficient, cost-effective and environmentally acceptable solutions to the global sustainability challenges facing society. We highlight recent advances and discuss opportunities of utilizing nanotechnology to address global challenges in (1) water purification, (2) clean energy technologies, (3) greenhouse gases management, (4) materials supply and utilization, and (5) green manufacturing and chemistry. Nanotechnology also proves to be an efficient technique for managing resources of the agricultural field, drug delivery mechanisms in plants, and maintaining soil fertility. The focus of this lecture is on sustainable energy solutions and as such, strong emphasis is given to renewable energy. However, cutting-edge advances in non-renewable energy production (e.g., petroleum refining, biomass conversion) may also be considered provided there is a clear sustainability focus or advance towards a clean fuel technology. In addition to the technical challenges listed above, we also discuss societal perspectives and provide an outlook of the role of nanotechnology in the convergence of knowledge, technology and society for achieving sustainable development.

Keywords: Nanotechnology, sustainability, global challenges

PROMOTING MENTAL WELLNESS; HOPES AND CHALLENGES FOR SUSTAINABLE HEALTH AND PROSPERITY

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Abstract

Mental wellbeing is a positive state of health that can impact thoughts, behaviors, and emotions. Hence, it is defined as an integral part of health by the WHO and included on the unified global agenda. It postulates everyone has a role and responsibility in promoting mental health and needs to encourage participation from various sectors such as education, work, environment, and community development. According to Murray & Lopez (1996), mental wellness will be a rising concern by 2025 that will constitute the second-largest disease, and the burden will be well beyond the treatment capacities of developed and developing countries. On the economic aspect, it has a potentially devastating impact on the global economy, which can lower the quality of life, deplete personal and family finances, and feed into poverty. According to the MHIN report (2019), 12 billion working days are lost every year due to mental illness. In addition, the social cost associated with the growing burden of mental illness is significant, and curing mechanisms are relatively less than required. The fundamental intention of mental wellness is to create happiness. The report by Origin of Happiness (2020) states that eliminating mental health issues would increase happiness by 20 percent, whereas eradicating poverty would increase happiness by only 5 percent. Many other scientific studies also found mental wellness and happiness are highly correlated than physical wellness. Hence, this presentation intends to explore the multidimensional aspect of mental wellness and happiness by looking into the following elements.

- Relevance of mental wellness for sustaining health and prosperity
- Measures to assess and improve the happiness level of stakeholders in organizations
- Means and ways to enhance mental wellness of young generation
- Challenges and hopes on maintaining happiness – A Case Study (NCAS)

Keywords: Mental health, mental wellness and happiness

MEDICINAL PLANTS IN CURRENT THERAPEUTICS: ARE WE MISSING THE LAST CHANCE?

Christophe Wiart

School of Pharmacy, University of Nottingham, Malaysia

Abstract

COVID-19 pandemic is a call for attention for the use of medicinal plants in Asia and the Pacific for the development of drugs and phytomedications. The presentation provides some historical background on the use of plants for human medicine, discusses current strategies in drug discovery from plants, and discusses the role of university teaching in the formation of intellectual elites capable of developing in the third world drugs and phytomedications of global interest.

Keywords: COVID-19, pandemic, medicinal plants, drugs, phytomedications

AI-DRIVEN DRUG DISCOVERY FOR COVID-19

Ho Leung Ng

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Abstract

Machine learning algorithms have given us powerful new tools for computational drug design. I discuss our use of machine learning in generating new molecules for COVID-19 drug discovery. The methods we are using are based on deep neural networks, genetic algorithms, and reinforcement learning. Our drug binding predictions are comparable to state-of-the-art free energy calculations but a small fraction of the computational cost.

Keywords: Machine learning, algorithms, computational, drug design, COVID-19

ssSPTA IS ESSENTIAL FOR SERINE PALMITOYLTRANSFERASE FUNCTION DURING DEVELOPMENT AND HEMATOPOIETIC

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Abstract

Serine palmitoyltransferase complex (SPT) mediates the first and rate-limiting step in the *de novo* sphingolipid biosynthetic pathway. SPT complex comprises of two large subunits SPTLC1 and SPTLC2/SPTLC3 and a smaller subunit either ssSPTA or ssSPTB. The biochemical function of smaller subunits has been shown to increase the catalytic efficiency and the fatty acyl-CoA preferences. *In vivo* biological importance of smaller subunits in mammals is unknown. We use a conditional null for *ssSPTa* and a null mutant for *ssSPTb* to explore their functions. we show ssSPTA is essential for embryogenesis and adult hematopoiesis. *ssSPTa* null mutants are embryonic lethal at E6.5. However, *ssSPTb* mouse is viable. *Mx1-Cre* induced deletion of *ssSPTa* leads to lethality and severe myelopoietic defect. Chimeric bone marrow transplantation experiments show defects in myelopoiesis and expansion of stem cell compartment. Hematopoietic stem and progenitor cells show impaired differentiation to the myeloid lineage and displayed endoplasmic reticulum stress. Therefore, ssSPTA is essential for embryonic development and hematopoietic functions.

Keywords: SPT, ssSPTA, de novo, sphingolipid, mutant, hematopoietic

PLANT EXTRACTS AS ALTERNATIVES TO ANTIBIOTICS

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Abstract

The current increasing trend in antibiotic resistance among clinical pathogens is a global issue and impacts the treatment of infectious diseases in our healthcare setting. The ease in which bacteria are able to develop resistance against antibiotics makes it necessary for the search for alternative therapeutic compounds. This presentation will focus on some of the plants with promising antibacterial activity against clinically important pathogens including *Pseudomonas aeruginosa, Staphylococcus aureus* and the multidrug-resistant *S. aureus* (MRSA). The secondary metabolites in plants have been shown to have strong antibacterial activity with the added benefit of containing resistance modifying agents that are postulated to prevent the development of bacterial resistance against these compounds. The added benefit of using extracts from plants is the ease in which the raw material can be obtained which is beneficial from both an economical and environmental point of view. The findings in this study indicate the potential goldmine that is contained in nature that can be used to combat antibiotic resistance.

Keywords: Plant extract, secondary metabolites, antibacterial activity, antibiotic resistance

BIODEGRADABLE POLYESTER NANOMATERIALS AS TUMOR TARGETING DRUG DELIVERY VEHICLES FOR POTENTIAL CLINICAL APPLICATION

Piyush Kumar Gupta

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Abstract

Polyester nanomaterials have been widely used in drug delivery application from a longer period of time. This study reports the synthesis of metal-free semi-aromatic polyester (SAP) nanomaterial for drug delivery and evaluate its *in vivo* acute and systemic toxicity for potential clinical application. The ring opening coplymerization of commercially available cyclohexene oxide (CHO) and phthalic anhydride (PA) monomers was carried out to synthesize fully alternating poly(CHO-*co*-PA) copolymer using metal-free activators. The obtained low M_n SAP was found to be biocompatible, hemocompatible and biodegradable nature. This copolymer was first-time used to fabricate curcumin (CUR) loaded nanoparticles (NPs). These NPs were physicochemically characterized. Further, these negatively charged core-shell spherical NPs exhibited slow sustained release behavior of CUR with anomalous transport and further displayed its higher intracellular uptake in SiHa cells at different time-periods compared to free CUR. *In vitro* anti-cancer therapeutic effects of free CUR and poly(CHO-*alt*-PA)-CUR NPs were evaluated on different cancer cells. We observed the increased cytotoxicity of CUR NPs with low IC_{50} values compared to free CUR. These results were further substantiated with *ex vivo* data where, a significant reduction was observed in CUR NPs treated tumor spheroid's size as compared to free CUR. Furthermore, the different doses of metal-free poly(CHO-*alt*-PA) nanomaterial were tested for its acute and systemic toxicity in BALB/c mice. We did not observe any significant toxicity of tested nanomaterial on vital organs, blood cells and the body weight of mice. Our study suggest that this metal-free SAP nanomaterial can be used for potential clinical application.

Keywords: Polyester, metal-free, drug delivery, cancer, treatment

A REVIEW- COMPARATIVE ASSESSMENT OF FUNGI GROWTH AND REDUCTION OF SPENT ENGINE OIL

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Abstract

Spent engine oil composed of various chemicals such as aliphatic hydrocarbons, aromatic hydrocarbons, polychlorinated biphenyls, chlorodibenzofurans, lubricative additives, and traces of heavy metal. Improper disposal of spent engine oil will lead to deleterious effect such as toxicity, mutagenicity and carcinogenicity in which concerns the public. Conventional method to remove spent engine oil are both expensive and does not degrade the hydrocarbon contaminants completely, compared to mycoremediation approach which have been reported to be environmentally friendly, efficient and cost effective. The main objective of this review is to assess which fungal isolate is more efficient to degrade spent engine oil by comparing two parameters which is biomass production and the percentage of spent engine oil degraded using data collected from various reported studies. Based on the comparative information obtained, *Mucor* sp. and *Trichoderma* sp. were found to have highest growth in the presence of spent engine oil, whereas *Aspergillus niger* and *Aspergillus nidulans* have moderate growth and *Aspergillus flavus* was found to register poor or no growth. Highest percentage of spent engine oil reduction was observed in the *Mucor* sp. Culture containing *A. niger*, *A. nidulans* or *Trichoderma* sp. were shown to have moderate percentage towards the spent engine oil reduction. The lowest percentage of spent engine oil reduction was found culture using *A. flavus*. Therefore, by comparing the two said parameters obtained from the five fungal species, it can be concluded that *Mucor* sp. is the most effective fungal isolates to be utilized in mycoremediation approach due to its high tolerance towards spent engine oil that is reflected by having the highest growth. Furthermore, *Mucor* sp. was also able to cause the highest percentage of spent engine oil reduction, suggesting the hydrocarbons degradation was the most efficient.

