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Multidisciplinary Approach in Basic and Applied Sciences (MABAS - 2023)

"Dissemination of Education for Knowledge, Science & Culture"

- Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon

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Honorable Chandrakant (Dada) Patil
(Minister of Higher Education, Govt. of Maharashtra),
President, Shri Swami Vivekanand Shikshan Sanstha, Kolhapur

MESSAGE

I am very happy to know that Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon is organizing an Third International Conference on "**MULTIDISCIPLINARY APPROACH IN BASIC AND APPLIED SCIENCES**" (MABAS-2023) on 23rd and 24th February 2023 at Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon in collaboration with the Department of Biotechnology, Shivaji University, Kolhapur.

I hope scientists and research scholars from varied disciplines will share their knowledge and academic experiences which will be highly beneficial to the students, participants and society.

Good wishes from for the grand success of the conference.

With best regards.

Honorable Prin. Abhaykumar Salunkhe
Executive President
Shri Swami Vivekanand Shikshan Sanstha, Kolhapur

MESSAGE

Heartiest congratulations for arranging Third International Conference on **"MULTIDISCIPLINARY APPROACH IN BASIC AND APPLIED SCIENCES" (MABAS-2023)** on 23rd and 24th February 2023 at Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon with knowledge partner Department of Biotechnology, Shivaji University, Kolhapur.

I am sure that very fruitful deliberations will take place in the conference which will be highly beneficial to the students, participants and society.

Good wishes from Shri Swami Vivekanand Shikshan Sanstha, Kolhapur for the grand success of the conference.

With best regards.

Honorable Prof. (Dr.) D.T. Shirke
Vice Chancellor,
Shivaji University, Kolhapur

MESSAGE

I am very happy to know that Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon is organizing Third International Conference on **"MULTIDISCIPLINARY APPROACH IN BASIC AND APPLIED SCIENCES" (MABAS-2023)** on 23rd and 24th February 2023 at Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon with knowledge partner Department of Biotechnology, Shivaji University, Kolhapur.

The theme of the conference is very vital. I hope scientists and research scholars from varied disciplines will share their knowledge and academic experiences which will be highly beneficial to the students, participants and society. Good wishes for the grand success of the conference.

With best regards.

Honorable Prof. (Dr.) P. S. Patil
Pro-Vice Chancellor,
Shivaji University, Kolhapur

MESSAGE

I am happy to know that Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon is organizing I am very happy to know that Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon is organizing Third International Conference on **"MULTIDISCIPLINARY APPROACH IN BASIC AND APPLIED SCIENCES" (MABAS-2023)** on 23rd and 24th February 2023 at Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon with knowledge partner Department of Biotechnology, Shivaji University, Kolhapur.

It gives me pleasure to wish the success at this conference. I hope scientists and researchers from varied disciplines will share their knowledge and academic experiences which will be highly beneficial to the students, participants and society.

With best regards.

Honorable Prin. Shubhangi Gavade
Secretary,
Shri Swami Vivekanand Shikshan Sanstha. Kolhapur

MESSAGE

I am delighted to know that Padmabhushan Dr.Vasantraodada Patil Mahavidyalaya, Tasgaon of our management is organizing Third International Conference on **"MULTIDISCIPLINARY APPROACH IN BASIC AND APPLIED SCIENCES" (MABAS-2023)** on 23rd and 24th February 2023 at Padmabhushan Dr.Vasantraodada Patil Mahavidyalaya, Tasgaon with knowledge partner Department of Biotechnology, Shivaji University, Kolhapur.

It gives me great pleasure to welcome you at this conference. I hope scientists and research scholars from varied disciplines will share their knowledge and academic experiences which will be highly beneficial to the students, participants and society.

Good wishes from Shri Swami Vivekanand Shikshan Sanstha. Kolhapur for the grand success of the conference.

With best regards.

Honorable Shri. Kaustubh Gavade
Chief Executive Officer,
Shri Swami Vivekanand Shikshan Sanstha. Kolhapur

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Good wishes from Shri Swami Vivekanand Shikshan Sanstha. Kolhapur for the grand success of the conference.

With best regards.

SANJAYKAKA PATIL
MEMBER OF PARLIAMENT (LOKSABHA)

MEMBER
Standing Committee on Water Resources
Consultative Committee, Ministry of Housing and Urban Affairs

संजयकाका पाटील
संसद सदस्य (लोकसभा)

Date- 17/02/2023

MESSAGE

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I hope scientists and research scholars from varied disciplines will share their knowledge and academic experiences which will be highly beneficial to the students, participants and society.

Good wishes from for the grand success of the conference.

With best regards.

Yours Sincerely,

MP Sanjaykaka Patil

MAHARASHTRA : 'Kaka Bhavan', Opp Chintaman Nagar Bus Stop, Near Railway Bridge, Madhavnagar Road, Sangli 416 416. ● Phone : 0233 2312002 ● Fax 0233 2311001
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सुमन आर. आर. पाटील
विधानसभा सदस्य,
तास. तासगाव-कवठेमहांकाळ विधानसभा मतदारसंघ
जि. सांगली

दिनांक 19-2-2023

MESSAGE

I am very happy to know that Padmabhushan Dr.Vasantraodada Patil Mahavidyalaya, Tasgaon is organizing an Third International Conference on "MULTIDISCIPLINARY APPROACH IN BASIC AND APPLIED SCIENCES." (MABAS) on 23rd and 24th February 2023 at Padmabhushan Dr.Vasantraodada Patil Mahavidyalaya, Tasgaon in collaboration with the Department of Biotechnology, Shivaji University, Kolhapur.

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Good wishes from for the grand success of the conference.

With best regards.

(Sumantai R. Patil)
Member of Legislative Assembly, Tasgaon,kavathemahankal
Maharashtra.

निवास – 'आबा सदन', ओजनी, ता. तासगाव, जि. सांगली पिन कोड ४१६ ३१२
निवास : ०२३४६-२६२०६६

Hon. Prin. (Dr.) R. V. Shejwal
Joint Secretary (Admn.),
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MESSAGE

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I am sure that this dual mode (offline and virtual) International Conference will focus on the various scientific tracks covering major areas of research in basic and applied sciences and would become a platform for bringing together administrators, business bodies, policy makers and the members of global scientific community including scientists, researchers and distinguished professors to find out the key problems, challenges and pragmatic solutions which will help in in-depth understanding of the global food security and environmental safety issues in a long-lasting way.

With best regards.

Hon. Prin. S. M. Gawali
Joint Secretary (Fin.),
Shri Swami Vivekanand Shikshan Sanstha, Kolhapur.

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Good wishes from for the grand success of the conference.

With best regards.

Hon. Avinash (Kaka) Patil
Member of Management Council,
Shri Swami Vivekanand Shikshan Sanstha, Kolhapur.

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I hope the deliberations and sharing of the core ideas, experiences, creative imaginations, innovations and formulas of different expertise under different sub-themes will be a milestone for the solutions of ongoing challenging issues of food and environmental security of the world. Indeed, I believe that, such kind of scholarly gatherings could play a vital role in making the world a better place and also make ready to tackle any difficult situations in the near future.

Good wishes from for the grand success of the conference.

With best regards.

Dr. Milind S. Hujare
Principal,
P.D.V.P. Mahavidyalaya, Tasgaon

WELCOME

Shri Swami Vivekanand Shikshan Sanstha was established in 1954 by the great educationalist Shikshanmaharshi Dr. Bapuji Salunkhe with the motto "Dissemination of Education for Knowledge, Science and Culture." and with the aim of imparting education to the people who are deprived of an opportunity of getting education. Today our management is runs 374 educational centers. Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon is one of these centers. The college was started in 1962 with a small strength of 67, now it is more than 5000.

Our college is running 16 UG and 08 PG courses of Arts, Commerce and Science faculties. The NCC, NSS, Gymkhana and Cultural departments of our college are our proud with outstanding performances. The Chemistry, Physics, Botany and Zoology laboratories are recognized as research laboratories by Shivaji University, Kolhapur for M.Phil. and Ph.D. degrees.

It's my great pleasure to inform you that during last two years our esteemed faculty has published several research papers in reputed journals. At the same time our faculty is highly engaged in taking minor and major research projects. Some of faculty has filed their patents for the approval.

Our management has an ever-lasting bond with the society. Inspiration and guidance of the President of our management Hon. Chandrakant Dada Patil (Minister, Govt. of Maharashtra), the executive president Prin. Abhaykumar Salunkhe, the Secretary, Prin. Shubhangi Gavade supports for growth and development of college.

I would like to welcome all of you and wish best success for Third International Conference on **"MULTIDISCIPLINARY APPROACH IN BASIC AND APPLIED SCIENCES" (MABAS-2023)** on 23rd and 24th February 2023 at Padmabhushan Dr. Vasantraodada Patil Mahavidyalaya, Tasgaon with knowledge partner Department of Biotechnology, Shivaji University, Kolhapur.

I would like to thank each of you for attending MABAS-2023 and bringing your expertise to this awesome gathering. You as researcher, have the vision, the knowledge, the resource and the experience to help pave our way into the feature technical actives. Through this conference, I request you to stay engaged, keep us proactive and help us bringing out more such events in future. My personal admiration and gratitude goes out to all of you.

I, on behalf of this college and other organizing associates welcome you all for your active and large participation in this conference to make it a grand success.

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Multidisciplinary Approach In Basic and Applied Sciences (MABAS-2023) | Published by Advent Publishing (https://adventpublishing.in) | ISBN: 978-93-95369-30-5

Diversity of Millipedes (Myriapoda: Diplopoda) In Selected Lateritic Soil Habitats in Satara Tehsil, Western Ghat, Maharashtra

Shaikh N. A.[1], Abdar M. R.[2], Kengar S. B.[3]

[1]Research student, Y.C. College of Science, Karad. 415124
[2]Dept. of Zoology, Krantisinh Nana Patil College, Walwa. 416313
[3]Principal, Yashwantrao Chavan College of Science, Karad. 415124

Abstract

Millipedes are one of the largest arthropod groups present on earth. They are highly diverse, having 12000 described species. Millipedes are one of the most important leaf litter fauna and play the role of decomposers, maintaining soil structure and nutrient cycling. Despite their impactful ecological role and high species diversity, taxonomic documentation of this group is very fragmentary in India. This work is an attempt to record millipede species from the lateritic soil belt of Satara Tehsil during January 2021 to February 2022, Western Ghat, Maharashtra. The study reports the presence of four genes *Anoplodesmus* (Carl, 1932) *Chondromorpha* (Silvestri, 1897) *Trigoniulus* (Pocock, 1894) *Xenobolus* (Carl, 1919) belonging to four species *Anoplodesmus saussurii* (Humbert, 1865) *Chondromorpha xanthotricha* (Attems, 1898) *Trigoniulus corallines* (Gervais, 1841) *Xenobolus carnifex* (Fabricius, 1775) and two taxonomic orders Polydesmida *(*Pocock, 1887) Spirobolida (Cook, 1895).

