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Materials Horizons: From Nature to Nanomaterials

Sreerag Gopi

Preetha Balakrishnan

Nabisab Mujawar Mubarak *Editors*

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Editors

Sreerag Gopi
ADSO Naturals Private Limited
Bengaluru, India

Curesupport B V
Deventer, The Netherlands

Preetha Balakrishnan
ADSO Naturals Private Limited
Bengaluru, India

Curesupport B V
Deventer, The Netherlands

Nabisab Mujawar Mubarak
Petroleum and Chemical Engineering
Faculty of Engineering
Universiti Teknologi Brunei
Bandar Seri Begawan, Brunei

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Chapter 13

“Biomedical Applications of Porphyrin Nanohybrids”



K. Simi Pushpan and Ajalesh B. Nair

1 Introduction

In nature, porphyrinoids are ubiquitous pigments of life that perform a variety of functions ranging from photosynthesis, electron transfer, oxygen transfer, and storage to the destruction of cells. Porphyrins are heteroaromatic tetrapyrrolic macrocycles linked to each other at a position by a methine bridge. It has 22 π electrons of which 18 π electrons are involved in providing its extended aromaticity. Figure 1 represents the basic unit of porphin scaffold.

Core and peripheral modification of porphyrins and related macrocycles like phthalocyanine, calixarene rings have gradually developed as a stimulating subfield of organic chemistry, which allows alteration of the molecular properties of these macrocycles. Such a structural alteration of these macrocycles opened pathways for studying novel reactivities and intriguing π -conjugation phenomena in these macrocyclic systems.

Porphyrinoids act as an attractive ligand for coordination chemistry for a variety of transition metals. The protonated form of these macrocycles can be tuned as specific anion binding agents depending on their cavity size. The strong absorption in near-infrared owing to extended conjugation and planarity allow these macrocycles to exhibit exciting optoelectronic properties and are considered as the most powerful building blocks for supramolecular assembly. They also exhibit interesting fluorescence behaviors and are clinically proven photosensitizers apart from their ability to

K. Simi Pushpan (✉) · A. B. Nair (✉)

Post Graduate and Research Department of Chemistry, Union Christian College, Aluva, Kerala
683 102, India

e-mail: simi.pushpan@uccollege.edu.in

A. B. Nair

e-mail: ajaleshbair@uccollege.edu.in

MATERIALS SCIENCE AND TECHNOLOGIES

PHOTOSENSITIZERS AND THEIR APPLICATIONS

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Chapter 12

Ruthenium Complexes in Dye-Sensitized Solar Cells: Experimental and Theoretical Perspectives

**Smitha Roy¹, Bebeto G. Nair²
and Aravind Krishnan^{2,*}**

¹Union Christian College, Aluva, Kerala, India

²St. Berchmans College (Autonomous), Changanassery,
Kottayam, Kerala, India

Abstract

“High efficiency with low-cost production” is the tag given to the 3rd generation of solar cells, viz. Dye Sensitized Solar Cells (DSSC). Ruthenium complexes serve as a major category belonging to the above class due to the advantages of high photostability and wide absorption range from visible to near IR. With the development of N3 dye, the godfather of ruthenium dyes, scientific research has developed remarkably in modifying the complexes with various functional groups. Improved binding of the dye to TiO₂ nano-surface, decreased back electron transfer, high absorption coefficient, resistance to water induced dye desorption, reversibility of ruthenium III/II couple, high absorption near the red region are some of the prerequisites for the production of efficient ruthenium dyes. An overall power conversion efficiency of 11% have been achieved using ruthenium polypyridyl complexes under standard illumination. The experimental modification includes the introduction of donor and acceptor moieties in the polypyridyl ligands which is seen to achieve the above-mentioned requirements.

* Corresponding Author's Email: aravind@sbccollege.ac.in.

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FLAVORS AND FRAGRANCES IN FOOD PROCESSING

PREPARATION AND CHARACTERIZATION METHODS



**P. BALAKRISHNAN &
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Chapter 10

Sensory Analysis and Brain Imaging of Flavors and Fragrances

Ajalesh B Nair,* Simi Pushpan K, Neethumol Varghese, and Minu Joys

Post Graduate and Research Department of Chemistry, Union Christian College,
Aluva-683 102, Kerala, India

*Email: ajaleshbair@uccollege.edu.in

Flavors are a mixture of volatile and non-volatile organic compounds which bear pleasant odors and are extensively utilized in food and beverage industry. It is perceived to be the most multimodal sensory skill comprising not just oral somatosensory and gustatorial but also retro nasal olfactory signals. All sensory signals arising from food before consumption are also possibly influenced by prospects due to prior experience. Fragrance consists of volatile organic compounds which can be perceived through olfactory system utilizing odor-object encoding in peripheral and central processing stimuli in brain olfactory regions consisting of several active olfactory receptor genes, having diverse protein sequence. The physiological effects elicited by the sense of smell are intricately connected to flavor analysis of brain and impact its cognitive functions. In this chapter, we intend to discuss the mechanism of action of neurophysiological effects of these two interconnected senses, flavors and fragrances, its brain imaging and sensory analysis along with the future advancements in this area.