Keywords: Review, spent engine oil, soil fungi, bioremediation

CORRELATION ANALYSIS BETWEEN INTERNET ADDICTION AND SELF-REGULATION AMONG THAI UNIVERSITY STUDENTS

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Abstract

Self-regulation on the internet activity that challenge between internet and human interaction. It is always special to study the relationships that arise between variables as humans are closely related to technology. The objective of this research is to study the relation between internet addiction and self-regulation of university students. The samples consisted of 500 first year students residing in Chiang Mai University dormitory and the data was collected from questionnaires, regarding personal information, Internet Addiction Test (IAT) and Self-regulation Assessment. Pearson's correlation coefficient was used to investigate the relationship between the internet addiction and self-regulation. The results revealed that the level of internet addiction had a moderate level of positive relation with poor self-regulation, which had a correlation coefficient of 0.560 with statistical significance level of 0.01, and the level of internet addiction has a low negative relation with good self-regulation, which had a correlation coefficient equal to -0.262 with statistical significance level of 0.01. Hence, creating the necessary assistance solutions to achieve a healthy balance of behavior will benefit individuals.

Keywords: Internet usage behavior, internet addiction, self-regulation, university students, mental health, correlation analysis

GLOBAL TREND OF MENTAL HEALTH AND WELL-BEING IN LGBTQ+ TEENAGERS: INTEGRATIVE REVIEW

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Abstract

The review article of "Global Trend of Mental Health and Well-Being in LGBTQ+ Teenagers: Integrative Review" that was scope by literature review in the empirical evidence for both in Thailand and overseas countries. The review was study about the problem and the educational gap that is happened in the Thai LGBTQ+ teenager group, and guideline to fulfill the gap which is found from the study. The information was gathered from the secondary source such as Scopus, PubMed, Science Direct, Google scholar along with the investigation of journal articles published in Thailand (Thai-Journal Citation Index Centre: TCI). The results of the literature analysis showed that the information on the prevalence of clinical depression in the LGBTQ+ teenager group, was the same case in Thailand and other overseas countries. From the results, the researcher developed some tools which would be used to intervene the clinical depression problem found in most of the LGBTQ+ teenager group.

Keywords: LGBTQ+ teenager, mental health, well-being, evidence-based literature

A PILOT STUDY OF A RESILIENCE PROGRAMME THROUGH GROUP DYNAMICS ON ACADEMIC PROBLEMS AMONG MATTHAYOM SUKSA 1 STUDENTS AT CHIANG MAI UNIVERSITY DEMONSTRATION SCHOOL

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Abstract

This research article aimed to develop and navigate the Resilience Programme through Group Dynamics on Academic Problems among Matthayom Suksa 1 Students at Chiang Mai University Demonstration School based on the results of the present study. This research studied 4 students in junior high school, screened using purposive sampling and a study design with one group for the study experiment. This study was evaluated before and after the experiment by using a general information questionnaire, an evaluation form for capacity in participating activity, and a resilience inventory evaluation form. This research programme was developed by using cognitive behavioural therapy. The therapy focused on acceptance and commitment, group dynamics, and resilience according to the concept of Grotberg. The programme passed testing for content validity by qualified persons. The total period of the programme was 11 weeks, with 1 session per week lasting for 60 minutes. This study prepared an information analysis by using descriptive statistics. From the results, it was found that the sample had a higher score for capacity for participating activity in the prescribed period after joining the programme. Further, most of the sample, (75%), had more satisfactory scores and a higher resilience score at the later time of joining the programme than. It was found that the average resilience score value of the sample after joining the programme was higher (114.5) than compared to before the programme (107.50).

Keywords: Resilience, resilience programme, academic problems, pilot study, students

STRESS MANAGEMENT PROGRAMME ON THE STRESS OF CHIANG MAI UNIVERSITY STUDENTS: A PILOT STUDY

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Abstract

The main objective of this study is to analyze and develop the results of a stress management programme conducted for students at Chiang Mai University, Chiang Mai, Thailand. This was quasi-experimental research, conducted according to the one-group plan that evaluated the results before and after the sample population joined the programme. The student initiatives include five Chiang Mai University students, selected through purposive sampling after passing the initial screening. They were evaluated by completing the basic information questionnaire of the Suanprung Stress Test-20 (SPST-20) and the Suanprung Stress Test-60 (SPST-60) before and after the programme. The tools used in this study was developed from the conceptual framework according to the CMOP-E model. The researcher used the technique of setting the occupational therapy group, the breathing technique by using the diaphragm, and a muscles relaxing technique, respectively. The concept of emotional determination was conducted according to the Vipassana-Kammatthana principle, the *Four* Foundations of *Mindfulness*, and cognitive behavioral therapy. These activities were performed for a total period of eight sessions, each session lasting for 90 minutes. Furthermore, this programme along with the cognitive behavioral therapy was screened for cognitive behavioral therapy processes and content validated by mental health and psychology experts. From the results, it was noted that upon completing the stress management programme, the sample representatives had a lower stress level with a statistical significance level of 0.05. The stress level was measured from the sources of stress, and this reduced with a statistical significance level of 0.05. However, it was observed that there was no difference in the susceptibility to stress level before or after joining the programme. In general, this stress management programme can be undertaken by students of Chiang Mai University s to monitor their stress levels.

Keywords: Stress, stress management, stress management programme, university students, pilot study

INFLUENCE OF HAND ANTHROPOMETRY AND NUTRIENT INTAKE ON HAND GRIP STRENGTH: A CORRELATIONAL STUDY AMONG YOUNG INDIAN BADMINTON PLAYERS

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Abstract

Badminton is a fast shuttle-racquet sport, which requires adequate endurance and agility for hitting forehand and backhand shots. For consistent and superior performances, players need to develop decent nutritional status and tremendous physical fitness. The present study concerns with the effect of anthropometric indices and nutritional profile on arm strength to related physical fitness for racquet gripping. The adolescent professional male (n=100) and female (n=100) badminton players aged between 10 to 15 years were selected from Nagpur city, Maharashtra state, India. Arm anthropometric indices and skeletal muscles of the players were determined. Muscle growing macronutrient- protein and skeletal developing micronutrients- calcium and phosphorus were calculated from dietary data by 24 hours' dietary recall method for consecutive three days. Arm strength was evaluated from hand grip strength test. Statistically, the assessed data were tested by formulating null and alternate hypotheses and differences were verified at 1% and 5% significance levels. Pearson product moment correlations of the assessed parameters with grip strength were derived. All the age groups possessed substantial shorter arm lengths (2.41-15.43%) as compared to the reference standards. Older groups appeared to have greater arm circumferences (1.00-3.92cm) than younger groups. In general, boys showed elevated skeletal muscles (6.69% and 8.29%) than girls. Dietary protein and phosphorus ingestion was significantly higher (45.42-90.88% and 16.18-40.62%) than recommended dietary allowances (RDAs). Calcium intake of the players (23.26-28.48 mg/day) was below the RDA. Older male players performed under excellent grade (38%) in the hand grip strength test, depicting masculine supremacy. Positive correlations (0.0710-0.5947) between arm anthropometry and nutrient intake with hand grip strength have proven their affirmative effects on delivering various explosive shots, which can enhance the performance level of emerging young players.

Keywords: Anthropometry, nutrition, body composition, physical fitness

AWARENESS AND KNOWLEDGE OF VERTIGO AMONG THE ADULT POPULATION IN SELANGOR, MALAYSIA

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Abstract

Dizziness and vertigo are common among the adult and elderly population. However, the knowledge & awareness of vertigo and the understanding on the differences between vertigo and dizziness in the adult population is seldom studied. The present study aimed to assess the level of awareness and knowledge of vertigo among the adult population living in Selangor, Malaysia. In addition, the study also focused on the participants' knowledge in differentiating dizziness and vertigo. This cross-sectional study received responses from 189 participants who were in the age range of 20 and 40 years residing in Selangor, Malaysia. between 20 and 40 years old who reside in Selangor, Malaysia. A self-developed validated online questionnaire was used as a study tool to understand the awareness and knowledge of vertigo among the participants. Data analysis was conducted using SPSS (version 28) to obtain frequency and percentages. In total, 152 participants' responses met the inclusion criteria. In that, 57.9% of participants had average awareness, followed by 29.6% of participants who had high awareness, and 12.5% of participants had low awareness of vertigo. However, 65.8% had average knowledge, followed by 20.4% had general awareness knowledge, and 13.8% had detailed specific knowledge of vertigo. Besides, only 6.6% of the participants knew the difference between vertigo and dizziness. The present study showed an average level of awareness and knowledge of vertigo among most young adults in Selangor, Malaysia. However, the awareness and knowledge regarding differentiating vertigo from dizziness were very low among the participants, demonstrating a gap in their knowledge of vertigo. Hence, education about vertigo among the public must be improved. Further studies are required on different age groups and within the other states of Malaysia.

Keywords: Dizziness, vertigo, knowledge, awareness

SUSTAINABLE LIVELIHOOD: GUIDELINES FOR HUMAN CAPITAL ACCESS OF GOAT FARMERS IN THE UPPER NORTHERN REGION OF THAILAND

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Abstract

This article would like to explain and present guidelines for human capital development of goat farmers in the upper northern region of Thailand. To analyze the whole point of development towards sustainability there was a field visit to explore the basic information of goat farming context. Through narrative research of goat farmers and then convey the story. Along with non-participant observations, it was found that the human capital development of goat farmers for sustainable livelihoods Much from the development of knowledge Specific professional skills that are applied and ensure stability by the operation of the farmer sector along with continuous support from government and academic departments.

Keyword: Human capital, sustainable livelihood, goat farmers, upper north region

BIOSYNTHESIS OF SILVER NANOPARTICLES USING WHOLE PLANT EXTRACT OF *CINERARIA MARITIMA* L, AND THEIR ANTIBACTERIAL ACTIVITY

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Abstract

Nanoparticles exhibit completely new physicochemical properties for specific applications based on their shape and size. In this present study we reported biosynthesis of silver nanoparticles (AgNPs) using water extract of whole plant parts of *Cineraria maritima*. The surface plasmon vibration, crystalline structure, surface morphology, elemental composition and possible functional molecules vibration of prepared AgNPs were characterized by different instrumentation techniques such as UV-visible spectrum (UV), X-ray diffractometer (XRD), Scanning Electron Microscopy (SEM-EDS), Fourier Transform Infra-red (FTIR) spectroscopy. UV spectrum showed the surface plasma absorption band occurred at the maximum of 425nm indicating the presence AgNPs in reaction mixture. Face-centred cubic (FCC) configuration of AgNPs obtained through XRD analysis. SEM-EDS analysis revealed that the prepared AgNPs are predominantly spherical in shape aggregates into large particles with no well-defined surface morphology and EDS spectrum indicated the presence of Ag in the prepared AgNPs. The FTIR spectrum evidenced the presence of different functional molecules that are the responsible the bioreduction of AgNPs. In addition, the AgNPs coated textile fibric demonstrated the potential of antibacterial activity against human pathogenic bacteria.