Keywords: Diplopoda, Diversity, Lateritic soil, Millipede, Satara, Species, Western Ghat.

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"Peanut Shell Extract Mediated Biogenic Synthesis of Palladium Nanoparticles (Pdnps) and It's Application as a Homogeneous Catalyst for the Suzuki-Miyaura Coupling"

Pranoti P. Patil, Utkarsha B. Patil, Utkarsha U. Patil, Shashikant R. Sawant, Rahul A. Kalel*

PG Department of Chemistry, Padmabhushan Dr. Vasantraodada Patil Mahavidyalay, Tasgaon, Dist.-Sangli. Pin. No. – 416 312, Maharashtra, India.

*(*Corresponding author E-mail*: rahulkalel89@gmail.com)

Abstract

The red peanut shell has been well-thought-out as agricultural / food waste. The huge amount of peanut shell waste produced per year in the world. It has been reported in the literature that peanut shell extract contains chlorogenic acid, phenolic compounds, rutin etc. Recently, an eco-coneptual approach to the sustainable development, as a simple and environmental friendly method for the synthesis of nanomaterial attracts mush attention of the researchers. Hence, in the present work, we have synthesized noble metal nanoparticles (PdNPs) using red peanut shell extract as a reducing agent and stabilizer. The formation of NPs was identified by the visual observation of the colour change of solution from faint orange to dark brown. In addition, the formed NPs were characterized by UV-Visible absorption, Infra-red spectroscopic analysis. Further, PdNPs were effectively used as a homogeneous catalyst for Suzuki- Miyaura coupling reaction between bromobenzene and substituted phenylboronic acids. The formation of product has been achieved at the optimum reaction conditions such as- at room temperature, high yield, low reaction time ~ 40 min., and easy separation of catalyst etc.

Keywords: Red Peanut Shell, green method, Palladium nanoparticals, IR, Suzuki- Miyaura coupling etc.

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A Study on Causes and Impact of Laterite Mining on Environment and on the Life of Dhangarwada People in Kudchire Village of Goa State

Mr. Vinay Takale

Govt. High School Kudchire Bicholim Goa

Abstract

Men for the ages have been using the stone. First tool used by men was stone. Though there is a wide use of laterite stone we cannot neglect the negative effect of Laterite mining on environment and on the life of people in the adjoining area. The Dhangarwada is blessed by rich Biodiversity, but recent growing population greed of making more money have destroyed the environment to the great extent. Environment is rich in flora and fauna which is not static for any organism. It keeps on changing due to human activity or natural phenomenon. The ongoing laterite mining have caused impact on the environment. For understanding the causes and impact of laterite mining the study was undertaken in Dhangarwada area. The paper attempts to present both causes and impact of laterite mining on environment and on the life of Dhargarwada people. Data is collected by field observation and personal interaction in the form of questionnaire.

Keywords: Laterite mining, Environment, Causes, Impact, Biodiversity

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Morphological Investigation of Rhyzopertha Dominica Using Light Microscopy and Scanning Electron Microscopy

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Abstract

Every year, large amounts of stored products are destroyed or contaminated due to the presence of arthropods, with beetles being by far the most common group of animals attacking these products. Rhyzopertha dominica is well known as a pest of stored grain throughout the world's warm regions. It can also be found on a wide range of foods, particularly cereals. Both adults and larvae cause the damage. Rhyzopertha dominica adults and larvae primarily feed on stored cereal seed such as wheat, maize, rice, oats, barley, sorghum, and millet. They are also found on a wide variety of foodstuffs including beans, dried chillies, turmeric, coriander, ginger, cassava chips, biscuits and wheat flour. The order Insecta known as Coleoptera is commonly referred to as beetles. They have four wings, with the front pair typically covering the hind wings and being thickened, leathery, or hardened. The adults and larvae have well-developed chewing parts in their mouths. Mandibles can be short and sharp for predaceous behaviors or long and toothed for gnawing on wood or crushing plant and animal matter. The egg, larva, pupa, and adult stages of development are in this order. The majority of larvae are elongated, flattened, or grub-like, in shape. The present study is carried out to study the morphological structures with the help of light microscopy and scanning electron microscopy. External morphology of *Rhyzopertha dominica*is studied under the scanning electron microscope (JEOL/Eo –JSM-6380 PC-SEM scanning electron microscope).

Keywords*:* Morphological study, scanning electron microscopy, Light microscopy and Rhyzopertha Dominica.

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Synthesis of Carbon Dot from Couropita Guianensis (Cannon Ball) Flower and Applied for the Sensing of an Anti-Diabetic Drug Metformin.

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Abstract

Among various nanomaterials, Carbon Dots (CDs) is new emerging star by virtue of their unique structure and fascinating properties and have attracted appreciable interest in different fields such as biological sensing, drug delivery, photodynamic therapy, photocatalysis, medical field, solar cells and sensing hazardous metals etc. Especially the method used for the synthesis of CDs by natural precursors has facile, eco-friendly and low cost. Green fluorescent CDs are prepared by simple bio-derived synthetic method by Couropita Guianensis flower commonly known as Cannon ball tree. These flowers have medicinal values and used in the case cold, cough and sometimes for fever. The phytochemistry of flower shows it has carbohydrates, alkaloids, proteins, flavonoids, tennis etc. The bio-active moieties contain eugenol, farnesol, carotenoids, isatin and indirubin vital to its antimicrobial activities. The synthesized Carbon Dots are characterized by different techniques, and applied for the sensing of an antidiabetic drug Metformin.

Keywords: Carbon Dot, Couropita Guianesis, Metformin.

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Morphological and Histological Cyclic Changes in Theovary of Freshwater Fish: *Channa Gachua*

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.*Department of Zoology Dr. Babasaheb Ambedkar Marathwada University Aurangabad, Maharashtra, India.

Abstract

The present study provides information of the cyclic changes in the ovary of a freshwater fish *Channa gachua*. During different stages of maturity ovary undergoes a series of changes in size color and structure. After fully matured ovary becomes highly vascularized and orange in color.When fully matured ovary occupies 1/3rd of the body cavity. Morphological ovary can be classified into various stages of maturity depending on size, shape and color as Immature or virgin, maturing, mature or ripe and spent phase.Depending on cyclic changes in ovary the spawning behavior is divided into four stages like Preparatory Phase, Pre spawning Phase, Spawning Phase and Post Spawning Phase.

Keywords: Channa gachua, spawning, ovary, atresia.

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Cordyceps Militaris – An Important Medicinal Mushroom

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Abstract

Cordyceps militaris (C. militaris) is an important medicinal mushroom useful for the extraction of several biometabolites. It has so many biologically important compounds such as polysaccharides, cordycepins and others. Due to increasing global demand, research on *C. militaris* has continued to increase in recent years. *C. militaris* has shown the potential for inhibiting inflammation-related events and are beneficial to act principally as pro-sexual, anti-cancer, immunomodulatory, and anti-oxidant agent, both in *invivo* and *invitro* experiments. Inflammation is a multifaceted biological process that contributes to the development and severity of diseases, including cancer, colitis, and allergies. These functions make *C. militaris* a suitable functional food for inhibiting diseases and inflammatory responses. In addition, it has lots of clinical applications. The prospects of this novel mushroom could be used not only for modern medicinal manufacturers, but also for the community people for the betterment of their health.

Keywords: *Cordyceps militaris*; inflammation; polysaccharides; cordycepin.

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Morphometric Analysis of Hiranyakeshi River, Sindhudurg District Using GIS Technology

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Abstract

A morphometric analysis of the watershed is the most recent, authentic and applicable method for identifying the relationships between various properties of the area. The quantitative analysis of river basins provides detailed information on geology, geomorphology, groundwater potential, and basin management. Earth Explorer was used to downloading DEM data for the Hiranyakeshi River. For the morphometric analysis of the Hiranyakeshi River Linear Morphometric Aspects, Aerial Drainage Basin Aspects, and Relief Aspects are used. According to the Hiranyakeshi River's morphometric research, the basin is of fourth order and is currently at an early mature stage. The drainage pattern of the basin is dendritic in nature. The basin has a steep slope, low stream frequency, and high channel maintenance constant. The study's conclusions may be useful to basin managers and planners as they implement soil and water conservation measures.

Keywords: Morphometric Analysis, Hiranyakeshi River, Linear Aspect, Aerial Aspect, Relief Aspect**.**

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Isolation of Urease Producing Bacteria to Produce Biocement via MICP Process

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Abstract

In the present study alkaliphilic bacteria, isolated from paddy field i.e. rich in urea was used for production of biocement. Urea hydrolysis is carried out by enzyme urease and is the most effective way of the generating calcium carbonate via producing CO^{3+} and NH^{3+}. Ammonia increases the pH in the environment causing Ca^{2+}& Co^{3+} to precipitate in the form of calcium carbonate, which can be used as biocement. It is one of the mechanisms of microbially induced calcium carbonate precipitation (MICP). Among the 8 isolates, potent urease producer which can tolerate urea up to 3.5% was used for the study. Tap and Borewell water having hardness of 22mg/ml & 17mg/ml was used for the biocement production. Urease activity was calculated using electrical conductivity method and it was in the range of 1.602-1.901 mS/min. In vitro biocement was produced by isolate(B) by incubating it for 7 days and the biomass precipitated was filtered, air dried and analysed by SEM and FTIR. The present ecofriendly approach can be potentially useful for removal of water hardness along with production of biocement.

Keywords: Biocement, Urease, Hardwater, SEM, FTIR etc.