1. Introduction

The earliest accomplishments in the field of flavors were predominantly in the arena of “sweet” flavor research. The investigators initiated their research in this area by introducing novel molecules since 19th century. The vanillin was first crystallized by Nicolas-Theodore Gobley from vanilla beans in 1958 and by 1872 its empirical formula was reported by Carles. Even though in 1874, Ferdinand Tiemann and Wilhelm Haarmann reported the structure of vanillin, it was successfully synthesized from guaiacolin by Reimer in 1876. Such efforts on the detection of a flavoring agent saw the commencement of a booming endeavor that accomplished its apex in the 1970s, when several molecular entities in significant products were recognized by Ivans Benz and Andreas Muheim (1996).

Flavor is crafted by nature and is constituted by aromatic chemicals that are biosynthesized during the typical metabolic processes in living thing and can be subsequently refashioned by further processing. The distinctive flavor of food signifies the complex influence by these aromatic factors on the senses of odor and taste. Flavorings are synthesized from natural and/or synthetic aromatic

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ABSTRACTS

Focal Theme

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continuous wave laser, it is observed that lower energy states become accessible.

Conclusion: This work shows the possibility to access energy levels of GaAsBi pin diode quantum well,

which are otherwise inaccessible using a combination of optical and electrical pumping.

Keywords: Quantum well pindiode, photoluminescence, Electroluminescence, GaAsBi

PHYSICAL SCIENCES-21

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Hydrothermally Synthesized Van Der Waal Layered Structure of 2D WS₂ for TFT Application

Saranya Sasi¹, Swathy B. Saseendran², Christeena Thomas¹, Asha A.S.² and R. Reshmi¹

¹Optoelectronic and Nanomaterial's Research Laboratory, Department of Physics, Union Christian College, Aluva, Kerala, India--683102

²NEST Lab Department of Physics, Cochin University of Science and Technology, Kochi, Kerala, India -682022

Background: Beyond graphene, 2D transition metal dichalcogenides are widely investigated because of their layer-dependent tunable properties. Tungsten disulphide (WS₂) being a promising material from this group, having potential application for next generation thin film transistors. The hydrothermal synthesis and subsequent post annealing to form van der waal layered structure has not been reported elsewhere.

Method: Typical hydrothermal method was employed to synthesize WS₂. Sodium tungstate, thiourea and oxalic acid were used as the precursors. The reaction carried out

at a temperature of 150°C followed by the annealing in the atmosphere of sulphur and argon.

Results: Post annealing treatment induces better crystallinity and facilitated van der waal layered structure.

Conclusions: Hydrothermal process and subsequent annealing identified a simple route to achieve 2D vander waal structure with enhanced crystallinity for the fabrication of thin film transistors.

Keywords: Transition metal dichalcogenides, Hydrothermal synthesis, post annealing

Synthesis and Characterization of Mn-doped MoS₂ for Electrochemical Sensing of Folic Acid

Christeena Thomas¹, Saranya Sasi¹, Asha A. S.², Alex Mathew¹, R. Reshmi¹

¹Optoelectronic and Nanomaterial's Research Laboratory, Department of Physics, Union Christian College, Aluva, Kerala, India- 683102

²NEST Lab, Department of Physics, Cochin University of Science and Technology, Kochi, Kerala, India- 682022,

Background: Nowadays there is triggering interest in 2D materials like Transition Metal Dichalcogenides (TMD's). Among TMD's MoS₂ has the most robust nature and its biosensing properties are still been explored. Folic Acid (FA) is an essential vitamin that is necessary for the proper growth and development of humans in every stage of growth. Also, manganese (Mn) is a catalyst with distinguishing properties. The FA sensing properties of Mn-doped MoS₂ are not yet reported.

Method: Facile hydrothermal synthesis method was used for the synthesis of Mn-doped MoS₂. For that sodium

molybdate dihydrate, thiourea, manganese acetate tetrahydrate were used as precursors. The reaction was carried out at 200°C for 24 hours.