Keywords: Cineraria maritima, AgNPs, SEM, FTIR, fabric, antibacterial

IMPACT OF METALLIC NANOPARTICLES ON THE NUTRITIONAL VALUES OF SPIRULINA

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Abstract

Spirulina has been consumed for nearly centuries and is the most consumed microalgae species due to its high nutritional values and anti-oxidative properties. *Spirulina* is a staple diet due to its easy cultivation and greater nutritional values in biological macromolecules (protein, lipid, carbohydrate), pigments (chlorophyll, carotenoids and phycobiliproteins) vitamins, minerals, phenolic compounds, and amino acid. *Spirulina* also has been used as nutraceuticals to treat numerous diseases and disorders due to its promising therapeutic values. However, extensive anthropogenic activities cause the release of metals and metallic nanoparticles into the environment that might cause toxicity to marine and freshwater microalgae. The presence of excessive metals in the environment affects the growth and nutritional values of microalgae. In this paper, the nutritional properties, the usage, and the harmful effects of metals and metallic nanoparticles to *Spirulina* are reviewed.

Keywords: Spirulina, nutrition values, metallic nanoparticles, toxicity

METALLIC NANOPARTICLE: EFFECT ON MICROALGAE IN AQUATIC ENVIRONMENT

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Abstract

Metallic nanoparticles (MNPs) have been widely used in household, industry, and agricultural products. The presence of MNPs in the aquatic environment causes damage to the living organisms and pollutes the water body rendering it harmful for human consumption. Quite a number of studies have been made on the toxic effects of MNPs towards microalgae. Most of the studies conducted reported changes in the cell structure, growth rate, pigment content, protein content and enzyme activity of microalgae. The morphology, size, chemical composition, concentration, solubility and dispersion of the MNPs had a role in the toxicity effect towards microalgae. This review paper focuses on the toxicity effect of selected MNPs towards microalgae in the aquatic environment. A better understanding on the behaviour of MNPs in the ecosystem will allow scientists to design environmentally safe MNPs.

Keywords: Metal nanoparticle, microalgae, aquatic toxicity

DNA VACCINES IN PRE-CLINICAL TRIALS AGAINST COVID – 19 A REVIEW

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Abstract

Covid 19 Pandemic is caused by the pathogenic severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Scientific fraternity worldwide swiftly developed various types of vaccines for the prevention and as mitigation measure for curbing the pandemic. Traditional inactivated vaccines, mRNA vaccines (Protein subunit such as Spike proteins), Viral vector vaccines (Non replicating Vector with protein subunit) have been approved by WHO (World Health Organisation) for emergency use. Emergence of many mutated variants has been the worrying factor in the fight against the pandemic. There has been continuous research in quest for more therapeutics especially on vaccines in order to curb and stop the pandemic. According to WHO there are 194 vaccines in pre-clinical trials belonging to various types out of which sixteen are DNA vaccines. In this review we have discussed about the advantages and disadvantages of the DNA vaccines also the DNA vaccines for Covid – 19 in pre-clinical stage.

Keywords: DNA vaccines, COVID-19 pandemic, coronavirus 2 – SARS –COV-2, preclinical

POTENTIAL COVID -19 THERAPEUTICS IN CLINICAL TRIALS
A BRIEF REVIEW

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Abstract

Severe acute respiratory syndrome coronavirus 2 (SARS – CoV2) the causative viral pathogen of COVID-19 pandemic belongs to the family of Coronaviruses which are positive stranded RNA viruses. Scientific fraternity have developed and developing various types of vaccines for prevention against COVID-19, such as inactivated virus vaccines, mRNA vaccines, replicating vector protein subunit vaccines etc., out of which some have been approved for clinical use. There is a need for SARS-CoV2 specific therapeutics for the treatment of COVID-19 as there is an emergence of new variants. Emergence of variants which possess immune evading property, spike protein mutation increased infectivity and more pathogenicity have impelled the need to develop therapeutics for treatment of COVID-19. This review compiles the information about potential antivirals in preclinical trials intended for the treatment COVID-19. The clinical development of such antivirals will be beneficial for the treatment and curbing the pandemic.

Keywords: Covid-19 pandemic, SARS–CoV-2, clinical trials

MYCOSYNTHESIS OF GOLD NANOPARTICLES AND ITS ANTICANCER ACTIVITY

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Abstract

Nanotechnology plays a pivotal role in cancer therapy so as to enhance the body's immune system and also in managing the system by bringing down the toxicity on the cells. Nanoparticles, being the building blocks of nanotechnology, paves way for innumerable wonders. It has proven its ability in mass production of anti-cancer nanoparticles besides its eco-friendly approach. Noble metal nanoparticles are multifunctional and are highly stable which makes remarkable explorations in this vast discipline. Particularly, Gold nanoparticles have extraordinary potency in cancer diagnosis and therapy. Green nanotechnology comes with the spectacular idea of using biosystems in the synthesis of nanoparticles. One such approach is by the use of edible mushrooms. Edible mushrooms naturally possess more nutritional values especially antioxidants, fibers and proteins. They are the excellent sources of bio active compounds which favor remedies for different ailments. Including those in our regular diet will boost our immunity. *Laetiporus versisporus* is an edible mushroom with high nutritional composition which makes it unique in some immunotherapies. Earlier studies reported the isolation of Lanostane Triterpenoids and Saponins from *Laetiporus versisporus*. Current study elucidates the phytochemical analysis of *Laetiporus versisporus* and the biosynthesis of Gold nanoparticles (Au- NPs) from the same. Furthermore, the synthesized Au-NPs were investigated for their anticancer activity against breast cancer cells (MCF-7). Phytochemical analysis of the mushroom showed that they are rich in primary and secondary metabolites. The gold nanoparticles were characterized by UV-Vis Spectroscopy, X-ray diffraction (XRD), Fourier Transform –Infrared spectroscopy (FT-IR), SEM and TEM. The synthesized gold nanoparticles were tested for cytotoxicity against MCF-7 cells and found to be having greater cell inhibition percentage.

Keywords: Laetiporus versisporus, gold nanoparticles, cytotoxicity, MCF-7 cells

SCIENCE AND QUALITY EDUCATION FOR SUSTAINABLE DEVELOPMENT IN LIBYA

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Abstract

The Paper is designed to present an overview on the state of art on new and emerging education and training approaches and methodologies to meet the sustainable development demands at global, regional, national, and local levels. It demonstrates that how crisis-ridden Libya is planning the vital role for effective education and training in chemical, biological, environmental science and engineering education using best practice blended learning approaches envisaged in the United Nations Commission for Sustainable Development (UNCSD) Rio+20 Future We Want 2012 Report, United Nations Sustainable Development Goals (UN SDGs) 2015-30, 17 goals and 169 targets and Higher Education Sustainability Initiative (HESI) that help play in leveling the varied content knowledge, expertise and experience of professionals. It highlights a strategy and plan of action to meet the challenges of change and development in education and training required to develop the vital skills and experience of sustainable development professionals needed to perform their more sophisticated jobs with greater responsibility and accountability. Eventually, it provides a framework approach using outcomes, output, baseline, targets, performance indicators, and activities to design a wide range of formal education and training in chemical, biological, environmental protection science, and engineering fields using new and emerging technologies for the enhancement of sustainable livelihood in Libya.

Keywords: New and emerging education and training, best practice blended learning approach, crisis ridden Libya, sustainable development

IMPACT OF LIFESTYLE INTERVENTION AMONG PREDIABETES PATIENTS

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Abstract

The term prediabetes a stage before diabetes which refers to the state of impaired fasting Glucose or Impaired glucose tolerance or combined of both,if the Fasting Blood Glucose Level is ranging between 100 to 125 mg/dL or HbA1C between 5.7 to 6.4 % or 2hrs value in OGTT from 140 to199 mg/dL. Unhealthy food choices leads to prediabetes, hence life style changes are necessary. The present study was aimed to find out the impact of lifestyle intervention among prediabetes. A 125 prediabetic individuals were selected for the study in Madurai and those who were diagnosed as diabetic were not included in the study. The demographic details and the anthropometric measurements like height, weight, and waist hip ratio were collected B.M.I. was calculated using standard formula. Further, the blood samples were collected for analysing fasting blood sugar, post prandial blood sugar from initial visits to six months, HbA1C for initial visits, third and sixth months. The subjects were taught about strict prediabetic diet and exercise. Diet chart and exercise chart were given to the subjects and they were followed up for six months. The collected data were presented with mean (SD) and frequency (percentage) and analysed using Repeated measures ANOVA &Friedman test for comparison between various follow ups. Wilcoxon Sign Rank test was used to compare the baseline and final follow up visit of BMI and HbA1C. P values <0.05 was considered as statistically significant. A sample of 125 patients with mean age of 41.65 ±7.56 year were included in the study of which 71.2 % were males and 28.8% were females. The mean height of the patients throughout the study was 158.76±10.04. The mean (SD) weight of the patients was reported to be reduced from 65.31 (1.24) to 64.44 (12.86) during different follow up visits with a *p* value < 0.05. Similarly, there was a difference in the waist, hip and waist hip ratio among various follow up visits (*p*<0.05). Also, the results showed a significant (*p< 0.05)* decrease in fasting glucose from 111.11±10.42 to 106.69±8.5 mg/dL and also for post prandial blood glucose from159.04±19.35 to 152.52±18.8 mg/dL for initial and final visit respectively. In addition, there was a significant (*p* <0.05) reduction in the BMI and HbA1C between baseline and various follow up visits. Hence, the study concluded that the life style intervention showed a greater impact on prediabetes indicating that the diet and exercise are more important for every prediabetic individual to prevent the progression to type 2 diabetes and its complications.