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Studies on Web Structure of Two Spiders from Family Araneidae in Akola District

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Abstract

Araneidae spiders have world-wide distribution due to their diversified forms, habits and unique pattern of aerial web architecture. Web structure differs significantly among spider species from family araneidae. This unique weaving ability and presence of multiple types of silk in the web attracted many scientists across the world. The gravity affects the designing of the web in the orb web waivers spiders. The spiders choose their web locations with respect to availability of food, vegetation and optimum temperature. Orb web spiders are popular model for ecological research. The present study conducted in the Akola District of Maharashtra, has made a significant contribution towards increasing knowledge of Web structure of spider *Argiope aemula* (Walckenaer, 1841) and *Cyclosa hexatuberculata* (Tikader, 1980) from the family araneidae. This study will help researchers working in this area to do further investigation.

Keywords: web structure, aerial web, behavior, gravity.

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ATTEMPTS TO IMPROVE THE EYE DROPPER DEIGNE FOR BETTER PATIENT COMPLIANCE

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Abstarst

The main aspects to eye dropper adherence is sucesseful instalation of the eye drops, though many patients of various age group struggle with the proper instillation of drop.

Difficulties may include aiming their drops, preventing excess drop leakage, avoid the contamination of bottle tip and generating in a force to expel a drop from bottle .Installation aids are the device that aim for better adherence and to reduce the barriers

The main aim is to improve the patient compliance & the efficacy. Most installation aid studied improved objective or subjective outcome of eyedropper installation including improved rate of successful administration & Increase patient satisfying compared to standard eyedropper bottles.

Some modifications were made in the existing design of eye droppere for better insti1lation.

Problems arising during instillations were identified & probable solutions were design for eye droppers.

Keywords: Eye dropper, patience compliance,new eye dropper designe.

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Aegle marmelos ash: A heterogeneous catalyst for Henry reaction

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Abstract

A simple and green protocol was developed for synthesis of β-nitro alcohols using *Aegle marmelos* ash as a heterogeneous catalyst for C-C bond formation via a Henry reaction under aqueous conditions at ambient temperature. The catalyst was prepared by simple thermal treatment and characterised using different analytical techniques like FT-IR, XRF, SEM, EDS, XRD and TGA analysis. An excellent yield of nitro alcohols was obtained within 15-30 minutes. No dehydrated product was observed confirmed using spectral characterisation. The catalyst used in these studies has the advantage of being a renewable resources material, cost effective, easily prepared, recyclable and environmentally friendly.

Keywords: Aegle marmelos ash, Henry reaction, β-nitro alcohols, Ambient temperature

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BMIM]-Glycine: A Sustainable Benchmark for Multicomponent Chromene Synthesis

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Abstract

We report a novel and highly sustainable approach for synthesis of chromene derivatives using n-Butyl-n-Methyl Imidazole-Glycine (BMIM-Glycine) at ambient reaction conditions. [BMIM]-Glycine plays dual role both as a catalyst and solvent, which enhances the efficiency of the protocol. This versatile method offers a mild, ecological and highly economical alternative to the existing protocols. The strategy adopts all of the principles of green chemistry. To summarize in short, environment friendly nature and multicomponent aspect are the striking characteristics of this methodology.

Keywords: *BMIM-Glycine, Chromene, Multicomponent, Sustainable, Green synthesis*.

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"Hydrothermal Synthesis to Study the Structural, Optical and Luminescence Properties of $S_{1-X}rmoo_4:Xce^{3+}$ Nanophosphor for Photonic Applications"

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Abstract

$Sr_{1-x}MoO_4:xCe^{3+}$ nanophosphors (x = 0.02, 0.04, 0.06, 0.08, 0.10) were studied for their structural, optical, and luminescence characteristics. The hydrothermal method was used to synthesize the phosphor powder. Different characterization techniques were utilized for the finding of structural and optical properties such as XRD, FE-SEM, EDX, UV, and TEM. The tetragonal crystalline structure of the host $SrMoO_4$ composition was confirmed by the XRD. The phosphor absorbs photons in the visible and ultraviolet light spectrum, according to absorption spectra. The strongest phosphor emission is visible in the emission spectra at 421 nm under 266 nm excitation. This emission resulted from the transition of intermediate states between the band gaps of the $SrMoO_4$ host, and its intensity tends to decrease as Ce concentration increases due to electron interaction penetration. Ultra-violet to visible light converters and generators of near UV/visible light are two photonic uses for the $SrMoO_4:Ce^{3+}$ phosphor.

Keywords: Phosphors, Luminescence, Hydrothermal and $Sr_{1-x}MoO_4:_xCe^{3+}$

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Thermodynamic Studies of Interactions of DABCO Based Ionic Liquids in Aqueous Solution At 298.15 K

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Abstract

The wide range of properties and applications of Ionic liquids (ILs) in the diverse fields such as, in synthesis and catalysis, electrochemistry, separation science, material science etc. attracted attention of researchers. The study of ionic interactions of such ILs in the aqueous medium and its effects on the structural changes of solvents is important to learn about the behavior of biological molecules. In present study, we have measured thermodynamic properties such as density and osmotic coefficient at 298.15 K for aqueous solutions of Butyl DABCO bromide in the concentration range from 0.05 to 0. 35 mol.kg^{-1} by using digital densitometer and osmometer respectively. The data obtained from thermodynamic parameters such as apparent molal volume (φ_v), partial molar volume ($\overline{V}$) of solute and solvent, Gibbs free energy etc. of aqueous solutions of ionic liquid. From the study it is observed that, the ion-ion interactions are dominant over the ion-solvent interactions with increasing concentration. The obtained data were further used to calculate ion-solvent, ion-ion interactions and water structural effects.

Keywords: *Thermodynamic, material science, DABCO, ionic Liquids, ion interactions.*

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Nanotechnology; Nanoparticles as key players in medical field for their unique size and different properties

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Abstract

Nanotechnology refers to the study of very small particles, having size of 0.1 to 100 nm. Recently, these materials have emerged as key players in modern medicine, with applications ranging from contrast agents in imaging to carriers for drug, gene delivery into tumors. The advancement in nano technology helps to cure neuro degenerative disorders such as Parkinson's disease and Alzheimer's disease. It is also applicable in tuberculosis treatment, in operative dentistry, in ophthalmology, in surgery, visualization, tissue engineering, antibiotic resistance and immune response. Nanotechnology is helpful in disease diagnoses. Therefore, nanoparticles with antioxidant properties may improve vascular dysfunction associated with hypertension, diabetes or atherosclerosis. It can also compensate for traditional ways of preventing, diagnosing and treating the spread of diseases with the help of nanomachines or nanorobotics. Their unique sizedependent properties make these materials superior and indispensable in many areas of human activity.

Keywords: Nanotechnology, Nanoparticles, nanorobotics, nanomachines

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Dyeing of Silk with Synthesized Derivatives of 3,3-bis(4-(dimethylamino)phenyl)indoline-2-one

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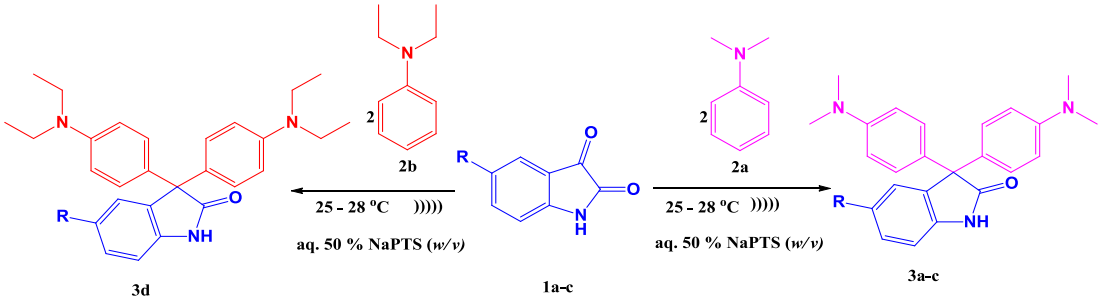
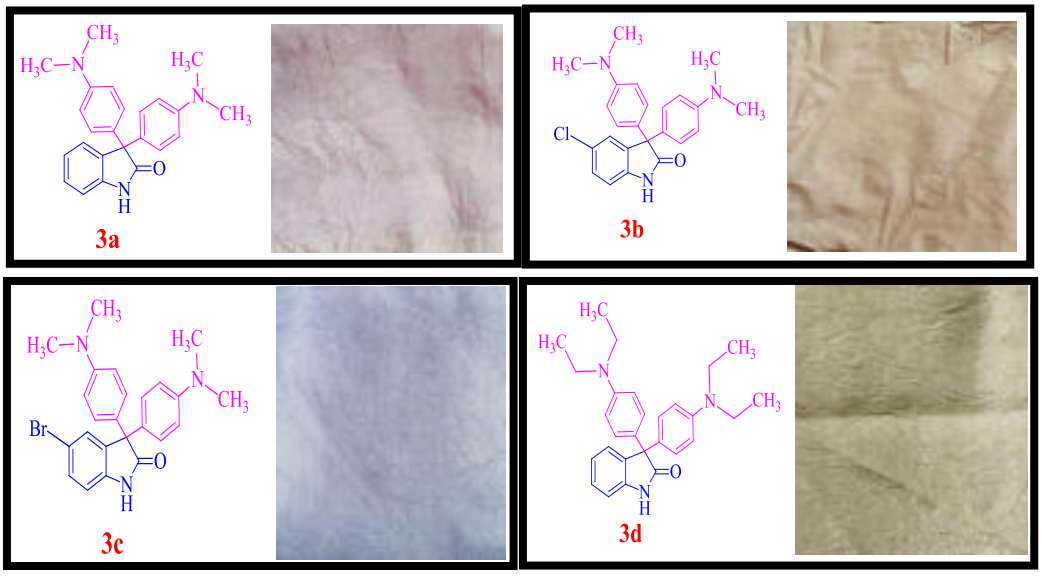
Abstract

Catalyst free synthesis of some triaryl dye derivatives is carried out by using aq. 50 % NaPTS (w/v) hydrotropic solution as reaction medium at room temperature. Reaction between isatin (1 mmol) and N,N-dimethyl aniline (2 mmol) generates 3,3-bis(4-(dimethylamino)phenyl)indoline-2-one derivatives. Further the synthesized 3,3-bis(4-(dimethylamino)phenyl)indoline-2-one derivatives were utilized for dyeing silk fabric.