Results: The Mn-doped MoS₂ has shown a 42% increase in oxidation current than pure MoS₂ in the presence of 1mM FA.

Conclusions: The synergetic effect of both Mn and MoS₂ can effectively increase the sensing of FA.

Keywords: Transition Metal Dichalcogenides, manganese, Folic Acid, biosensing.

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कुछ अनमोल यादें शशि सर के नाम...

अपने आत्मीयजनों से जुड़े संस्मरण हमें इस कदर भावुक बना डालते हैं कि अक्सर पूरी बातों को शब्दबद्ध नहीं कर पाते। भावुकता का पलड़ा इतना भारी पड़ जाता है कि कुछ बातें अधूरी रह जाती हैं। इसी वजह से शशि सर (डॉ. पवूर शशीन्द्रन) के बारे में संस्मरणात्मक लेख लिखने का सुखद अवसर जब प्राप्त हुआ तब अजीब दुविधा में पड़ गई। सर से जुड़ी स्मृतियाँ अनायास हमारे मन में आती-जाती हैं लेकिन शब्दों में उन यादों को पिरोना आसान कार्य न था। अपनी तरफ से विनम्र श्रद्धांजली के रूप में मैं इस कोशिश को रखना चाहूँगी।

सर का हँसमुख चेहरा, गहरी सोच में लीन होते हुए बालों में खुजली करना, फिर यकायक एक नई बात को हमारे सामने रखना— सबकुछ हमेशा-हमेशा के लिए छूट गया है, विश्वास नहीं होता... सर हैं और कहीं से सारी बातें सुन-समझ रहें हैं— ऐसा ही लगता है। यहाँ मैं सर की विद्वत्ता से ज़्यादा इंसानियत के पैरोकार, कुशल अध्यापकीय व्यक्तित्व आदि भूमिकाओं पर प्रकाश डालना चाहूँगी। 'प' की सबसे बड़ी महानता इस बात में निहित है कि वे खुद को पहले छात्रों के स्तर पर बिठाने में ज़रा भी संकोच नहीं करते। वे भली-भाँति जानते हैं कि इसी तादात्म्यता से छात्रों को उच्च स्तर तक लाया जा सकता है। एक अच्छे दोस्त की तरह, पितृतुल्य वात्सल्य प्रदान करते हुए सही प्रेरणास्रोत बन जाते हैं हमारे शशि 'प'।

स्नातक स्तर की शिक्षा के लिए आर्ट्स कॉलेज में मुख्य विषय के तौर पर मैं हिंदी ही लेना चाहती थी, दाखिला भी ले लिया था, लेकिन घरवाले उस वक्त वनस्पति-शास्त्र को ज़्यादा तवज्जो दे रहे थे। उम्र की अपरिपक्वता ने मुझे भी हिंदी को महज़ दूसरी भाषा के रूप में स्वीकारने के लिए मजबूर किया। "आगे



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quantified in this study. It contains vital components of such a diet. The carbohydrate content was much less whereas total protein and minerals were sufficient to fulfil the metabolic needs. The essential amino acids screening depicted the presence of phenylalanine (0.95%) and glycine + threonine (0.93%) quantities at higher levels. Minerals are categorized as micronutrients that are essential in metabolism and fluid maintenance in the body. The minerals such as boron (61ppm), iodine (38ppm) and manganese (20ppm) were in good quantities in the leaf. This content will help to reduce individual risk factors including those related to cardiovascular diseases among humans and animals. The next major mineral in *A. alnifolia* was Zinc (13ppm) which is being involved in reduction of above risk factor and also helps to secrete insulin. Anti-nutritional factors were allowing the vegetable to stand on the safest nutritional path where the trypsin inhibition property (0.0046 ± 0.01 TIU/mg Protein), nitrate (180 ± 1.39 $\mu\text{g KNO}_3$ eq/g sample) and phytate (0.645 ± 0.03 $\mu\text{g/g}$ sample) quantities were within the acceptable range. Thus, the collection and consumption of wild edible plants has been a way of life to supplement dietary requirements for many rural populations throughout the world. This present study also suggested that further research is needed on cultivation and food processing techniques on this wild leafy vegetable to get potent nutrients.

Keywords : phytate, degenerative diseases, cardiovascular diseases, edible plants

O34: TAXONOMY AND WEB ARCHITECTURE OF *CYRTOPHORA UNICOLOR* DOLESCHALL, 1857 (ARANEAE, ARANEIDAE) FROM THE WESTERN GHATS

Elizabeth V. Mathew and Niladevi K. N. *Department of*

Zoology, Union Christian College, Aluva, Kerala.