Keywords: Prediabetes, diet, exercise, diabetes, BMI, HbA1C

PRODUCTION OF FOOD GRADE PIGMENTS FROM MICROBIAL SOURCES

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Abstract

For many years, the usage of synthetic food colourants has been highly controversial because of their negative assessment. The natural food colourants can be an alternative to synthetic colourants as they have positive health benefits. Plants, animals and microorganisms are the natural sources of biocolourants. For biotechnological production of such colourants, microorganisms are more suitable due to factors such as ease of availability and culturing, the microbes' potential to be genetically manipulated, etc. Microorganisms produce food-grade pigments like carotenoids, melanins, flavins, quinones, and more specifically monascins, violacein, indigo, etc. Fermentation-derived ingredients in the food industry are increasing by the year. Production of food-grade pigments by microbial fermentation is still at a developing stage. To name a few, pigments from Monascus sp., astaxanthin from Xanthophyllomyces dendrorhous; Phaffia rhodozyma, Arpink redcolour from Penicillium oxalicum, riboflavin from Ashbya gossypii, β-carotene from Blakeslea trispora, lycopene from Erwinia uredovora and Fusarium sporotrichioides. In addition to this, there are number of microorganisms like Serratia and Streptomyces produce carotenoids in good amounts. Many factors like pH, temperature, carbon sources, types of fermentation, minerals, nitrogen source, moisture content and aeration rate can influence the food grade pigment production effectively. Apart from the optimal production strategies of these food grade pigments, they got lots of health benefits like can act as antibiotics, antioxidant activity, anticancer agents, anti-proliferative effects and immune-modulators.

Keywords: Food grade pigments, microbial carotenoids, antioxidants

COVID-19 VACCINE HESITANCY AMONG THE MALAYSIAN POPULATION

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Abstract

COVID-19 is a potentially fatal infectious disease which requires effective vaccines to keep the outbreak under control. Despite the on-going effort for an effective vaccine, public hesitancy towards vaccines are now one of the main concerns to the global health in containing this global pandemic. Thus, this preliminary study was carried out to assess the degree of COVID-19 vaccine hesitancy among general public in Malaysia and to identify the underlying reasons for their hesitancy by using 5C psychological antecedents of vaccination.

This present study was conducted by carrying out cross-sectional online survey for approximately two months between January to February 2021, involving 385 participants. The survey contained questions based on the 5C model. The data from the results were analyzed using Smart PLS 3 for statistical analysis, with the partial least squares structural equation modelling (PLS-SEM). According to the findings, only 62% of Malaysians had planned to get the COVID-19 vaccine, while the remaining 38% did not. The results also showed that confidence, calculation, collective responsibility and constraints had a significant positive influence on vaccine hesitancy but not complacency. There is a degree of vaccine hesitancy towards the COVID-19 vaccines among the Malaysian population. Thus, in order for vaccination campaign to be more effective, it should focus more on addressing the issue relating to confidence, calculation, collective responsibility and constraints and less on complacency.

Keywords: COVID-19, vaccine hesitancy, Malaysian population

EVALUATION OF ANTIMICROBIAL ACTIVITY OF PAPAYA (VAR. RED LADY) PEEL AGAINST GRAM POSITIVE AND GRAM NEGATIVE BACTERIA

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Abstract

After fresh consumption and processing of papaya fruit, waste is generated in the form of peel and is not being put to use. This work aimed to utilize the thrown away waste from papaya fruit after processing and to promote the integral exploitation of the by-products rich in bioactive potentiality. The antibacterial activity of petroleum ether, ethyl acetate, ethanol and water extracts of papaya peel from red lady variety against Gram-positive bacteria such as *Staphylococcus aureus* (ATCC 29213) , *Bacillus cereus* (ATCC 14579) and Gam negative species such as *Pseudomonas aeruginosa* (ATCC 27853), *Klebsiella pneumoniae* (ATCC 700603) and *Proteus mirabilis* (GC 10) were carried out using agar well diffusion method. The result revealed that the ethanol and ethyl acetate extract showed significant antibacterial activity in all bacterial strains studied and it be a better solvent for the extraction of the bioactive agents from papaya peel, The Gram-negative bacterium *Proteus mirabilis* revealed the highest zone of inhibition (20mm) and the results were comparable with the synthetic antibiotic tetracycline (24 mm). Due to the presence of numerous bioactive compounds in papaya peel, it could be a useful source for antibiotic production having immense medicinal and industrial application.

Keywords: Papaya peel, antimicrobial activity, antibacterial activity

A COMPARATIVE HPTLC FINGERPRINTING OF METHANOL EXTRACTS OF *CARICA PAPAYA* L. VAR. RED LADY PEEL AND SEED

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ABSTRACT

Fruits processing generates a significant by-product and are usually thrown away as waste. Papaya a common tropical fruit after processing produce waste in the form of peel and seeds represent about 8.5 to 12% of fruit weight. These by-products are the natural source of value-added compounds contain enormous amount of nutrients and biologically active compounds that can be utilised as nutraceutical foods, dietary additives and pharmaceutical products. The present study focuses comparative phytochemical analysis of methanol extracts of papaya peel and seed using HPTLC method. Red Lady variety of papaya fruits collected from Kerala Agriculture University, Vellayani, Thiruvananthapuram, Kerala were used as the plant material. The chromatographic separation of methanol extracts of papaya peel and seed were carried out using CAMAG microlitre syringe with Automatic TLC Sampler 4(ATS4). The plate was scanned using TLC scanner 4 and fingerprint data were recorded with winCATS software and the results showed that papaya peel and seed contain various phytoconstituents. Compared to papaya seed more number of peaks were observed in peel revealed its immense biological potentialities. The current study is a pre requisite for further exploration of various bioactive compounds from papaya peel and seed. `

Keywords: HPTLC, papaya peel, papaya seed, fruit waste, phytoconstituents

EFFECT OF CRY PROTEIN BASED DIET ON THE INTESTINAL MOTILITY AND HISTOPATHOLOGICAL CHANGES IN MALE ALBINO RATS

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Abstract

In vitro assessment procedure for gastrointestinal motility through Dale's examination of small intestine, following 3 months treatment with Bt Cry protein, shows more avoidance in digestive development in regarded creature when contrasted with control. T3 test gathering of treated rodents is more conspicuous among them. Various examples of digestive developments are engaged with the physiological movement of chyme along the gastrointestinal tract (GIT) and are the consequence of the exchange between unconstrained action of digestive smooth muscle, intestinal and outward neural circuits. The investigation of gastrointestinal motility might be useful in deciding modification in motility, assessing impact of neurotic condition on GI travel and helps in deciding the restorative capability of medications in motility disorders. Expanded motility because of Bt Cry protein meddles with the assimilation and retention measure, in this manner influencing the gastrointestinal motility which can upset usefulness of the GIT, as parasympathetic incitement development though nerves hinder peristaltic developments, which can prompt the runs and the malabsorption condition. Histological sectioning of specified tissue such as small intestine, large intestine and stomach was routinely stained with haematoxylin-eosin (H/E) staining and observed microscopically. Bt Cry protein does not affect the stomach tissue or does not cause any damage to it and it was observed that catalase activity of stomach tissue increases significantly than control.

Keywords: Motility, intestine, cry, chyme, gastrointestinal tract

PREVALENCE OF MUSCULOSKELETAL PAIN AND ITS ASSOCIATION WITH COMPUTER WORKSTATION ERGONOMIC AMONG UNDERGRADUATES IN MALAYSIA

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Abstract

The advanced technology promotes students to utilize computers widely for education purpose especially during the pandemic. With the increased use of computers, musculoskeletal (MSK) pain too has increased among the undergraduates. However, studies that evaluate the association between MSK pain with the computer workstation ergonomics among the undergraduates are insufficient. Thus, this study aimed to identify the prevalence of various MSK pain and its association with the computer workstation ergonomics among the undergraduates in Malaysia. A cross-sectional study was conducted using self-administered online questionnaire among 390 undergraduates. Data on Nordic Musculoskeletal Questionnaire (NMQ) and Computer Workstation Checklist (CWC) were collected. Descriptive statistics were used to evaluate the prevalence of MSK pain and its association with computer workstation ergonomics was analysed using chi-square test. The results showed that 79.1% and 52.7% of the participants reported MSK pain in the past 12 months and 7 days respectively. The highest prevalence of pain was reported at the neck, followed by shoulder and the lower back. 43.1% of the participants spent 5-8 hours per day on their computer workstation. Pain in the neck, elbow, wrist, lower back, hip, knee and ankle in the past 12 months were associated with the computer workstation ergonomic on the height of the armrest with $p<0.05$. Whilst, pain in the neck, elbow, wrist and knee in the past 7 days were associated with the width of the chair seat with $p<0.05$. This study revealed that more than half of the undergraduates have experienced MSK pain and there is an association with the computer workstation ergonomics. Therefore, it is important to educate the undergraduates on the proper computer workstation ergonomic as a preventive measure of MSK pain.