SchemeSynthesis of 3,3-bis(4-(dimethylamino)phenyl)indoline-2-one derivatives



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Effects of Dietary Inclusion of Synbiotics on Proteincontent, Enzyme Activity and Economic Parametersof*bombyxmoril*

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Abstract

Nutritionhasasignificantimportanceinimprovingthegrowthanddevelopmentofsilkworm *Bombyxmori*.Silkyieldismainlydependentonhealthydiseasefreelarvalgrowthandhighernutritive value of mulberry leaves. Previous studies showed use of synbiotics had highereconomic benefits and reduced mortality in silkworm. The present investigation was carriedwith an objective to determine the impact of fortification of mulberry leaves with Serigrow++(containing Spirulina, yeast extract and probiotic bacteria of Lactobacillus Spp.) at 1000 ppmonprotein content,growth and commercialtraits of B.mori (CSR2 ×CSR4).

Significant increase in various economic parameters like cocoon weight, pupal weight, shellweight and silk filament for treated samples over control were observed. Hence, the results ofpresent study clearly designate the effectiveness of Serigrow++ showed better growth, rearingperformance,development of silkworm larvae,qualityand quantityof silkin*B. mori.*

Keywords: *Bombyxmori*, Serigrow, Synbiotics, Probiotics, Prebiotics, Proteincontent.

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A Literary Review on Medicinal Properties of Alkaloids, Phenols, and Steroids of C*innamomum Zeylanicum*

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Abstract

Cinnamon (*Cinnamomum zeylanicum*) is used as a medicinal remedy because of its nutritional properties. Cinnamon has enough quantity of micro and macronutrient and additionally fatty acids, carbohydrates, amino acids, etc. Phytochemicals which include secondary metabolites, increase their medicinal value. Quantitative and qualitative content material is recognized via different tools like IR Spectroscopy (Infrared spectroscopy), GLC (gas-liquid chromatography), MS (Mass spectrometry), and HPLC (High-pressure liquid chromatography). Scientists and researchers used to detect techniques for the identification of different concentrations of phytochemicals. Phenols, alkaloids, tannins, steroids, flavonoids, saponins, carbohydrates, proteins, terpenoids, coumarins, and some vitamins are found in cinnamon oil, an extract of cinnamon that has excessive medicinal value. These phytochemicals reduce inflammation and microbial activity and also increase antioxidant effects. These phytochemicals contain anticancer, anti-mutagenic, and antidiabetic compounds. Additionally, the preservative compound also detects bacteria and pathogens.

Keywords: *Cinnamomum zeylanicum*, HPLC, phytochemicals, secondary metabolites, anti-microbial, phenols, vitamins, etc.

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Determination of Age and Longevity of Indian Burrowing Frog *Sphaerotheca Breviceps* Inhabiting Sangli District, Southern India

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Abstract

Using skeletochronology, we determined the age structure of adult *Sphaerotheca breviceps*from Sangli district in the breeding season of 2022. Longevity and age at sexual maturity in an Indian population of *Sphaerotheca breviceps*were studied by skeletochronology performed on the phalanges. Frogs collected in 2021 and 2022 by pitfall traps made in sand during monsoon season. These frogs were brought to the laboratory where body mass and body size was measured and simultaneously 4^{th} toes of right limb was clipped and fixed in 10% formalin solution. Clipped toe of each individual frog was leaned, deminerlized and processed for skletochronological process. Number of growth marks was observed from the mid-diaphyseal cross sections of the phalanges. The maximum age recorded was 3-4 years. Among 61, nine (14.75%) individuals with (SVL: 3.9 ± 0.68cm) were completely lack the LAGs. twelve (19.67%) individuals with (SVL: 5.6 ± 0.40) showed 1 LAG each, nineteen (31.14%) frogs with (SVL: 7.2 ± 0.26 cm) exhibited 2 LAGs, fourteen (22.95%) frogs with (SVL: 8.1 ± 0.24 cm) recorded 3 LAGs, seven (11.47%) frogs with (SVL: 9.3 ± 0.36 cm) showed 4 LAGs in the phalangeal cross sections. The presence of either double or tribal LAGs was not noticed. Back calculation indicated that the endosteal resorption rate is very low in this frogs. In some old age individuals showed partially resorbed first LAG. The results suggest that this burrowing frogs may live for a maximum of 3-4 years in the natural population.

Keywords: age estimation, age structure, *Sphaerotheca breviceps*, skeletochronology, tropics

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Asbestos In Talc Leading To Cause of Ovarian Cancer

Sairaj Patil

Abstract

The purpose of the review is to demonstrate the effect of Asbestos present in talcum powder can lead to ovarian as well as breast cancer. The variety of research and review articles from the worldwide authors have been referred for detailed study of cancer-causing agents. We have done the deep study on the Johnson & Johnson baby powder and the level of asbestos as an impurity present in it. From October 2017 to June 2019 total 22 women have been induced cancer. Inhaled asbestos fibers become trapped in the body. The fibers cause diseases such as mesothelioma, ovary cancer and asbestosis.

After thoroughly studying and understanding the case of talcum powders containing asbestos, we got to know that talc which is one of the softest minerals present on Earth if not properly screened for impurities and if it is not properly sterilized than it may cause different types of cancer due to the presence of asbestos as an impurity.

Keywords: Asbestosis, Mesothelioma.

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Study of Diversity of Birds in Chandgad City and Near Area of Chandgad Dist. Kolhapur (Maharashtra)

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Abstract

Present study work is done in Lock down period of COVID-19 and this period was important time for avifauna with less human disturbances. The survey of availability and distribution of bird species in Chandgad city and near area during the lockdown and post lockdown period was carried regularly. the present bird diversity in Chandgad city and near area of Chandgad Tehsil, District Kolhapur (M.S) India was done from March 2020 to June 2021. A total of 80 bird species belonging to 10 orders were reported from study area. The observation shows that bird's diversity from Chandgad city and near forest is rich and greater number. It was also observed that the less pollution, well climatic conditions, cultivated and wild vegetation available in good, which was the important factor for richness of bird numbers and with less human disturbance in the study areas of Chandgad city in Lock down period. During the study period, some migratory birds are also recorded.

Keywords: Bird species, lockdown, post-lockdown, Chandgad city.

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SEASONAL CHANGES IN BIOCHEMICAL COMPOSITION IN THE MUSCLES OF INDIAN MAJOR CARP (IMC) *LABEO ROHITA* (HAMILTON 1822)

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Abstract

The present study deals with seasonal changes in biochemical composition in the muscles of Indian Major carp (IMC) fresh water fish *Labeo rohita* commonly known as Rohu in local language. IMC Rohu collected from Fishermen of Banshelki reservoir of Udgir Tahasil during December 2020 to November 2021 and studied for seasonal changes in biochemical composition in Muscle moisture, Protein, Glycogen and Lipid. Muscles Moisture content in the of *Labeo rohita* is minimum in the month December 2020 and June 2021 (77.00%) and maximum muscle moisture content in the month February (78.00%) with average mean value 77.50%. Muscle Protein content of *Labeo rohita* on dry weight basis is found minimum in the month December (71.8053± 0.432049%) and maximum muscle Protein content in the month May (75.37197 ± 0.124722%) with average mean value 73.68863 ± 0.235391%. Muscle Glycogen content of *Labeo rohita* on dry weight basis is minimum in the September (0.448998 ± 0.028674%) and maximum muscle Glycogen content in the month October (1.105665 ± 0.057927%) with average mean value 0.622887 ± 0.022993 %. Muscle Lipid content of *Labeo rohita* on dry weight basis is minimum in the July (3.295091 ± 0.075865%) and maximum Lipid content in the month October (6.535091 ± 0.065997%) with average mean value 4.646202 ± 0.043241%. The present study may be beneficial in to develop the policies for conservation of *Labeo rohita* and the outcomes may be useful in identification of ideal season for capture of this fish.

Keywords: *Labeo rohita* Moisture, Protein, Glycogen, Lipid,.Seasonal biochemical variation. Banshelki reservoir

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Spinel Ferrite Used In Hyperthermia Application

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Abstract

Spinel ferrites have received special consideration due to their several biomedical applications such as drug delivery and hyperthermia treatment for cancer. Applications involving biology have unique needs. Because it is difficult to identify the iron atoms of the well-known iron oxide from those of hemoglobin, it becomes undesirable. Using mixed ferrites, which have a variety of magnetic characteristics, is a potential solution. Due to their time-saving benefits, low inherent toxicity, simplicity of synthesis, physical and chemical stabilities, and acceptable magnetic characteristics, these ferrites have drawn particular interest. This study provides an overview of the physical ideas of spinel ferrite, the hyperthermia principal, magnetic characteristics, and synthesis techniques of nanosized ferrites based on the significance of ferrite particles in certain spinel ferrite for hyperthermia therapy

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Temperature Dependence D. C. Electrical Resistivity of $Ba_xca_{1-X}zro_3$(X=0.1 - 0.5)

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Abstract

Barium calcium zirconate was prepared by Solution combustion method. The material is synthesized for various compositions of Ba and Ca. The prepared powders were sintered at 900 ℃. The powders were pelletized. The SEM, XRD and Resistivity variation with temperature of Prepared pelletes were studied .The temperature dependent D.C.resistivity was studied for all compositions .(x=0.1-0.5).The result showed the variation of electrical resistance at different temperatures for different compositions. For x=0.3 the switching occurred at 781℃,For x=0.4 The switching occurred at 800℃ ,For x=0.5 the switching occurred at 847℃ .switching behaviour was observed for x=0.3,x=0.4 and x=0.5.For x=0.1 and x=0.2 showed the behaviour of semiconductor.

Keywords: solution combustion method. Switching behaviour

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Some Results of Differential Subordination and Superordination Of Analytic Functions

Miss. Priyanka Jirage

Abstract

The purpose of this paper is to obtain some differential subordination, superordination and sandwich results of analytic funtion using generalized operator.