Spider taxonomy has over the years been recognized as a demanding field of study due to the complex morphological and anatomical features of spiders and genitalic polymorphism. The spider genus *Cyrtophora* Simon, 1864 belongs to family *Araneidae* Clerck, 1757 and subfamily *Cyrtophorinae* Simon, 1895. *Cyrtophora unicolor*, known as the “Red tent spider” appears reddish brown in color and builds large tent web, characteristic of subfamily *Cyrtophorinae*. After Pocock reported the species in 1900 from Sikkim, subsequent report came more than a century later, in 2014, from the Western Ghats. This study describes the species and distinct web pattern. Morphological taxonomy gives a vivid description of the appearance of the species. The cephalothorax, abdomen and genitalia are explained and illustrated. The species is characterized by a pair of shoulder humps and numerous orange-brown sclerotized plates on the abdomen. Epigyne has a sinous rim and distinct sclerotized epigyne that has a pentagonal central part. Males are rarely found, due to extreme sexual dimorphism; they are much smaller, and seldom found in



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traditional medicinal values to treat gastrointestinal disorders, respiratory tract disorders including asthma, fever, hair loss and graying of hair, liver disorders including jaundice, skin disorders, spleen enlargement and cuts and wounds. The plant has several phytoconstituents like wedelolactone, eclalbasaponins, ursolic acid, oleanolic acid, luteolin and apigenin. Pharmacological activities of plant extracts and individual phytoconstituents have revealed anticancer, hepatoprotective, snake venom neutralizing, anti-inflammatory, and antimicrobial properties. Bimetallic Cu/Zn were synthesized utilizing leaves extract of *Eclipta* through green synthesis protocol. Green synthesized Cu-Zn nanoparticles 30-50nm in size possess its parental Cu, Zn metal screened through SEM and EDAX analysis. Further synthesized Cu-ZnBNP possesses characteristic UV-Visible, FTIR, and XRD patterns. Cu-ZnBNP possess significant *invitro* antioxidant activity. Finally *invitro* MTT assay results revealed that green synthesized Cu-ZnBNP possess excellent alveolar anti-cancer activity when compares with their *Eclipta prostrate* plant extracts counterpart.

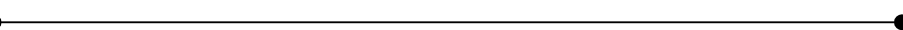
Keywords: nanomaterials, phytoconstituents, SEM and EDAX analysis

O47 FEEDING ASSOCIATED COOPERATIVE BEHAVIOUR OF DROSOPHILA LARVAE

Nila Devi K.N*, Elizabeth V. Mathew and Anmariya Joy

Department of Zoology, Union Christian College, Aluva, Kerala

Drosophila melanogaster has emerged as a model organism for research on social interactions. They use vision, olfaction and gustation to recognize each other. The present study was focused on the dynamics of collective foraging decisions by the larvae of *Drosophila* including cluster formation, social digging and de-clustering in different food sources. Influence of different food sources in which the larvae were reared on the general food preference of larvae was also included in the study. Changes in the behavioural patterns of second instar *Drosophila* larvae on exposure to different food sources was assessed. Visual and mechanoreceptors play a major role in the cooperative behaviours while olfaction play major role in selection of food. The food source in which the larvae were grown had no influence on the general food preference of the larvae and among the various fruit sources tested, mango was found to be the most preferred food followed by pineapple. The time taken to reach the food source was found to be much less in the case of mango pulp as compared to other fruit sources. Same observation was made when larvae raised on other food sources were provided with mango pulp. The results suggested that the *Drosophila* larvae have specific food preferences irrespective of the source of food in which they were raised. The larvae use olfactory sensation for foraging while the presence of other larvae, detected mostly by the visual and mechanoreception was found to be crucial in establishing feeding associated cooperative behaviours like cluster formation and digging. The behavioural pattern differed conspicuously while foraging on food kept at different depth, pointing to that adequate air supply is also a major factor in determining the cooperative behaviours such as sustenance of clusters and de-clustering. The observations made



why gandhi?



Prof. Ramjee Singh

Awarded Padma Shri by Government of India
Eminent Gandhian Scholar and Former Vice-Chancellor,
Jain Vishva Bharati University, Ladnun, Rajasthan

This volume critically examines the relevance of Gandhi in the contemporary world in relation to some of the most crucial questions before us. I am sure this volume is a welcome addition to Gandhiana and it will kindle further research on some unexplored areas dealt in this volume. I congratulate the editors and the Probhoda Trust for undertaking the responsibility of publishing this volume in their effort to disseminate the life and principles of Gandhiji.