Keywords: Musculoskeletal pain, ergonomics, NMQ, CWC

PREVALENCE OF RESPIRATORY SYMPTOMS AND ASSOCIATED RISK FACTORS AMONG STREET FOOD VENDORS IN KLANG VALLEY, MALAYSIA

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Abstract

Air pollution in urban cities is a rising concern as the poor air quality can lead to various respiratory problems. The street vendors in Malaysia are at an increased risk of respiratory problems due to continuous exposure for long hours towards road dust, vehicle emissions, extreme weather conditions and air pollutants from industrial sites. Hence, the present study aimed to determine the prevalence of respiratory symptoms and associated risk factors among street food vendors in Klang Valley, Malaysia. A cross-sectional study was conducted among 237 street food vendors in Klang Valley, Malaysia. The socio-demographic data, work characteristics and the information on respiratory symptoms were collected using self-administered questionnaire. The frequency distribution and Chi-square test using IBM SPSS software were used for data analysis. The study results revealed that the most frequent respiratory symptoms among the street food vendors were sore throat (30.8%), followed by cough (29.1%). No significant association was found between risk factors (age, gender, duration of job) and cough, sputum, breathing difficulty, chest pain, irritated nose and sore throat. There was a statistically significant association between working hours and sputum production (p=0.014). The working hours were significantly associated with breathing difficulty (p=0.011). A significant association was also found between the type of cooking fuel used and presence of cough (p=0.001). To conclude, the street vendors in Klang Valley, Malaysia are at an increased risk of developing respiratory problems. This study indicates the positive association of work-related risk factors such as working hours with breathlessness and sputum production, and also the association between the cough and type of cooking fuel used. Based on these findings, various control measures such as regular monitoring of lung functions and health education programs should be undertaken. Apart from this, vendors should also consider using clean fuels instead of charcoal.

Keywords: Prevalence, respiratory symptoms, street vendors, working hours

STUDIES ON NFkB DOCKING WITH COMMON BIOACTIVE COMPOUNDS PRESENT IN *PUNICA GRANATUM* PEEL AND *VITIS VINIFERA* SEEDS

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Abstract

Plant-based products have long been utilized as traditional remedies throughout the world. Higher plants serve as a "reservoir" of phytochemicals known as bioactive compounds, which are used as valuable medicines to fight a variety of diseases across the world. The materials that are considered waste in plants possess bioactive components with potential medicinal properties. They contain important secondary metabolites known as phytochemicals which provide different bioactive potentials. In this study, we have analyzed the interaction of phytochemicals that are present common in both *Punica granatum* peel and *Vitis vinifera* seeds against protein NFkB. The 2,3- Dihydro-3,5-dihydroxy-6-methyl-4H-pyran-4-one (DDMP), alpha. -Tocopherol-beta-D-mannoside, gamma-sitosterol, Glycerin, Guanosine, Pyrogallol, palmitic acid, and Ethyl palmitate were the eight phytoconstituents present in both the selected plant materials and selected for this *in silico* investigation. The 3D protein structure of NFkB was procured from the protein data bank. The structures of bioactive compounds were obtained from Chemspider and drawn using Chemsketch software. This study clearly shows that alpha. -Tocopherol-beta-D-mannoside interacts with target protein NFkB with an energy level of -10.88 kcal/mol (2 hydrogen bonds). The NFkB forms interaction with that alpha-Tocopherol-beta-D-mannoside at the lowest energy level with -10.88 kcal/mol. The interaction of anti-oxidant and anti-cancer potential alpha-Tocopherol-beta-D-mannoside with NFkB may play a major role in providing chemopreventive property for both *Punica granatum* peel and *Vitis vinifera* seeds.

Keywords: Punicagranatum, NFkB, guanosine, pyrogallol, palmitic acid

BIO CHARACTERIZATION VIA FT-IR AND GC-MS IN CUCURBITA VARIETY (YELLOW AND WHITE PUMPKIN)

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Abstract

The current study aimed to conduct phytochemical screening, FT-IR, and GC-MS analysis in squash (*Cucurbita pepo* L.,) usually called yellow and white selection pumpkin. It's one among the dicotyledonous vegetables consumed in daily diets that imparts high inhibitor properties. The phytochemical characterization can facilitate to seek out the substance with a therapeutic property. The peel, flesh, and seed sample of each pumpkin variety were used as sourced and extracted consecutive with ethyl acetate and acetonitrile solvents using the maceration method. Phytochemical screening and quantification were carried out by standard analytical method. The functional group of the sample extracts was analysed using FT-IR methods. Further, phytochemical profiling was carried out utilising the GCMS technique in order to identify therapeutically important chemicals contained in the sample elements. Phytochemical analysis of two extracts showed the presence of major components like alkaloid, phenol, carbohydrate, and proteins. The farthest alkaloid, phenol, carbohydrate, and protein varied consequently different parts like peel, flesh, and seed. FT-IR analysis of each extract in the peel, flesh, and seed exhibited maximum functional group in ethyl acetate extract. The major peak was characterized at wavelength 3004.24-3421.05, that indicates O-H functional group. Further quantification and GC-MS analysis were performed in ethyl acetate extract. Remarkable GC-MS analysis in yellow and white pumpkin ethyl acetate extract discovered the utmost range of 6-8 compounds within the flesh part. Further compound activity can facilitate us to unearth key compounds.

Keywords: Cucurbita pepo L., peel, white pumpkin, yellow pumpkin, ethyl acetate, GC-MS

PARTIAL PURIFICATION OF EXTRACELLULAR AMYLASE FROM HALOTOLERANT ACTINOMYCETES *STREPTOMYCES BRASILIENSIS* MML2028

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Abstract

The present study is concerned with the optimization, production and partial purification of halotolerant amylase from newly isolated *Streptomyces brasiliensis* MML2028 isolated from Kelambakkam salt pan, Tamil Nadu, India. Among 6 amylase production media were tested, APM1 showed maximum enzyme production and it was detected by well diffusion assay. The production medium was optimized as 1% of starch substrate, 3% of NaCl, 24°C Temperature and pH 9, and incubation of 9 days. The assay was observed for each media optimization by measuring the release of reducing sugar (RS) by 3,5 Dinitro salicylic acid (DNS) method and expressed in international unit (UI). The amylase produced was partially purified subsequently by ammonium sulphate precipitation and dialysis, and lyophilized for other study. The total activity of the partially purified α-amylase was observed to be 1806.9U/mL. Analysis of the enzyme by SDS-PAGE revealed a prominent band which was estimated to be 70 kDa. The effect of the enzymes on different percentages of NaCl, pH, temperature, metal ions and inhibitors were tested. The enzyme is more active in 3% of NaCl, pH 8 and 24°C Temperature which is known to be a halotolerant alkaline α-amylase. The enzyme showed tolerance in magnesium and manganese ions whereas it is inhibited by ferric and cobalt ions. Inhibitors such as Triton x-100 and urea were tolerated by the enzyme whereas the enzyme activity was inhibited by EDTA and SDS. De-inking of α-amylase was showed good results which proved that the enzyme activity is more efficient.

Keyword: Amylase, halophilic, streptomyces, dinitro salicylic acid

OPTIMIZATION AND CHARACTERIZATION OF FLORISYNTHESIZED SILVER NANOPARTICLES (AgNPs) FROM *SOLANUM PUBESCENS*

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Abstract

The studies pertaining to the synthesis of silver nanoparticles and their applications are available in plenty. This is due to the industrial importance of Nanoparticles. However, synthesizing AgNPs and their stability is still a challenge. Hence, different biological methods were used by the biologists among which florisynthesis is one among the method. In this study, an attempt was made in optimization of synthesis of silver nanoparticles (AgNPs)using floral extract of *Solanum pubescens.* The study was conducted using various concentration of silver nitrate (1mM,2mM, and 3mM), different pH (pH 5.0,7.0 and 9.0) and different concentrations (5,10 and 15%) of aqueous extract of the flowers of *Solanum pubescens.* The characterization of AgNPs were carried using UV-spectrophotometry, Fourier Transform Infrared Red spectroscopy (FTIR), Dynamic Light Scattering (DLS), X-Ray Diffraction (XRD), and Scanning Electron Microscope (SEM). The optimization studies revealed that the floral extract added with 1:5 concentration to 1mM silver nitrate at pH 9.0 gives smaller AgNPs. The average size of the particle recorded was around 47nm through DLS whereas the XRD confirm the particles are of face centred cubic crystals with the average size of 13nm. FTIR analysis of the floral extract and the synthesized particles confirms the presence of phytoconstituents which has been acting as reducing and capping agents in the synthesis of silver nanoparticles.

Key words: Florisynthesis, optimization, silver nanoparticles, SEM, XRD, FTIR, solanum pubescens

MOLECULAR IDENTIFICATION OF SCALE INSECT *(EULECANIUM GIGANTEUM)* IN *HIBISCUS ROSA-SINENSIS*

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Abstract

Hibiscus rosa-sinensis is a widely grown evergreen valuable medicinal, ornamental species planted in India. Scale insects are small herbivorous insects found on all continents and they are serious sap sucking pest of many ornamental plants. These scale insects are undetectable due to their basic morphology, small size and polyphagous feeding nature, hence management of these tiny insects become a serious concern across the globe. In order to afford a prospective solution to the problem, an accurate, simple, and developmental-stage-independent identification method is required, hence we have attempted the molecular identification of scale insect in *Hibiscus rosa-sinensis* plant using mitochondrial gene Cytochrome Oxidase Subunit I (mtCOI) sequencing. Experiment was carried out by isolating insect DNA using modified CTAB method. Through two or three rounds of error-prone PCR followed by steady procedure to amplify a mtCOI region. This region of mtCOI has been used as a standard DNA barcode for a diverse array of taxa. The confirmation has been done by sequencing of mtCOI by which it was found to be of the genus of *Eulecanium* and species *giganteum*. This study addresses the questions of biodiversity and molecular characterization of scale insect. Further, the information obtained in this study provides baseline data for future crop improvement program and integrated pest management strategies.

Keywords: Insect DNA, mtCOI, PCR, pest management, sap sucking pest, sequencing

MDCK CELL LINE PERMEABILITY OF CURCUMIN LOADED PHYCOCYANIN NANOSPONGES - *IN VITRO* STUDY

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Abstract

Blood- Brain barrier (BBB) is a natural protective wall for brain to restrict the invasion of xenobiotics or toxic chemicals. This in turn it becomes a major obstacle for researchers and industry people for formulating the drug to treat brain disorders like brain tumor, Alzheimer disease, multiple sclerosis, meningitis and so on. The purpose of our research was to study the invitro cytotoxity & BBB permeation of curcumin loaded phycocyanin nanosponges (Cur-PC NS) using Madin-Darby Canine Kidney (MDCK) cell lines. Cell viability of Cur-PC NS were performed using 3-(4,5-dimethylthiazol-2-yl)-2.5- diphenyltetrazolium bromide (MTT) assay and the transepithelial electrical resistance (TEER) values and permeability coefficient were measured to test the integrity of monolayer of MDCK cell line. Our results showed that Cur-PC NS at 50µM, 85% of MDCK cells are more viable and there was a significant ($p < 0.01$) reduction in TEER values up to 48 hours when compared to the curcumin. The permeability coefficient of nanosponges produced 2.5fold increase in enhancement ratio with Papp value of $1.94 \pm 0.11 \times 10^{-6}$ cm/s and $4.86 \pm 0.04 \times 10^{-6}$ cm/s for curcumin and Cur-PC NS respectively. Our research concludes that phycocyanin nanosponges can be used as a carrier for curcumin to permeate the BBB which may play major role in treatment various brain disorders. Future studies are needed to substantiate the exact mechanism of permeability with clarification of efflux transporters presents in BBB.