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New species of Some Black mildew fungi from Western Ghats-III

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Abstract

An attempt has been made to explore black mildew fungi from Western Ghats regions of Kolhapur district. It is revealed that, four species of anamorphic genus like Asterostomella and one species of genus Asterostomula described as species new to science.

Keywords: *Black mildews*; *anamorphs*.

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One-pot synthesis of 2-amino-4H-pyran and its derivatives via ultrasound-assisted using copper nanoparticle fabricated from *Curcuma aromatica* plant extract.

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Abstract

Copper metal nanoparticle production have got a lot of attention due to their wide variety of uses and distinctive features. Copper is a reasonably inexpensive valuable metal when compared to gold and silver, and it also possesses strong antibacterial characteristics. FT-IR and X-ray diffraction were used to characterise the produced CuNPs (XRD). The average particle size of copper nanoparticles was determined to be between 34 and 50 nm. Cu NPs' catalytic activity was evaluated using a one-pot synthesis of 2-amino-4H-pyran with sonochemical aid via a multi component reaction of aromatic aldehydes, malononitrile, and 1,3-dicarbonyl compounds at 70 ^{0}C in presence of ethanol as a solvent. Copper nanoparticles have been examined as a novel heterogeneous catalyst in a variety of reactions. Copper nanoparticle catalysed processes provide advantages over traditional metal catalysed reactions in terms of low catalyst loading, high atom economy, higher yields, lower costs, shorter reaction durations, and catalyst recyclability. From a mechanistic standpoint, it has been demonstrated that the majority of transformations occur via the production of organometallic intermediates during interactions with copper nanoparticles. The current effort entails developing a green approach for the production of Cu NPs as well as 2-amino-4H-pyran.

Keywords: Cu NPs, green synthesis, multicomponent reaction, nanocatalyst, nanoparticle, heterocyclic compounds

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Impact of Various Parameters on Spectroscopic Behaviors of Layer-by-Layer (Self-Assembled) Films

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Abstract

Layer-by-Layer (LbL) deposition of materials by electrostatic self assembly has often been employed used to mutate the surface of several materials. This technique can be extensively used in the construction of nanostructure and easily tailorable two-dimensional and three-dimensional self-standing structures. Due to its compatibility with the construction of highly organized materials and its high versatility, the LbL deposition method was used for the building of new biomaterials and has seen promising applications in biological field. It is important to mention in this context that the spectroscopic and aggregating behavior of such films can be varied by varying a number of parameters viz. *pH*, *ionic strength*, *layer thickness*, *temperature*, *interaction time* etc.

In the present study, we report about the successful preparation of LbL films on solid substrates of a dye based xanthene tricyclic structural motif, formally belonging to triarylmethine dyes family viz. fluorescein (FL) with an inert polymer viz. Poly (acrylic acid) (PAA). In this investigation, the spectroscopic and aggregating behaviors of these films have been extensively studied in the light of UV-Vis absorption spectroscopic study & atomic force microscopy (AFM) by altering various parameters such as *layer thickness (number of layers)*, *concentration, interaction time, pH of the solution etc.* The atomic force microscopic image (AFM) provides compelling visual evidence regarding the role of pH in the spectroscopic and aggregating behavior of LbL films.

Keywords: Layer-by-layer, Azo-dye, FL-PAA, UV-Vis absorption spectroscopy. Atomic Force Microscopy (AFM)

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Effect of Silkworm Excreta stimulus on Plants and their growth performance

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Abstract

Field experiments were conducted for one year to determine the effect of silkworm rearing waste on growth on Hibiscus flower plants present in house in vase. This study consisted treatments of different concentrations by weight including without use of silkworm excreta considered as control and other experimental 7 Hibiscus flower plants. This study resulted in silkworm excreta recorded the large growth of plants and without use of excreta shows less growth. In plants Hibiscus plants longest shoot, greater number of branches, more number of leaves and more no. of flowers are observed as compared to control plant.

Keywords: *Silkworm excreta, Hibiscus, Flower, shoot length.*

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Health Fitness and Wellness

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Abstract

Health, fitness and wellness are the three aspects of each individual which are interrelated to each other. Achieving one leads to the achievement of the second and thus the third is also attained. Whatever the age and gender of the person health depends on the type of food consumed, the amount of rest and exercise the individual is engaged in. it is never too late to begin and adapt a new lifestyle which is healthy.

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Abhrak Bhasma and SiO_2 Mediated Protection of Phospholipid Turnover in Carbon Tetrachloride Induced Acute Hepato-Steatosis and Allied Nephrotoxicity Showing Male Albino Rat

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Abstract:

CCl_4 (3.00ml/kg body wt/day) given for 7 days causes acute hepatic steatosis with associated kidney necrosis. This hepato-steatosis model was used to study Abhrak Bhasma (AB) mediated (10, 20, 30 & 40mg) and drug control SiO_2 (10, 20, 30 & 40mg) mediated turnover of phospholipids in liver and kidney and tracking its transfer through serum phospholipids content in male albino rat. Results indicated AB alone showed no change in normal rat phospholipids in liver, kidney and serum. In case of SiO_2 dose 10, 20mg given alone non-significantly influenced the phospholipids content in liver and kidney. But 30 and 40mg doses increased transitory phospholipids level with low significance.

Phospholipids content of liver were decreased significantly with CCl_4 induced acute hepato-steatosis coupled with deplete in renal phospholipids and reflective transitory rise in serum. Minimum effective dose of AB to normalize the phospholipids levels for liver was 20mg, for kidney it was 10mg and for serum it was 30mg. In SiO_2 treated rats 10mg and 20mg doses showed trend of increased phospholipids in liver and kidney but high doses did not show this trend. Serum levels remained in mirror with the organ patterns and remained high over normal values.

Results are compared and interpreted with AB and SiO_2 protective potencies as appeared through phospholipid metabolism in liver and kidney. Serum phospholipids content indicate the transfer route in protective processes. The results also help to understand structural damage and protection of target organ liver, associated toxicated organ kidney in early phases of induced Non-alcoholic fatty liver disease (NAFLD). It is also discussed with earlier studies of lipid content, free radical and glutathione status of liver and kidney.

Keywords: Abhrak Bhasma, Steatosis, Phospholipids, NAFLD, SiO_2, CCl_4

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Synthesis of chromium-D-phenylalanine complexand exploring its effects on reproduction and development in *Drosophila melanogaster*

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ABSTRACT

Background: Various dietary supplement forms of chromium(III) compounds including chromium-D-phenylalanine ($Cr(D\text{-}phe)_3$) affect insulin function, protein and fat synthesis. These processes are often crucial in normal reproduction and fetal development. Some scientific literature raised concern about the reproductive and developmental toxicities of chromium(III) supplements. However, no studies have thoroughly evaluated the reproductive and developmental effects of chromium complexes. Thus, the present study was undertaken to explore the reproductive and developmental effect of $Cr(D\text{-}phe)_3$ using *Drosophila melanogaster*. **Methods:**$Cr(D\text{-}phe)_3$ was synthesized and characterized by infrared spectral analysis, melting point (DSC) and UV spectral analysis. *Drosophila melanogaster* was raised in corn flour agar medium containing 5, 10, 15 and 20 µg/ml of $Cr(D\text{-}phe)_3$. Effect of $Cr(D\text{-}phe)_3$ was evaluated by determination of larval period, pupal period, percentage of egg hatching, morphometric analysis of egg, larvae, pupae and adults, fertility, fecundity, lifespan and levels of antioxidant enzymes such as catalase, reduced glutathione and superoxide dismutase.

Results: Interestingly the study results indicate that $Cr(D\text{-}phe)_3$ has beneficial effects on reproduction and development in *Drosophila melanogaster* rather than toxicity. $Cr(D\text{-}phe)_3$ significantly improved larval period, pupal period, percentage of egg hatching, morphometric characters of larva, pupa and adult, fertility, fecundity and lifespan in drosophila. Moreover, $Cr(D\text{-}phe)_3$ also significantly elevated the levels of catalase, reduced glutathione and superoxide dismutase in *Drosophila melanogaster.*

Conclusion:$Cr(D\text{-}phe)_3$ supplementation to *Drosophila melanogaster* was found to be beneficial for their reproduction and development. These effects may be attributed to its potentiation of insulin action, protein synthesis and antioxidant properties.

Keywords: Trace elements; chromium complex; chromium (III) compounds; dietary supplements; Antioxidants

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Effect of Am Fungi on Protein, Chlorophyll and Enzyme Activity in Finger Millet under Salt Stress

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Abstract

Soil salinity is a major abiotic stress adversely affecting crop production worldwide due to its impact on plant growth. Salinization of soil is increasing in many parts of the world particularly in arid and semi-arid areasand become a serious problem for agriculture. AM fungi could enhance the ability of plants to cope with salt stress by improving plant nutrient uptake and ion balance protecting enzyme activity and facilitating water uptake. The present study deals with the use of AM fungi in alleviation of salt stress in *Eleusine coracana* L. Garten (finger millet) which helps in increasing crop yield. This study shows increasing concentration of NaCl from treatment T1 toT4 decreased the growth in non-AMF inoculated finger millet plants as compared with AMF inoculated plants from treatment T5 to T8 and T9 (non-treated and only AM inoculated). It is observed that root and shoot protein and chlorophyll content are increased in AMF inoculated finger millet plants. It also effect on enzyme activity particularly SOD activity is higher in AMF inoculated plants and decreased with increasing NaCl concentration in Non AMF inoculated plants but catalase activity (CAT) do not show any significant change with increasing NaCl concentration.

Keywords: Soil salinity, AM Fungi, Finger millet

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Synthesis and Screening of Multifunctional Potential of C-3 Substituted Coumarin Derivatives

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Abstract

We report the synthesis, structural characterization and pharmaceutical activity of C-3 substituted coumarin derivatives. The compounds were significantly active against *Staphylococcus aureus*, *Pseudomonas aeoginosa* and *Candida albicans*. Promising antioxidant activity was observed when compared to ascorbic acid. All derivatives also showed commendable *in vitro* antiproliferative activities against the cells of human cancer cell lines MCF-7, HeLa, SCC-40, COLO-205 and MiaPaCa-2 along with appreciable tumor selectivity with distinct selectivity index. Amongst these analogs 3ACFA and 3ACTA were identified as the most potent with GI50 values of 36.3 and 25.68 µg/ml against HeLa and SSC-40 respectively. Molecular docking studies using cyclooxygenase-2 (PDB ID: 6COX) revealed strong binding affinities for COX-2 active site. Moreover, ADMET properties of the synthesized compounds were determined using the pkCSM and SwissADME online tools and all the compounds had accurate pharmacokinetic profiles. Hence, these -3 substituted coumarin derivatives can be considered for optimization and lead development.