Surendra Kumar

Former Secretary
Gandhi Peace Foundation,
New Delhi

This volume is a scholarly analysis of contemporary concerns which would help to revisit Gandhian principles in the context of challenges facing the world. It brings into limelight the contemporary relevance of Gandhi in the post pandemic world in which we are living. It explores some of the new areas which were not analysed so far giving space for further research and interpretation. This book would be widely discussed by academics and activists working in the field of Gandhian thought and action and the general public who are in search of alternatives to overcome the impasse created by modern western civilization.



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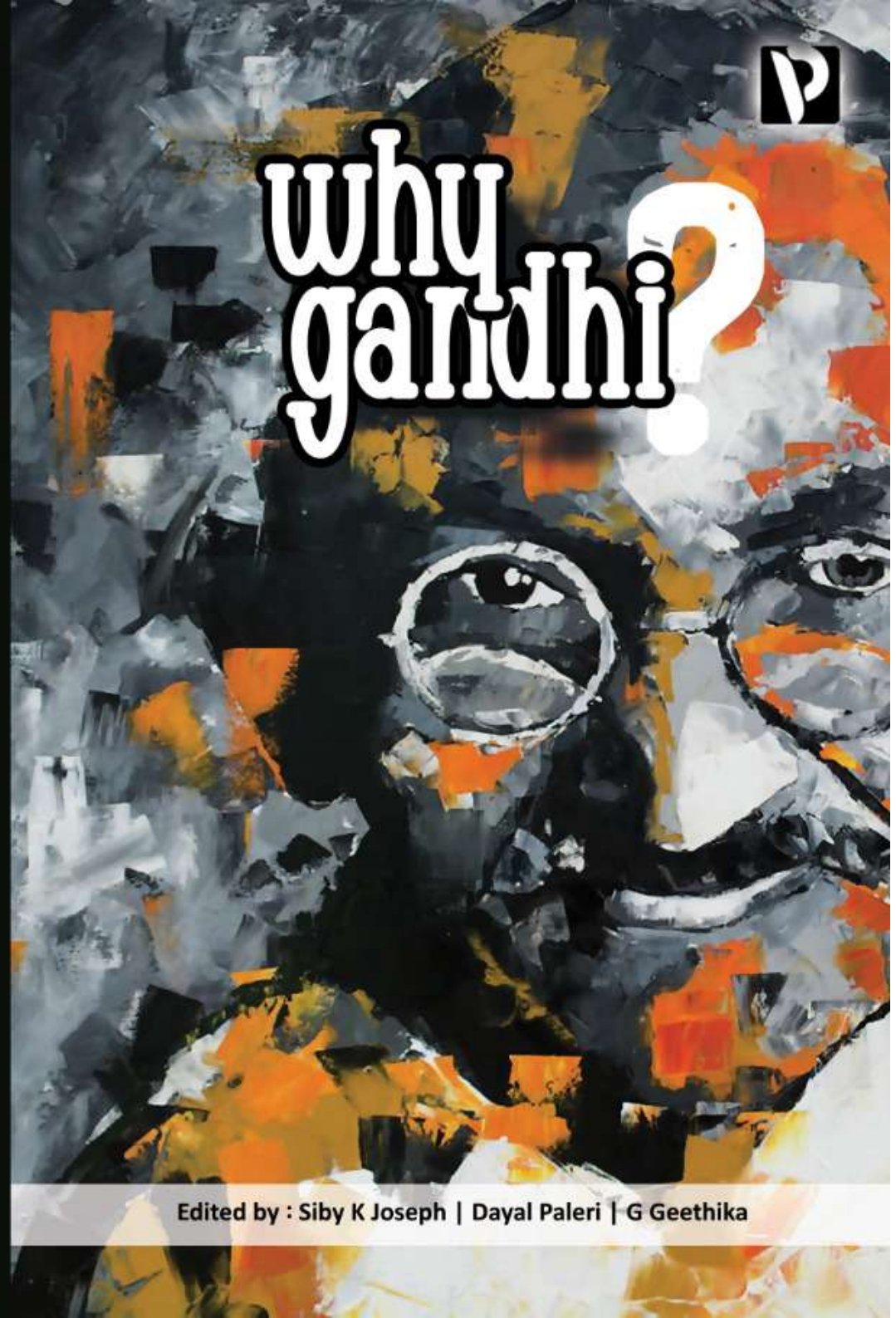


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Why Gandhi ?