Keywords: BBB, MDCK, nanosponges, curcumin

IMPROVE THE GERMINATION RATE AND DEFENSIVE ENZYME ACTIVITY NATURALLY BY THE EXTRA CELLULAR POLYMERIC SUBSTANCES PRODUCED FROM *SPIROGYRA* SPP.

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Abstract

Algae exist in environments ranging from oceans, rivers, and lakes to ponds, brackish waters and even snow. Being photosynthetic, they increase the oxygen content of their environment. From an economical perspective, algae are very useful for creating biomass or fertilizers as they grow very fast. In this present study, the fresh water green algae *Spirogyra* spp. was isolated from different water bodies of in and around Chennai District, Tamil Nadu, India. The isolated four strains of *Spirogyra* spp. from the samples were made as unialgal culture. Biomass developed from all the strains under *in vitro* conditions were subjected to study the extracellular polymeric substances like proteins and polysaccharides. It contains maximum of 270 µg/L of proteins and 315 µg/L of total polysaccharide contents in the 50gm of total fresh weight of strain number 3. This amazing property is very much useful to maintain a plant seed from its loss of activity and also improves the rate of germination. Application of the crude exact with varying concentration in different time intervals gives the excellent germination rate at 150 mins of soaking before the soil inoculation. The pathogen related protein activity was noticeably higher when compared to the control plants. The result also compared with soil application of the algal extract and commercial organic and inorganic fertilizers. Algal extracts show second most biofertilizer after the vermi extracts.

Keywords: Green algae, spirogyra spp., total poly saccharides, biofertilizers, algal extracts

MOLECULAR METHODS IN DETERMINING RHIZOBACTERIAL DIVERSITY

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Abstract

Rhizosphere is known to provide ecologically favourable niches for most of the soil beneficial soil microorganisms. The rich bacterial activity in the rhizosphere aids in several biological and ecological process important for the plant health and the ecosystem. Soil contamination could affect the bacterial diversity above and below the ground ecosystem. It is important to study bacterial diversity from rhizospheric ecosystem. Because contaminated and polluted soil creates serious problem in crop production. Many activities such as city development, pesticide used in agriculture field, pollution caused by chemical and textile factories can potentially affect rhizosphere diversity. The soil microbial populations play a vital role in maintaining the functioning of soil ecosystem. The present review focuses on various molecular approaches used to explore the microbial diversity of rhizosphere ecosystem. The traditional and modern molecular methods may be very useful to construct the microbial profiling in different rhizosphere soil ecosystem. The rhizosphere-living bacteria that exert a beneficial effect on plant growth and improves the soil health. Through assessing the soil microbiome and its role in the rhizosphere ecosystem may provide a sustainable and effective approach to increase the soil fertility, crop yield and food security.

Keywords: Rhizosphere, rhizobacterial diversity, qPCR, next generation sequencing, soil microbial diversity

A STUDY TO IDENTIFY THE PHYTOCHEMICALS IN *PASSIFLORA EDULIS* F. *EDULIS* AND *PASSIFLORA EDULIS* F. *FLAVICARPA* AND TO MAKE A COMPARATIVE SENSORY STUDY ON THE ATTRIBUTES TO CREATE A COMMERCIALLY VIABLE PRODUCT

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Abstract

Phytochemicals are found abundantly in plants which are non-nutritive and bio active compounds that prevents the onset of degenerative diseases and protects the body by maintaining the health. The chemical constituents of food have the ability to protect and prevent the humans from degenerative diseases. The objective of this study is to identify the chemical components of two varieties of passion fruits *Passiflora edulis* f. *edulis* with *Passiflora edulis* f. *flavicarpa* available wildly in the Thandikudi hills, Tamil Nadu, India and compare the sensory attributes between the two varieties of the prepared squashes. High tech instrument the JASCO FTIR spectrophotometer (FTIR-4600) was used to identify the chemical constituents in the fruits. The results showed the presence alkane, primary alcohol, aldehyde and aromatic compounds in the fruit pulp. The inferential statistical analysis of the sensory evaluation revealed that the panel members categorized the *Passiflora edulis* f. *edulis* squash to be more acceptable when compared to the *Passiflora edulis* f. *flavicarpa* squash in the 9 -point hedonic scale. Further this study can be extended on comparing the other varieties of passion fruits and make them a commercial product for marketing.

Keywords: Phytochemicals, passion fruit, organoleptic evaluation

AN OVERVIEW OF CEROPEGIA JUNCEA ROXB.: REVIEW

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Abstract

Nature has abundant source of herbs. Each herb has certain phytoconstituents, that isolated substances are utilized as drug. Through this review distribution, morphology, phytochemistry and pharmacological *Ceropegia juncea* Roxb**.** were analysed. The steroids, terpenoids, anthocyanins, anthracene glycosides, coumarins, flavonoids, fatty acids, phenolic compounds, alkaloids, carotenoids, tannins, saponins, and carbohydrates, lipids, sugars, potassium, lupeol and stigmasterol are found in preliminary phytochemical analysis. FTIR results have shown the functional groups of alcohol, aldehyde, alkyne, alkene and amines, except ester. The proven results of HPLC & HPTLC showed the presence of cerapegin. Cerapegin is reported to hypotensive, hepatoprotective, antiulcer, antipyretic. Also, the coumarin present in *Ceropegia juncea* Roxb is found to have anti – coagulant, anti- oxidant, anti – allergic, anti- thrombotic, anti – inflammatory, anti – proliferative, anti-viral, anti-carcinogenic, analgesic activities, cytoprotective and modulatory functions. Coumarin and ceropegin are mostly used to prepare soma drink and also there were 29 components isolated from *C. juncea* Roxb. The antimicrobial studies also notified in this review. This review summarizes the medicinal value of *Ceropegia juncea* Roxb. in both traditional and ayurvedic system.

Keywords: Phytochemistry, pharmacology, anti- microbial, soma drink, ceropegin

EVALUATION OF ANTIOXIDANT AND ANTIBACTERIAL ACTIVITIES OF BUBBLE BELLY MASSAGE OIL

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Abstract

Bubble Belly massage oil is introduced in Malaysia in the year 2018, and since then it becomes popular among Malaysians. The massage oil is believed to reduce weight, remove bad air from the body, reduce constipation, improve skin firming, reduce cellulite, improve blood circulation, reduce menstrual pain, reduce body ache, lighten black marks, and reduce scar appearance. The massage oil contains lemon oil, vitamin E oil, aloe vera oil, eucalyptus oil, ginger oil, black pepper, fenugreek, 'kayu sepang' (*Caesalpinia sappan*), 'akar tahi angin', 'akar sendi', and 'cabai pintal'. Till date, no study was reported on massage oil and thus this research aimed to evaluate the effect of the massage oil for antioxidant activity using DPPH assay, and antibacterial activity using disc diffusion, minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) assays. The crude ingredients of the bubble belly massage oil were undergone aqueous extraction, followed by lyophilisation. The concentrations of freeze-dried extract and oil sample were prepared as mg/mL and percent composition (v/v), respectively. The highest radical scavenging activity of 73.1% was exhibited by the oil at 0.78% (v/v), meanwhile 56.92% for crude extract at 50.00 mg/mL. Ascorbic acid, gallic acid and tocopherol showed radical scavenging activity of 67.92%, 75.47%, and 67.92% and 70.70% respectively, and comparably good as the oil sample. The oil sample exhibited higher zone of inhibition in methicillin-resistant *Staphylococcus aureus* (MRSA), *Escherichia coli*, *Bacillus cereus*, *Klebsiella. pneumonia* and *Enterococcus faecalis* at 15.0 mm, 14.0 mm, 12.0 mm, 9.0 mm and 14.0 mm, respectively at concentration 100% (v/v). However, the crude extract did not show any inhibition zone on all tested bacteria. The oil sample inhibited *B. cereus*, MRSA and *E. coli* at MIC value ranging from 0.39 to 0.78% (v/v). Both the crude extract and oil showed MBC values of 12.50 mg/mL and 0.39% (v/v) against *B. cereus* and MRSA, respectively. Streptomycin sulfate showed both MIC and MBC value of 0.39 mg/mL for all the tested bacteria. In a nutshell, the oil sample of the bubble belly showed significant inhibitory and radical scavenging activities. Hence, the mixture of herbs synergistically exhibited potential biological activities and are potential as pharmaceutical drug.

Keywords: DPPH assay, disc diffusion assay, MIC and MBC assays, bubble belly massage oil

ANTIBACTERIAL PROPERTIES OF ZINC OXIDE NANOPARTICLES ON *SERRATIA MARCESCENS* ATCC 43862

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Abstract

Zinc Oxide Nanoparticles (ZnO NPs) are a part of nanotechnology which have antibacterial activity could serve as an alternative to the conventional antibiotic treatment. The present study aimed to test the antibacterial effects of *Serratia marcescens* by determining growth inhibitory effects via turbidity test and INT assay, functional groups from bacterial cell wall that were involved in the surface interaction of ZnO NPs by FTIR analysis as well as the morphological changes caused by ZnO NPs through SEM. The highest growth inhibition reported on *S. marcescens* from turbidity test was $51.27 \pm 4.56\%$ for 160 µg/ mL of ZnO NPs Besides, INT assay showed the MIC value was 80 µg/ mL. Meanwhile, FTIR detected the involvement of numerous biomolecules such as polysaccharides, secondary amides, protein and sugars bonds stretching when ZnO NPs interacted with the bacteria cell wall. On the other hand, SEM analysis showed ZnO NPs induced loss of cell surface integrity and, shrinkage of bacteria cells, while EDX analysis confirmed the accumulation of ZnO NPs on bacterial cell surface. Overall, the current study confirmed the antibacterial activity of *S. marcescens* in a dose-dependent manner.