Keywords: Coumarin, ADMET, Antiproliferative activity, Molecular docking

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Aquatic Biodiversity of Nimbavade Reservoir of Sangli District, Maharashtra, India

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Abstract

Wetlands play a vital role in maintaining the biodiversity and lively hood of the human being. Atpadi is one of the drought prone tahsil of Sangli district of Maharashtra. In aquatic ecosystem of Nimbavade, a total number of ten macrophytes were reported. The phytoplankton play an important role in aquatic ecosystem as a primary producers,and have a unique ability to fix inorganic carbon to build up organic substances through primary production. The Chlorophyceae represented by 18 species. The Cyanophyceae members were represented by 07 species. The Bacillariophyceae observed 04 species. Dinophyceae and Euglenophyceae represented by 01 species each. This wetland is secondarily being used for capture fishery. Important major carps, common carp, Chinese carp and 09 local fish species occurred in this reservoir.

There were 24 species of aquatic birds were observed in the vicinity of Nimbavade reservoir.

Attempts have been made to observe the diversity of macrophytes, phytoplankton, fish and bird diversity to obtain the baseline data from Nimbavade reservoir of Sangli district from June 2016 to May 2018.

Keywords: Biodiversity, wetland, Nimbavade reservoir, macrophytes, Phytoplankton, fishes and birds. Sangli district, Maharashtra

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Biodiversity of Aerobiocomponents With Reference To Groundnut Crop at Patan

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Abstract

This study deals with the biodiversity study Aerobiocomponents trapped from the aerosol over groundnut crop at Patan. In present investigation air monitoring over groundnut crop was carried out by Volumetric Continuous Tilak Air Sampler. It is being used extensively for qualitative and quantitative analysis of the microbial content over groundnut at Patan. From January 2012 to May 2012 in Rabi one (R1) season and January 2013 to May 2013 Rabi two (R2) season. During Rabi seasons (R1, R2) air sampling was carried out at Meshtewadi one km away from Patan. Thus for two crop seasons the experiments were conducted. During the period of investigation daily record of temperature, relative humidity and rainfall was maintained, Correlation analyses of the results obtained with the climatic factors indicated that the pollen grains do not correlate with any climatic factors but depend on the phenology of the recorded species. The density of the fungal spores has positive correlation with both temperature and humidity.

Keywords: Biodiversity, aerobiocomponents, Fungal Spores, Pollen Grains, Patan

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Cobalt Oxide (Co_3O_4) Thin Films for Supercapacitor Application

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ABSTRACT:

Among the transition metal oxide materials, cobalt oxide is generally considered to be the most promising material because of its low cost, high energy, density, environmental friendliness, and natural abundance for supercapacitor applications. Cobalt oxide (Co_3O_4) was synthesised on the stainless-steel substrate by the electroless deposition method at room temperature. The deposited films were obtained at optimised preparative parameters with a black colour and good adhesion to the substrates. The optimised uniform thickness film was annealed at 300^0c for 1 hour. The XRD pattern of the annealed sample is observed, giving it a relatively higher intensity. The amorphous nature was confirmed by X-ray diffraction (XRD). The chemical composition of the Co_3O_4 was investigated by Fourier transform infrared (FT-IR) spectroscopy which revels that the strong peaks at 3400 and 1625 cm^{-1}coresponds to surface absorbed water and surface hydroxide in nanoparticle. The other two peaks at 663 and 569 cm^{-1} are attributed to the starching vibration of Co^{2+}-O bond and Co^{3+}-O bond of the cobalt oxide which gives evidence of the existence of the Co_3O_4. A scanning electron microscope (SEM) associated with energy dispersive X-ray (EDX) was used to investigate the annealed sample morphology, particle size, and elemental composition. This shows the clustered growth of shape and sized nanoparticle-like structures and particle size between 15nm to 40nm. The EDS spectrum of the Co_3O_4 thin film, confirms the presence of Co and O elements in the film. The electrochemical behaviour was examined by cyclic voltammetry (CV), Galvanostatic charge-discharge analysis (GCD). The CV curve data showed the supercapacitor nature of Co_3O_4.

Key words : *Cobalt Oxide, electroless method, supercapacitor.*

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Exploring Anti-Inflammatory Properties of Indian Herbs for Treating Rheumatoid Arthritis

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Abstract

Inflammation is a term used when our body shows defense mechanism against any unwanted particles which can cause serious type of harm in our body. When some unwanted foreign material enters in our body, it responds to it. The response may occur in the form of redness, swelling, irritation, itchiness, burning sensation etc. Rheumatoid arthritis (RA) is one of the inflammatory diseases which cause pain in the joints. This disorder is very common and is more reported in women than men. In India, around seven million patients reported RA which is around 1 % of the total population. Although there are several possible treatments and medicine available to cure RA and inflammation related disorders but they are mostly chemical based and can cause various side effects which is harmful for us. The allopathic treatments are successful but it is also causing adverse effects which varies from person to person. So, people are coming towards the ayurvedic or herbal treatments of RA which includes medicinal plants having the potential to treat RA with safer outcomes. In this review article, it is tried to present some characteristic properties of some herbs which are having anti –inflammatory properties and if explore further it will help to diagnose the serious conditions of Rheumatoid arthritis.

Keywords: Inflammation, Rheumatoid arthritis, anti-inflammatory, diagnose, ayurvedic, medicinal, adverse effect, irritation, burning sensation, foreign material.

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Review of Charging Systems for Electric Vehicle

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Abstract

Use of Electric vehicle is popularly used because of their zero pollution, non dependency on traditional fuel sources . Electric vehicles are the best solution over the energy crisis. Charging of electric vehicle is more efficient, Cheaper as compared to Petrol or Diesel vehicle. Electric vehicle contributes in major role in transport of total energy consumption in India. Hence it needs to alternative solution in transport sector. In this paper different charging systems of the electric vehicles are studied. These charging systems are compared based on levels, Infrastructure. This paper aims to study charging systems for electric vehicle.

Keywords: Electric vehicle ,Charging systems.

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Click reaction for 1, 4-disubstituted 1, 2, 3 triazoles

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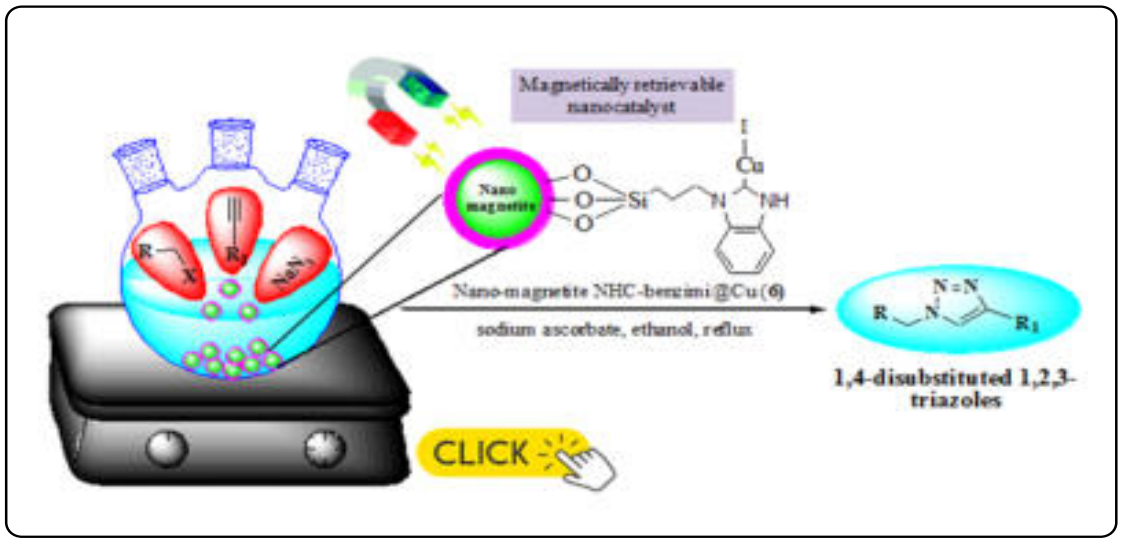
Abstract

In this paper, we report a novel magnetically separable silica coated copper nano-magnetite NHC-benzimi@Cu complex as heterogeneous catalyst for the multicomponent click reaction via Huisgen 1,3-dipolar cycloaddition reaction of alkyl or aryl halide, sodium azide and terminal alkyne, which affords various1,4-disubstituted 1,2,3-triazoles. The multistep repaired nano catalyst has been characterized by various spectroscopic methods such as FT-IR, TGA, EDX, XRD, TEM and VSM. The heterogeneous nano catalyst structures coated on the copper surface are responsible for the excellent catalyst performances in the reaction. The reusability of the catalyst makes the present protocol more fascinating from an environmental and economic point of view.

Graphic ABSTRACT



Keywords: Magnetically retrievable nanocatalyst · Click reaction · Copper iodide · 1,2,3-triazoles · Reusability

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Cyber Security

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Abstract

Cyber security is the process of protecting computers, mobile devices, servers, electronic systems, networks and data from malicious attacks. It's also referred as Information Security (INFOSEC) or Information Assurance (IA) or System Security. This article shows the information on cross cutting issues within cyber security research. The focus has also been made on the three pillars of cyber security i.e. People, Process and Technology. In cyber world threats are constantly new, malevolent hackers are not going to give up anytime soon. As long as there are hackers, the cyber security will remain a trending technology. And to provide the strong need of cyber security professionals, the number of cyber security jobs is growing three times faster than other technical jobs. According to Gartner, by 2025, 60% of organization will use cyber security risk as a primary determinant in conducting a third party transaction. This paper will also put focus on Artificial Intelligence integrated into antivirus to achieve smarter detection and response capabilities.