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Why Gandhi?

Edited by

Siby K. Joseph
Dayal Paleri
G Geethika

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11

NATIONAL EDUCATION POLICY 2020 & *NAI TALIM*: EXPLORING THE (DIS)SIMILARITIES

G GEETHIKA

Education is the process of receiving systematic instruction. Whether formal, informal or non-formal, it is an enlightening experience that transforms the individual in all respects. It is the basis for human capital, imperative for shaping a better society. According to Professor Aldous Huxley (1927), “a liberal education prepares young people for life by training their intellect.” Before him, John Henry Newman wrote, “it is the education which gives

COVID-19: India and the World

The emergence of COVID-19 has turned into a cataclysm with prodigious repercussions on life and livelihood. As pandemic preparedness is recognized as a pivotal part of disaster preparedness systems at the national and international arena, globally it took a few weeks to acclimatize with the attributes of what was unfolding gravely. Timely interventions by the World Health Organization and other international partners have resulted in a coordinated public health response driven by real-time, reliable and actionable outcomes. The pandemic has propelled the world into an economically paralyzed state juttied out with unemployment and debts. The book, "COVID-19: India and the World" incarnates the pandemic trajectories and responses in India and the world. This book is useful for academicians, policy makers, scholars, researchers, public health professionals and people involved in pandemic research and excogitations.

Dr. C. Vinodan is Director, School of International Relations and Politics, Mahatma Gandhi University, Kerala, India.

Dr. Anju Lis Kurian is Guest Lecturer, Department of Political Science, Newman College, Kerala, India.



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C. Vinodan, Anju Lis Kurian

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Anju Lis Kurian

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In: COVID-19: India and the World
Editors: C. Vinodan and Anju Lis Kurian

Chapter 12

COVID-19 PANDEMIC & PHARMACEUTICAL PATENTS: CHALLENGES & OPTIONS FOR INDIA

G. Geethika Ph.D*

Assistant Professor

Union Christian College, Aluva, Kerala, India

ABSTRACT

The COVID-19 pandemic is raging relentlessly across the globe outrunning the reckoning of all. On the one end the corona virus positive cases continue to surge, and on the other, countries and companies are pulling out all the stops to release a drug to cure COVID-19. Among the many uncertainties and unanswered questions pertaining to the medicines, a serious concern is with respect to a crisis brewing vis-à-vis patenting rights and public health. Several public calls have already been sounded for invoking riders to overlook intellectual property rights over drugs and medical equipment for treating pandemics. The question of protecting public interest and ensuring national health prerequisites versus incentivising innovation and promoting corporate interests shall transform into a feud, mostly detrimental for developing countries like India. The COVID-19 pandemic calls for a revisit of the TRIPS flexibilities as envisaged by the Doha Declaration on Public Health. The scenario becomes crucial for India, a country which has so far issued only one compulsory license. The paper propose to assess the impending situation from a human rights perspective in an interdisciplinary manner. It calls for a review of the implications of voluntary licensing and voluntary pooling options, as advocated by the pharmaceutical companies, upon price control and accessibility of the much needed COVID-19 vaccines. The study is interesting and important because India is the “pharmacy of the world” and many developing and less

* Corresponding Author's Email: geethikag@uccollege.edu.in

THE NEED TO CONSUME TEN LEAFY VEGETABLES DURING MONSOON - A REVIEW

Abstract

Leaves can reduce the acidity in the body and make it alkaline, which prevents several diseases. The consumption of a combination of leaves of ten medicinal plants (pathila) which are available from our surroundings has immense health benefits during the month of Karkidaka, June- July in south India.

Keywords: Ayurveda, green leaves, medicinal properties

Authors

Maneesha C R

Department of Bio Sciences
Union Christian College
Aluva, Kerala, India

Jyothilekshmi. S

Department of Bio Sciences
Union Christian College
Aluva, Kerala, India

jyothilekshmis@uccollege.edu.in

Sona. A

Department of Biotechnology
SAS SNDP College
Kerala, India

APPLICATIONS OF PLANT-DERIVED POLYSACCHARIDES WITH SPECIAL EMPHASIS ON MUCILAGE

Abstract

The recent advancements in scientific knowledge and its diverse applications made us recognize the importance and need of some old practices. The use of synthetic materials, especially polymers with many side effects, also prompted human kind to switch on to plant-derived products. Among the various unavoidable substances in our daily lives, polymers are of prime importance. They may be natural, semi-synthetic and artificial. Natural polymers are biocompatible, biodegradable and less toxic than artificial polymers. Among various natural polymers, plant derived polysaccharides such as mucilage, gums and starch. Mucilage is utilized in tablet formulations, drug delivery systems and waste water purification by removing dyes and heavy metals. It shows pharmacological properties such as antioxidant, antibacterial and anti-inflammatory. This chapter reviews the importance and applications of plant mucilage with special reference to its pharmaceutical, pharmacological and bioremediation perspectives.