Keywords: Antibacterial, zinc oxide nanoparticles, S. marcescens, SEM, FTIR

ANTIBACTERIAL PROPERTIES OF ZINC OXIDE NANOPARTICLES ON *ENTEROCOCCUS FAECALIS* ATCC 29121

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ABSTRACT

Zinc oxide nanoparticles (ZnO NPs) are widely used to treat a range of different skin conditions. The current study aimed to determine the antibacterial properties of ZnO NPs on *Enterococcus faecalis* which is commonly associated with skin and wound infection. The antibacterial effect of ZnO NPs was determined by investigating the growth inhibitory effects of ZnO NPs on *E. faecalis* and the surface interaction of ZnO NPs on bacterial cell. Besides that, morphological changes caused by ZnO NPs on *E. faecalis* was investigated also. The study results showed a significant ($p<0.05$) growth inhibition for all tested concentration of ZnO NPs at 24 h as compared to the negative control. The percentage of growth inhibition for 5, 10, 20, 40, 80 and 160 µg/mL of ZnO NPs were 5.42 ± 1.28, 16.69 ± 0.88, 23.74 ± 1.23. 32.07 ± 1.65, 54.73 ± 2.15 and 63.50 ± 2.50 % respectively. FTIR spectrum determined the possible involvement of alcohol, methylene, amide I, aromatic phosphate and primary amine from the bacterial cell wall of *E. faecalis* in the surface interaction with ZnO NPs. Finally, SEM-EDX reported a considerable accumulation of ZnO NPs on bacterial cells and the consequent morphological alterations to *E. faecalis* such as surface roughening and wrinkles were observed. Hence, the current study has illustrated the antibacterial properties of ZnO NPs against *E. faecalis* in a dose- dependent manner through the surface interaction of NPs on bacterial cell which caused alterations on cell membrane integrity that might have resulted in cell death.

Keywords: Antibacterial properties, zinc oxide nanoparticles, E. faecalis, SEM, FTIR

BIOPOLYMER NANOCOMPOSITES: ENVIRONMENTAL BIODEGRADATION OF POLY (3-HYDROXYBUTYRATE-*co*-4-HYDROXYBUTYRATE) COPOLYMER INCORPORATED WITH CLAYTONE

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Abstract

As an emerging biodegradable candidate for the replacement of synthetic plastics, nanoclay incorporated polyhydroxyalkanoates (PHAs) has become an important biocomposite with wide range of applications due to its improved properties. Therefore, this study aimed to provide a greater insight into the biodegradation pattern of poly(3-hydroxybutyrate-co-4-hydroxybutyrate) [P(3HB-co-27%4HB)]/Claytone nanocomposite under composting as compared to pure P(3HB-co-27%4HB) copolymer. The biodegradation rate of polymers was determined by measuring the percentage weight loss of the polymer films. It was found that P(3HB-co-27%4HB) copolymer demonstrated higher percentage of weight loss (66.27%) as compared to P(3HB-co-27%4HB)/Claytone nanocomposite (23.44%) under composting soil condition. Physical appearance of the polymer films was observed and as degradation proceeds, the polymers became more brittle and fragmented. Scanning electron microscope (SEM) examination showed that the surface erosion of the polymers took place due to the action of depolymerase enzyme produced by the microorganisms in the composting soil. Isolation of PHA-degrading microorganisms was carried out using clear-zone technique by inoculating the isolates onto the mineral agar containing PHA as the sole source of carbon. The isolate PHBI was subjected to 16S rRNA analysis and the phylogenetic relationship tree constructed revealed that the strain showed 99% similarity to *Pausimonas lemoignei* LMG 16480-A62 strain. This study would provide a significant impact on the use of nanocomposite biomaterials in various fields depending on its biodegradability.

Keywords: Poly(3-hydroxybutyrate-co-4-hydroxybutyrate) [P(3HB-co-4HB)], P(3HB-co-4HB)/Claytone nanocomposite, composting environment, biodegradation, PHA-degrading microorganisms

THE ROLE OF NUTRITION AND FOOD HABITS IN PROMOTING HUMAN HEALTH AND WELL-BEING

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Abstract

The well-being of human health is influenced by many factors, one of which is the subject of this paper, i.e., balanced diet and healthy eating habits. While people may not have control or have limited control over the many factors which affect their wellbeing, they do have choice and significant control over what they eat. Making smart food choices is therefore an important and significant way to contribute to overall physical and mental health. A well-balanced diet helps the individual get the essential nutrients in the right proportions. This in turn helps to maintain good physical health by supplying the body with nutrients to maintain energy, healthy bones and muscles, etc. It also helps maintain good mental health by preventing fatigue, lack of energy & slow mental speed. Good diet prevents obesity, diabetes, sluggish mental functioning, etc. Studies reviewed in this paper indicate the correlation between poor diet and physical health conditions; between poor diet and mental health conditions such as low energy and low mood, increased fatigue, poor attention and slow processing speed. Poor physical and mental health caused by poor diets affect an individual's adjustment in society, relationships with others and with their sense of well-being. Smart food choices and healthy eating habits on the other hand, contribute to 'feeling healthy and strong', good mood and longevity. It's therefore vital that we take an active role in developing health eating habits and maintaining a healthy life style.

Keywords: Nutrition, food habits, human health, well being

POTENTIAL OF GREEN SYNTHESIZED ZNO NANOPARTICLES AS AN ANTICANCER AGENT

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Abstract

Cancer is one of the major causes of death. Over the years, numerous approaches have been devised to lessen chronic pain and deaths as well to enhance the quality of life. However, a scarcity persists in the effectiveness of cancer treatments. Some of the crucial steps to ensure optimal cancer treatment include early cancer detection and drug administration with high specificity to lessen toxicities. As a consequence of high systemic toxicities and complications with conventional cancer diagnostic and therapeutic measures, alternative strategies via nanotechnology are being engaged to advance the level of diagnosis and lessen disease severity. Nanotechnology has been creating promising results in the treatment of cancer by providing efficient, quick and sensitive detection of cancer even when it occurs on a small degree of cell and destroying tumours with minimal damage on the surrounding healthy cells. This novice exploration is providing exciting prospects in terms of detection and treatment of cancer cells. Among all other metal oxide nanoparticles, ZnO nanoparticles (ZnO NPs) are reported to be economical and has comparatively less toxic properties since zinc is one of the essential trace elements present vastly in human body tissues. Moreover, ZnO NPs exhibit remarkable biomedical applications especially in the areas of drug delivery. In this review, the applications of ZnO NPs in the field of cancer is discussed.

Keywords: Cancer, nanotechnology, green synthesis, ZnO NPs

DEVELOPMENT AND OPTIMIZATION OF PROANTHOCYANIDIN LOADED TRANSFEROSOMES FOR OSTEOARTHRITIS

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Abstract

The present study was planned to develop an optimized formulation of proanthocyanidin loaded transferosomes for osteoarthritis. Transferosomes containing proanthocyanidin was prepared using rotary evaporation technique and optimized by using 3 –factor, 3- level Box- Behnken Design. The independent variables selected were phospholipid (X1), tween 80 (X2), and sonication time (X3) with dependent variable such as % entrapment performance and *in-vitro* diffusion at 6 hr. The optimized formulation was confirmed by point prediction method. The optimized formulation was evaluated for vesicle size analysis by SEM, particle size distribution, zeta potential, drug content and *invitro* drug release (24 hr) studies. The dependent variable obeyed quadratic model. The vesicle shape of optimized formulation was found to be round in shape and smooth. The particle size 41.57±0.04 nm indicated that the optimized formulation can cause the deposition of contents in both dermal and epidermal layers. The reported zeta potential of -13mv indicates the formulation would be most stabled in long term storage. The optimized formulation showed 78.29% drug entrapment efficiency and *in vitro* diffusion release of 92.23 % at 24 hr. The drug release kinetics obeyed zero order pattern of drug release. As the current approach gives a positive response, the new drug thereby can be a safer alternative to the existing NSAIDS used in treating Osteoarthritis.

Keywords: In vitro diffusion osteoarthritis, proanthocyanidin, transferosomes

FUTURE OF FOOD: IMPACT OF YOUTUBE ADVERTISEMENTS MARKETING CONTENT AND PERSUASIVE TECHNIQUES

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Abstract

The culture of screen viewing has changed from big screen to small screen and casting of small screen to big screen. Family members use different devices such as mobiles, tabs, laptops and desktops to view visual content. The food marketers use this techno-culture for their advantage and influence the food culture of people. Most of the advertisements on food and beverage ring through all kinds of social media like Face Book, Twitter, Instagram, LinkedIn, Pinterest and YouTube. Out of all the social media, YouTube harness effective advertisement formats such as skippable in-stream, non-skippable in-stream, video discovery, and bumper to persuade viewers. SocialBlade.com analytics is helpful to identify most popular videos targeting families regarding food and beverages ads. The unhealthy, processed, industrialized food are presented with taste appeal and fun appeal by promotional characters. The advertisements focusing children use animation and show with health and nutrition benefits. Especially now in Covid pandemic situation, when the screen time of family members, especially of children have soar high, the possibility of viewing the ads on food and beverages also raise high. This impacts the overall health of the families, as the market content demands them to get addicted to such foods. This results in childhood obesity resulting in chronic disease in later life. As the children are influenced about their preference, purchase and consumption of food, the regulation of offline and online marketing content becomes the need of the hour. Awareness of children rights and social responsibility of social media especially of YouTube will be helpful to reduce the ill health situation of children, the future generation.

PREDICTION AND ANALYSIS OF COVID-19 CASES IN SELANGOR MALAYSIA USING DEEP LEARNING MODEL.