Keywords- Attacks, Cyber Security, Hackers, Malicious

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Diversity of Wetland Avifauna from Kadegaon Tahsil, Sangli District, Maharashtra

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ABSTRACT

Kadegaon tahsil is situated in Sangli District (17°18′N 74°21′E). Bird occurs throughout the world their presence indicates health of ecosystem. They serve as route to connect aquatic ecosystem with terrestrial ecosystem by nutrient cycling and maintains them stable. They also provide direct and indirect benefits to humans. The present study is attempted to record diversity and status of wetland avifauna from Kadegaon tahsil, Sangli, from 2021 to 2022 in which 48 species of wetland birds were recorded of 12 orders and 24 families during period of study. Among the recorded species 6 were migratory, 10 were residential migratory and 32 were residential species.

Keywords: Wetland, Sangli district, Kadegaon tahsil, Avifaunal diversity.

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DNA barcoding and phylogenetics of freshwater fish fauna of Upper Krishna River, Maharashtra

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Abstract:

The identification of fish species and fish diversity are crucial for fisheries management. However, morphological characteristics-based identification can often be challenging for a non-specialist to achieve. The assessment of DNA barcoding, phylogenetics, and genetic diversity of fish species in the Upper Krishna River, Maharashtra, India, was the focus of the current study. Overall, 81 samples of 25 species, 3 orders, and 5 families were barcoded successfully and were confirmed to be 98–100% identical in both the NCBI and BOLD databases. One fish species was identified to be Endangered, three species as Near Threatened, and one species as Vulnerable out of these 25 fish species. Using R studio, a Neighbour Joining (NJ) tree was created in order to conduct a phylogenetic study of the identified species. To identify cryptic species and assess barcoding success, the K2P barcoding gap analysis was conducted. Utilizing MEGA 6.0, the genetic distance analysis and nucleotide base composition revealed the Upper Krishna River to have a significant genetic diversity. The evolutionary analysis was supported by both molecular information and morphological key distinguishing features. The COI barcode library created in the current work was useful for cryptic species identification as well as species identification and molecular research.

Keywords: *Barcoding gap; Conservation; DNA barcoding; Phylogentics; K2P, Upper Krishna River.*

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Studies on the Electrical and Magnetic Properties of Magnesium Ferrite with Samarium and Dysprosium Substitutes

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Abstract

The present research work describes synthesized Sm - Dy Substituted Magnesium ferrite by a simple and inexpensive Combustion method. This method is one of the most important for the synthesis of nanomaterials. The Combustion method is used to obtain the nanoparticles which possess good chemical homogeneity, high purity, and lower calcination temperature. We have investigated the structural, electrical, and Magnetic Properties of Sm - Dy Substituted Magnesium ferrite. The Mg $[(Sm)_{0.6}(Dy)_{0.4}]_x$ $Fe_{2-x}O_4$, Mg $[(Sm)_{0.5}(Dy)_{0.5}]_x$ $Fe_{2-x}O_4$, Mg $[(Sm)_{0.4}(Dy)_{0.6}]_x$$Fe_{2-x}O_4$ (x = 0.0 to 0.30 in steps of 0.05) ferrite materials were successfully synthesized by chemical combustion route. The presence of nominated peaks in the XRD pattern confirmed the formation of cubic spinel ferrite phase with the presence of ortho-ferrite phase due to rare earth ions. It is observed that the intensity of ortho-ferrite phases increases with an increase in rare earth content.

Keywords: Combustion method,Magnesium ferrite**,** nanomaterials

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Evaluation of E. Coli Contamination in Drinking Water in Chiplun City

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Abstract

Escherichia coli is the primary microbiological water quality indicator in the water sector, and current guidance maintains that it signals recent faecal contamination and various illness. Poor drinking water quality has been linked to a variety of illnesses, brought by micro-organisms that cause diarrhoea, particularly in impoverished areas. In this study, the quadrant technique was used to investigate the association between E. coli and recent faecal contamination in drinking water.

Utilizing E. coli as a measurement tool, the study's goal was to assess if public health is affected by water in Chiplun. For analysis, 8 different samples were collected from places such as hotels, café, stations, and a few other. In general, the study found that, significantly higher E. coli count have the highest illness risk among the water samples that were examined. However, studies demonstrating E. coli growth in the environment has brought this into doubt in terms of public and water safety.The degree to which E. coli interacts with its human in this context is shown with categorization into levels of risk and how it affects Public Health. To conclude with findings from the study, suggested that some of the water sources were very seriously contaminated as compared to others and were above acceptable safely limits.However, studies demonstrating E. coli growth in the environment has brought this into doubt in terms of public and water safety.

Keywords: E. coli, Public Health, Chiplun, Safety

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Morphological and Anatomical Studieson*iphigenia Stellata*blatt

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Abstract

Iphigenia stellata Blatt.belonging to the family Colchicaceae is rare and endangered plant It is reported in the checklist of endemic plants of Maharashtra.. It is commonly known as 'gulabi bhuichakra' or 'ranlasun'. Corms, seeds, leaves and capsules of *Iphigenia stellata* were collected in the month of 18thAugust 2021 from Panchgani, District Satara and state Maharashtra. The present paper gives an account of morphology and anatomy of *Iphigenia stellata* Blatt. Macromorphology, natural seed germination of the plants were studied by using *Iphigenia stellata* Blatt. plant specimen, research articles and book references while studies in the anatomy of root, corm, stem, leaf and structure of stomata in leaf were carried by taking hand out transverse sections of fresh material of root, corm, stem, leaf stained with safranin stain. The slide photography was prepared by utilizing compound microscope with 45 X lens magnification . Cellular details of transverse sections of fresh material of root, corm, stem, leaf showed different types of cell layers like epidermis, hypodermis, cortex , vascular bundles with endodermis, pericycle ,xylem,phloem , pith regions composed with the parenchyma, sclerenchyma and chlorenchymatous types of the tissues. Information regarding the growth, anatomy and cultivation of this medicinally and economically important colchicine containing species is lacking so it is necessary to have detailed knowledge of morphology and anatomy of *Iphigenia stellata* Blatt. for the plant propagation and conservation of the endangered plant species. .

Keywords: Iphigenia stellataBlatt., Rare, Seeds, Corms, Stem, Leaf, Mophology,Anatomy, Cellular details, Table land.

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Air Ion Concentration and Production in winter and Summer Season by Sugarcane and its Effect on Pollution Index at Rural Station Khatav ($16^0 57^{'}$N $74^0 31^{'}$E).

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Abstract

Air ions have charge and electrical conductivity. Air ions are produced by different vegetations among that sugarcane is best for the production of negative air ions. These air ions are measured by Gerdien type air ion counter which is fabricated and developed at A.C.S. College, Palus. Air ion concentration is more in winter as compared to the summer season. In winter Radon is closer to the earth's surface so helps sugarcane to produce more air ions. Air ion production also depends upon Radon concentration, temperature, humidity, and temperature. Actually, negative air ions are helpful for animals and humans but positive air ions are not beneficial. The pollution index is the ratio of the number of positive air ions to the number of negative air ions. The pollution index is treated as an air quality indicator. A pollution index is less than one that is beneficial for us. Air ion concentration in Sugarcane variety CO86032 is found more in winter as compared to summer. Also, the pollution index is 0.79 in winter and 0.93 in summer at rural station Khatav.

Keywords: Air ion, pollution index, Radon, Photosynthesis, positive ions,

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Graphene-supported caffeine-Based N-Heterocyclic Carbene- Nickel complex for C-H arylation of Benzoxazole

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Abstract

Graphene decorated caffeine-Based N-heterocyclic carbene-nickel complex has been prepared by multi-step procedure. The formation of complex was confirmed on the basis of analytical technique such as Fourier transform infrared (FT-IF), Fourier transform Raman (FT-Raman), Thermogravimetric analysis (TGA), energy dispersive X-ray analysis (EDX), Transmission electron microscopy (TEM), Brunauer-Emmett-Teller (BET), X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS). The complex proved to be an efficient heterogenous catalyst for C-H arylation of Benzoxazole with aryl boronic acids. The cycling studies revealed that complex could be reused for six times without significant decrease in catalytic activity.
Keyword N-Heterocyclic carbene – Graphene – caffeine – C-H arylation – Reusability

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Role of Man-Made Wetland in the Livelihood of Adjoining Residents: A Case Study of Alsund Lake (Tal. Khanapur, Dist. Sangli)

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ABSTRACT: Wetlands play an important role in maintaining the ecological balance. They are important water bodies giving the required bases to the various biotic factors of the nature. Ecologically the wetlands are essential to maintain the tropic levels of the aquatic environment. They also support the other components like the birds and surrounding cultivated and wild plants. The wetlands are majorly divided into two categories like the natural and man-made. The man-made wetlands are developed for various conservation and human requirements. These wetlands are found important to uplift the rural farmers by providing them various facilities like the sustainable water to their crops. These wetlands are also maintaining the ground water table and well water level. Some of the wetlands are proved as the fish producing centers, which can helps to get the some employment to the rural unemployed youth. These water bodies are found important for supplying the water for drinking and industrial purpose. In general these man-made water bodies are proved to be important by protecting the aquatic ecosystems and freshwater living resources, including consideration of fisheries, aquaculture, animal grazing, agriculture activities, drinking and industrial water and protecting biodiversity. In the present paper attempts are made to understand the potential importance of a manmade wetland of Alsund (Tehsil. Khanapur of Sangli district of Maharashtra state). The total geographical area of village is 2631 hectares. Alsund has a total population of 4,454 peoples, out of which male population is 2,246 while female population is 2,208. Literacy rate of Alsund village is 73.87% out of which 79.79% males and 67.84% females are literate. There are about 963 houses in Alsund village. Pin code of Alsund village locality is 415 311. The Alsund sand dam has been commissioned on 1993. The length of the Alsund sand dam wall is 4.48 kms. The Alsund wetland has an irrigation capacity of 165 ha. The reserve storage capacity is 114 ha. The water storage capacity is 49.00 TMC and the dead water storage capacity is 6.12 TMC. There are 106 individual beneficiaries/farmers of the water for agriculture. Total of 34.20 ha.land has been benefitted for agricultural water. The benefitted villages by the dam are Alsund, Khambale and Kalambi. The crops in and around the dam are 30% Kharip and 70% Rubbi type. Water of the dam is also used for drinking purpose for the projects like Kalambi Dhavaleshwar, Alsund and for Vita town. The dam has been also used for different varieties of fish culture like Chilapi, Indian carp, Katla - Katla, Rohu and Mrigal etc. Few migratory birds are also recorded. The birds like Yellow Wattled Lapwings, White Egrets are common in the area indicating favorable habitat. From the study it is revealed that these man-made wetlands are potentially important with respect to the agriculture, grazing animals, drinking water, industries, fishing and avifauna of the region. Study also found that these water bodies should be maintained regularly for the efficient and sustainable use. The joint forest management schemes should be developed around these water bodies to fulfill the forest based needs of the neighboring people**.**

Keywords: Alsund Lake, Khanapur Tehsil, Livelihood, Biodiversity and Agriculture.