Authors

Sumin Mary Jose

Department of Botany
Union Christian College
Aluva - 683 102

Anilkumar M

Assistant Professor
Department of Botany
Union Christian College Aluva
drmakumar@gmail.com



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IVCPB 54**Identification, characterization and comparison of seasonal calcium oxalate crystal load in *Amaranthus dubius***

Renu Rajan^{1*} and Justin R. Nayagam¹

¹*Department of Botany, Union Christian College, Aluva- 2, Kerala, India 683102*

**Email: renumarychacko@gmail.com*

Calcium oxalate is a very important antinutrient present generally in all plant parts from embryo to mature plant, which reaches the human body through food and raw plant-based drugs. Though calcium oxalate crystals in plants are useful for them in many ways, it can contribute to an increase in the oxalate levels in humans and animals consuming them raw as food or drugs, which can in turn precipitate nephrolithiasis and renal failure. Hence the identification, characterization and comparison of CaOx load in vegetables consumed as food and herbal drugs are crucial in managing a low oxalate diet for patients suffering from renal ailments and to those prone to hyperoxaluria. The present study aims at generating new knowledge on the seasonal oxalate load of common leafy vegetable purple Amaranthus at its various stages of maturity such as young leaf and mature leaf, in its life cycle. Young leaves exhibit a greater number of small druse crystals whereas mature leaves show a lesser number of big druse crystals in *Amaranthus dubius*. The crystal load can be plotted as mature leaf > young leaf. The crystal load in young leaves is 6% less than that of mature leaves. The future prospect of the study lies on the biotechnological intervention to genetically engineered plants with less oxalate content by identifying the genes responsible for ergastic crystal formation in plants.



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IVCPB 59

***Lasiodiplodia theobromae* infection on *Myristica malabarica* seeds: Threat in artificial regeneration**Saira George¹ and Justin R. Nayagam¹¹*Department of Botany, Union Christian College, Aluva, Kerala, India.*

Lasiodiplodia theobromae (Pat.) Griffon and Maubl. was found associated with seeds of several tropical tree species, which eventually proved decline in regeneration potential in many forest tree species. Germination studies on seeds of *Myristica malabarica* for artificial regeneration recorded incidence of the ascomycetic fungal pathogen in stored *Myristica* seeds. Seeds were collected from the natural stands during the months of February - March for four consecutive years of study 2018 to 2021, from Mullaringad forest range in South India with coordinates of 10°1'4" N and 76°47'10" E. Seeds stored in containers detected fungal infection after one month of storage. Mean incidence percentage of 28.75% was recorded in stored seeds collected during 2018. Infection appeared as fluffy, cottony, grayish white patches. Germination characteristics of fresh and stored seeds were evaluated by ANOVA. Fresh seeds recorded a mean germination percentage of 31% and that of infected seed lot was 4.5%. Seed borne fungi *L. theobromae* is a threat in plantation practices of *M. malabarica*. The disease incidence is random in seed lots but has a significant impact in reducing germination. Since *M. malabarica* is listed as vulnerable in IUCN, its propagation requires high consideration.

Why Gandhi?

Edited by

Siby K. Joseph
Dayal Paleri
G Geethika

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This book, *Why Gandhi?* is a collection of essays written by eminent literary figures, Gandhian scholars and noted academics on themes which are of great significance for humanity. We are sure that this book will be a milestone in the dissemination of Gandhian thought and action.

We hope that this book will be warmly welcomed by the Gandhian scholars, researchers, academics and the general public at large.