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Abstract

Selangor is a state in the peninsular Malaysia that functions as the economic hub of the country. The state witnessed worse number of COVID-19 cases in the country, leading to a series of lockdowns, which has an enormous impact on the economy. Good plans are essential to further control the cases during the current state. This study aims to develop a model that could predict the number of COVID-19 cases for days or weeks ahead in the state of Selangor. The number of COVID-19 cases recorded by the Ministry of Health Malaysia (MOH) over the duration of August and September 2021 were used in the analysis. A total of 67% of the data was used for training and the rest for testing. Recurrent neural network (RNN) model based long-short term memory (LSTM) variants, which include stacked LSTM and bidirectional LSTM were used to develop the models. The study duration between August and September was period during which the number of COVID-19 cases reduced from 6326 new cases on the 1st of August to 1940 on the 30th of September 2021. Lowest number of new cases, 979 was recorded on the 27th of September 2021. The RNN models has Root Mean Square Error (RMSE) values between 0.07 and 0.09 and were of good potential as predictors for daily cases.

Keywords: COVID-19 cases, prediction, recurrent neural network, Malaysia

REVIEW OF HEAVY METAL CONTAMINATION IN MANGROVE SEDIMENT IN MALAYSIA

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Abstract

The amount of environmental degradation surrounding many cities and mangrove areas is unpredictable due to unplanned and unregulated urbanization and quick expansion of industrial economy. Because of their persistent and bio-accumulative nature, heavy metals are prominent issues among many contaminants. By bioaccumulation in the food chain, the amount of pollution may have harmful influence on aquatic life, the environment, and human health, particularly for human consumers of seafood. The findings from this review will offer a comprehensive image of our environment's present pollution level, particularly in mangrove sediment in Malaysia. Sediments can aid in the evaluation of heavy metal pollution by giving a history of pollutant input and environmental changes. As a result, research on the distribution of heavy metals in sediment are critical and significant from the standpoint of public health. In addition, this review looked at the sources of heavy metals, as well as their effects on living organisms and human health. Finally, referring to the findings of pollution status, there is a discussion to compare heavy metals contamination between the east and west coast Malaysia. In regards to the anthropogenic activities, it can be concluded that west coast area is more polluted than the east coast.

Keywords: Heavy metal, mangrove, sediment, pollution, Malaysia

PREPARATION AND CHARACTERIZATION OF CALCIUM PHOSPHATE CHITOSAN NANOCOMPOSITE AS PLANT GROWTH PROMOTER

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Abstract

Calcium phosphate-chitosan nanocomposite (CaP-CS NC) was prepared by simple and cost-effective co-precipitation method. The XRD analysis revealed the crystalline nature of the CaP-CS NC. The structural parameters like crystallite size and dislocation density were calculated using XRD pattern and the average crystallite size was found to be 43 nm. SEM analysis revealed agglomeration of the CaP-CS NC. The EDAX analysis indicated the presence of Ca, P, O and N elements in the prepared CaP-CS NC. It also revealed the absence of any impurities in the prepared sample. UV-VIS-IR analysis showed that these NS could be used as antireflection layer in solar cells to improve the efficiency of solar cells. In addition, the prepared CaP-CS NC was tested for the plant growth stimulator properties in lab scale level, it showed a significant increase in plant growth when compared to control. Hence, the current study indicates the prepared CaP-CS NC could be used as a plant growth promoter.

*Keywords**: CaP-CS NS, XRD, FESEM, plant growth promoter*

SYNTHESIS AND CHARACTERIZATION MAGNESIUM DOPED FERRIC SULPHATE (Mg-Fe$_2$SO$_3$ NPs) NANOPARTICLES FOR AGRICULTURE APPLICATIONS

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Abstract

Magnesium doped Ferric Sulphate nanoparticles (Mg-Fe$_2$SO$_3$ NPs) were prepared by simple and cost-effective co-precipitation method. The XRD analysis revealed the crystalline nature of Mg-Fe$_2$SO$_3$ NPs and the crystallite size was found to be 7.1 nm. The FESEM image showed the agglomeration of Mg-Fe$_2$SO$_3$ NPs and the shape of the grains appeared like starfish which has limbs grown from a common cluster. The EDS analysis revealed the presence of C, O, Fe, Mg and S elements in the prepared sample. It also revealed the absence of any impurities in the prepared sample. Through FTIR, Mg-Fe$_2$SO$_3$ NPs showed characteristic peaks at 615.29 and 1400.32 cm-1 which are corresponded to Fe-O and O-H bonds respectively. In addition, the peaks noticed at 1130.29 and 1633.71 cm-1 are responsible for C-N stretching and N-H bending respectively. Further, the seed germination study revealed that the Mg-Fe$_2$SO$_3$ NPs caused a significant increase in plant growth compared to untreated.

Keywords: Mg-doped Fe$_2$SO$_3$ NPs, XRD, FESEM, seed germination.

SUPPORT LINEAR EVOLUTIONARY METHOD FOR DIMENSIONALITY REDUCTION IN BLOOD PRESSURE DETECTION

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Abstract

Blood pressure is a major life-ending illness. Nowadays more Prediction methods are available. Intelligent learning helps to select proper method for the dataset. Machine Learning has algorithms like LDA (Linear Discriminant Analysis) and SVM (Support Vector Machines) which produce a brand original hybrid smart method for reliable prediction. To do intelligent learning, the performance analysis of the techniques is examined. In this paper, the major machine learning techniques LDA and SVM are used for the comprehensive study. Both methods are using hyperplane for prediction, but both techniques have less likely performance while portends to the data. This work also compares two techniques and propose the best for the dataset.

Keywords: LDA, SVM, prediction, blood pressure, dimensionality reduction.

A SENTIMENT-BASED SPAM DETECTION MODEL FOR COVITWEET USING MACHINE LEARNING APPROACH

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Abstract

In the era of smartphones and online social networks, instant and unstructured short messages play a vital role in communication. For example, WhatsApp is one of the favorite tools for communication. But, the transmission will happen only through the closed group in this. If the information needs to be transmitted globally, Twitter is the platform used. It leads to more illegal online activities through spammers. Those spreads are known as a spam message. The critical field of research is sentiment analysis because people make their decisions only through the review, blogs, and comments spread over social networks. The present study was intended to know both sentiment and text's nature, such as legitimate or not, through an infused approach. Covid-19 based tweets downloaded with a python program through Twitter API keys. From the downloaded tweet, Non-English tweets were removed. Automatic labels were predicted then the sentiment polarity was calculated. Finally, a dataset covitweet was framed. Then the label was concatenated to frame a multilabel problem. The next step performed was the machine learning classifiers application to the dataset. Performance of binary label classifier and multilabel classifier were evaluated. The evaluation results showed that the multinominal naïve Bayes has produced a high impact when applied with OneVSRest classifier. Adaboosting has made the same result with binary label classifiers and multilabel classifiers.

Keywords: Covitweet, sentiment-based spam detection model, machine learning approach

A REVIEW ON THE EFFECTS OF DIFFERENT SUBSTRATES ON THE GROWTH AND NUTRITIONAL COMPOSITION OF *PLEUROTUS OSTREATUS*

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Abstract

Mushrooms are one of the most undervalued foods globally, even though they are highly nutritious and flavorful with a high content of proteins, vitamins, and minerals. Mushrooms could be an alternative solution to the world's food crisis as they are inexpensive to grow on different types of substrates including waste materials. Pleurotus ostreatus, frequently known as oyster mushrooms, are the second most cultivated mushroom in the world. This species is known for its high protein content and easy cultivation. Oyster mushrooms have the potential to produce protein-rich biomass when grown on various substrates. There is a need to identify substrates that are cost-effective for the commercial production of nutritious oyster mushrooms as the substrates used currently are either costly or inadequate to produce oyster mushrooms in the required quantity or quality. Thus, the effects of 10 different lignocellulosic substrates on the growth and nutritional composition of P. ostreatus were reviewed and analyzed in this review. The substrates included in this review were wheat straw, thatch grass, elephant grass, sugarcane bagasse, corncob, cotton stalks, cottonseed hulls, soft wood sawdust, hard wood sawdust and general sawdust. Based on the analyzed data, sugarcane bagasse was concluded as the most suitable substrate to grow P. ostreatus. This substrate contains a high amount of nutrients and is also likely to produce a significantly high yield of oyster mushrooms while enhancing the nutritional quality of the mushroom. However, these findings must be evaluated and confirmed through further research in this field.

Keywords: Pleurotus ostreatus, lignocellulosic substrates, nutrition, yield

FACTORS DETERMINING THE CUSTOMERS' INTENTION TO PURCHASE OTC PRODUCTS THROUGH E-PHARMACIES

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Abstract

In the health care system, over-the-counter (non-prescribed) drugs play a crucial role in the medication process. Over-the-counter (OTC) drugs are medicinal products sold without a doctor's prescription. Without seeking care from health professionals, OTC medications are safe and effective for the general public usage. Generally, OTCs and self-medicines are used to treat mild health issues in a simpler and inexpensive way. Cold-and-cough medicines, vitamins, analgesics, digestive medicine (i.e., anti-acids), and dermatological medicines are the categories that dominate the world's top five OTC market-share. Limited studies in India aimed at evaluating OTC purchasing behaviour in e-pharmacies. Therefore, this study aimed to identify influential E-pharmacy factors that are affecting consumers during OTC products purchase. This study also examined the consumers' intention to purchase OTC products across major cities of Tamil Nadu. A total of 153 responses were collected from e-pharmacy customers through self-administered questionnaires across 4 major cities of Tamil Nadu. E-pharmacy customers who made at least one purchase on the e-pharmacy website were considered for the study. Based on the results, analgesics is the most preferred OTC category in the online purchase mode. The results also demonstrated that post-purchase behaviour aspects like on-time delivery of the product and providing the shift response to solve the queries raised by the e-pharmacy customers play a significant role in enhancing customer satisfaction across e-pharmacy sites.

Keywords: OTC products, E-pharmacy, customer, generic drugs, purchase Intention

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