Naveen Kumar DD
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9

**PRAJAMANDAL MOVEMENTS
AND THE GANDHIAN WAY
IN PRINCELY STATES:
AN OVERVIEW**

TWINCY VARGHESE

Indian National Movement is one of the biggest mass movements that the modern world has witnessed, with several streams of major and minor struggles at different levels intertwined into a multi-layered mass struggle encompassing both violent and nonviolent methods. The revolt of 1857 had created drastic political changes in the governance of the country. East India Company was suspended from its activities, and the nation came under the direct rule of the British Crown. Being subjects of the British Em-



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എഡിറ്റർ:
ഡോ. മിനി ആലീസ്
ഡോ. ഷിമി പോൾ ബേബി

ആമുഖം

ഡോ. മിനി ആലീസ്, ഡോ. ഷീമി പോൾ ബേബി

വൈവിധ്യത്തിന്റെ സാധ്യതകളെ സ്വീകരിക്കുന്ന നിലപാടാണ് സമകാലിക സ്ത്രീവാദചിന്തകൾക്കുള്ളത്. അതുകൊണ്ടുതന്നെ സ്ത്രീവാദമെന്ന ഏകവചനം അപ്രസക്തമാകുകയും സ്ത്രീവാദങ്ങളെന്ന ബഹുവചനം സമകാലിക പഠനങ്ങളിൽ പ്രസക്തമാവുകയും ചെയ്യുന്നു.

19-ാം നൂറ്റാണ്ടിന്റെ ഉത്തരാർദ്ധം മുതൽ 20-ാം നൂറ്റാണ്ടിന്റെ പൂർവ്വാർദ്ധം വരെയുള്ള ഒന്നാംതരംഗ സ്ത്രീവാദം സമൂഹത്തിൽ സ്ത്രീപുരുഷന്മാർക്ക് കരഗതമാകേണ്ട തുല്യാവകാശത്തിനാണ് ഉന്നതംകൊടുത്തത്. രാഷ്ട്രീയവും സാമൂഹികവും സാമ്പത്തികവുമായ തുല്യതയ്ക്കായി അവർ നിരന്തരം പ്രവർത്തിച്ചു. തുല്യ വേതനം, തുല്യ അംഗീകാരം തുടങ്ങിയ നിരവധി അവകാശങ്ങളെ തിരിച്ചറിഞ്ഞ കാലഘട്ടമായിരുന്നു അത്. സ്ത്രീകൾ നേരിടുന്ന പ്രശ്നങ്ങൾക്ക് സാർവ്വലൗകികമായ മാനമുണ്ടെന്ന വീക്ഷണമാണ് ഈ കാലഘട്ടത്തിൽ ഉണ്ടായിരുന്നത്. ഭൗതികമായ നിലയിലുള്ള സ്ത്രീപുരുഷസമത്വം സാധ്യമാകുന്നതോടെ സ്ത്രീജീവിതത്തിന്റെ പ്രതിസന്ധികൾക്ക് അവസാനം ഉണ്ടാകുമെന്ന നിരീക്ഷണമാണ് ഇവർ മുന്നോട്ടുവെച്ചത്. പുരുഷാധിപത്യ വ്യവസ്ഥയാണ് സ്ത്രീയുടെ രണ്ടാം ലിംഗപദവിക്ക് കാരണമെന്ന വീക്ഷണം ഒന്നാം തരംഗത്തിലുള്ളടങ്ങിയിരുന്നു.

1960കളോടെ രൂപംകൊണ്ട രണ്ടാംതരംഗ സ്ത്രീവാദം അക്കാദമിക ഗവേഷണങ്ങൾക്ക് പ്രാധാന്യം നൽകിയിരുന്നു. ഭാഷയും സാഹിത്യവുമുൾപ്പെടെയുള്ള സാംസ്കാരിക രൂപങ്ങളെ സ്ത്രീപരിപ്രേക്ഷ്യത്തിൽ നോക്കിക്കാണേണ്ടതിന്റെ ആവശ്യകതയെ തിരിച്ചറിഞ്ഞ കാലഘട്ടമാണിത്. സ്ത്രീകളുടെ വ്യക്തിപരമായ അനുഭവങ്ങളുടെ രാഷ്ട്രീയത്തിന് ഉന്നതം കൊടുക്കുന്ന വീക്ഷണം രണ്ടാംതരംഗത്തിൽ പ്രധാനമായിരുന്നു. പുരുഷാധിപത്യവീക്ഷണം പുലർത്തുന്ന സ്ഥാപനങ്ങളുടെ നിരാസവും ലൈംഗികരാഷ്ട്രീയത്തിന്റെ തിരിച്ചറിവും രണ്ടാംതരംഗസ്ത്രീവാദത്തിന്റെ സവിശേഷതയായിരുന്നു. മധ്യവർഗ്ഗ സവർണ്ണ ബോധ്യങ്ങൾക്ക് പ്രാധാന്യം കൊടുക്കുന്നു എന്ന വിമർശനം രണ്ടാംതരംഗ സ്ത്രീവാദത്തിനെ

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