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Nesting Behavior of Grey Hornbill in South Western Maharashtra

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Abstract

Hornbills are known for their distinctive, large beaks that have a casque, or horn-like structure, on top. The South Western Maharashtra is home to several species of hornbills, including the Indian Grey Hornbill (Ocyceros birostris), the Malabar Grey Hornbill (Ocyceros griseus), and the Great Hornbill (Buceros bicornis). They are play important ecological roles by dispersing seeds and pollinating flowers. The present paper deals with nesting behavior of Hornbill in South Western part of Maharashtra. The present study was carried during year 2022. The nest was observed for 90 days. Information recorded for nest trees included: height of the nest cavity, distance of the cavity from the nearest branch, cavity orientation (compass degrees), diameter of the trunk at the nest, and cavity opening width and length. Hornbills are known for their unique nesting behavior, which involves sealing the female inside a tree cavity with mud and droppings during incubation and chick-rearing. This behavior has important ecological and evolutionary implications for the survival and reproduction of hornbills. Hornbills are highly selective about their nesting sites, choosing cavities that are safe from predators and provide suitable conditions for incubation and chick-rearing. The size and shape of the cavity affects the success of the nesting, with larger and more circular cavities generally providing better conditions for the female and chicks. During incubation and chick-rearing, the female is sealed inside the cavity by the male using mud and droppings, which helps protect the female and chicks from predators and extreme weather conditions. The male provides food for the female and chicks during the nesting period, and both parents play important roles in protecting and caring for the young.

Keywords: Grey hornbill**,** Nesting behavior, South Western Maharashtra.

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Overview of Microsponges for Dermatological Applications

Sourabh Khot

ABSTRACT:

Dermatological disorders have an infinite psychosocial impact, causing significant impairment of patient's life. Topical therapy plays an important role in management of such disorders. Conventional topical delivery systems in overmedication / undermedication, resulting in adverse effects and reduction in therapeutic efficacy. Consequently, researchers are striving towards the event of other delivery systems for dermatological applications. From a last decade, microsponges emerged as an option for topical delivery. Their characteristic flyspeck size offers enhanced benefits, making them superior to the contemporary microcarriers. This review furnishes a comprehensive account of state of the art, important factors affecting the successful performance and mechanism of drug release from topically applied microsponges, along with characterization techniques. Then a list of marketed products and their applications for common dermatological disorders has been presented. In all, this paper is an attempt to a bibliographic foundation for researchers working during this field and foster further investigations during this arena.

Keywords: Microsponges, Acne, Salicylic Acid, Eudragit RS 100, etc

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Microencapsulation of Dimethyl Adipate Phase Change Material for Thermal Energy Storage in Decorative Coating

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Abstract

Rapid advancement in buildings and construction have increases the demand of energy which show negative impact on environments leading to increases the carbon emission and environmental temperature. Thermal energy storage is a useful way for reducing energy supply and demand imbalances. Phase change materials are mostly used in a thermal energy storage system. PCM can absorb and release energy at a constant temperature. In advances, houses were built to keep indoor temperature comfortable in all seasons. Thermal energy storage is the best way to minimize the global warming. In the present work, thermal energy storage decorative paint is prepared using microencapsulated phase change material (MPCM). An in-situ polymerization technique is used to encapsulate dimethyl adipate phase change material. The decorative paint is prepared various percentage of MPCM loading. Dimethyl adipate (DMA) and melamine-formaldehyde were used as core and shell material for polymerization respectively. Sodium laureate sulphate (SLS) is used as a surfactant. The prepared MPCM were characterized using various chemical, thermal, morphological techniques including FT-IR, TGA, DSC, and SEM. The SEM analysis revels spherical morphology and smooth shell surface of microcapsule. Thermal stability of prepared microcapsule increase's confirm by TGA analysis. The decorative coating was prepared with 0 %,5%,10%,15%, and, 20% MPCM loading, and the prepared paint was tested for pencil hardness, gloss, and stain resistances. The thermal energy transfer rate was used to measure how much time coated panel took to reach the equilibrium temperature of 25°C. Coating with 20% MPCM loading revealed good thermal storage capacity in building paint.

Keywords: Thermal energy storage, Phase change Material, Dimethyl adipate, In-situ polymerization

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Effect of Microwave irradiations on germination of Fenugreek seed *Trigonella foenum-graecum*

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Abstract

Microwaves - electromagnetic radiations with frequencies ranging from 300 MHz to 300 GHz. There are many applications of microwaves. Microwaves also cause massive electromagnetic pollution. This paper is an investigation of microwave irradiation treatment on the germination of fenugreek seeds. Fenugreek seeds were exposed to six different microwave exposure periods of 0 to 30 seconds. There was a considerable increase in the germination rate after shorter exposure periods to the microwave. Longer exposure periods reduced the germination rate. The positive effects of microwaves could be of considerable importance for better crop production.

Keywords: Microwaves, seed germination, fenugreek seed

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Novel ionic liquid dihydrogen 4,4′-trimethylenedipiperidine phosphate catalysed greener and efficient synthesis of dihydro pyrano [2,3-c] pyrazole

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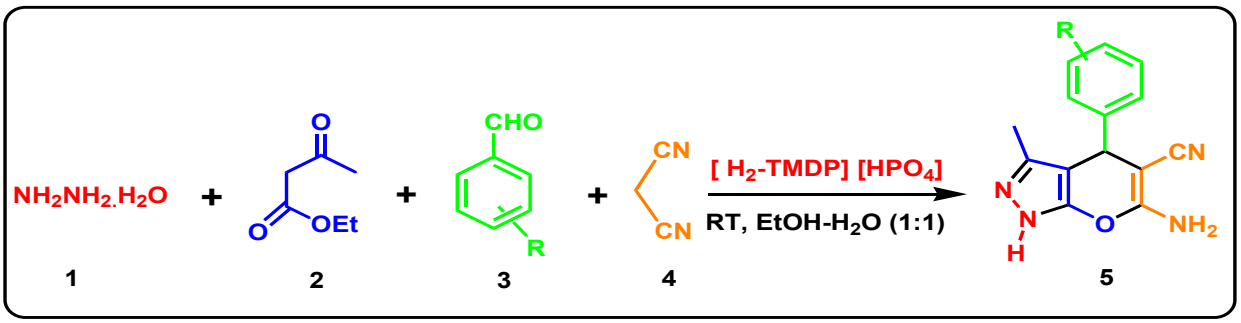
ABSTRACT:-

A novel robust acidic ionic liquid dihydrogen 4,4′-trimethylenedipiperidine phosphate was synthesised from 4, 4′-trimethylenedipiperidine and phosphoric acid. The prepared catalyst was characterized by FTIR, ^{1}H-NMR, ^{13}C NMR and Mass Spectroscopy. The synthesized novel catalyst was found to be competent for synthesis of pyranopyrazole derivatives through one-pot multicomponent condensation of diverse aryl aldehydes with malononitrile, ethyl acetoacetate, and hydrazine hydrate in presence of a catalytic amount of dihydrogen 4,4′-trimethylenedipiperidine phosphate [H_2-TMDP][HPO_4] as an efficient and inexpensive catalyst at room temperature. The novel catalyst proved to be rapid and efficient for synthesis of pyaranopyrazole derivatives attributing to excellent yields of 86-92% within 12-16 minutes. Merits of this meticulously designed protocol are the use of novel ionic liquid, easy work-up process, good to excellent yields, short reaction time, and purification without column chromatography.

Keywords:*Aromatic Aldehyde, Ionic liquid, Pyranopyrazole, Room temperature, Multicomponent*.



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Assessing the Possible Antimicrobial Properties of Two Indigenous Plants of Uttarakhand, *Ficus Auriculata* and *Ficus Palmata*

Namrata Singh and Rashmi Verma*

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Abstract

The indigenous plants of Uttarakhand, *Ficus auriculata* and *Ficus palmata*, have been used as folk remedies for many years. In many villages in Uttarakhand, they are used to cure cuts, wounds, and diarrhea. They are members of the Moraceae family and possess numerous traditional therapeutic benefits. The objective of the current research is to investigate the antibacterial properties of the plants *F. palmata* and *F. auriculata*. *Ficus palmata* is a rich source of flavonoids, polyphenolic chemicals with powerful antioxidant qualities that aid in the treatment and prevention of a variety of oxidative stress-related disorders, including neurological and hepatic conditions. For the purpose of evaluating their antibacterial activity against several clinical human infections, *Ficus auriculata* and *Ficus palmata* from the state of Uttarakhand were examined. The antibacterial activity of plant leaves and stems extracts in Petroleum ether (PE), acetone, ethanol and methanol in polarity order by successive soxhlet extraction technique. Plant extract investigated using the Agar Well / Disc Diffusion method. Plant extracts shown the substantial effectiveness against a variety of harmful microorganisms (bacteria).The largest zone of inhibition was seen in the methanolic extract of the Ficus species out of all extracts. Acetone and Petroleum ether extracts for Ficus species showed moderate activity. According to the current study, *F. auriculata* and *F. palmata* have the ability to protect against microbial diseases. On the basis of the current study, it can be inferred that further research on both plants may be useful in finding a potential source for brand-new, efficient herbal medicines to treat infectious disorders brought on by dangerous human infections. These research results may serve as superior sources for the creation of new drugs.

Keywords: *Ficus auriculata, Ficus palmate*, agar well / disc diffusion method, antimicrobial activity, drug development.

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Organic Farming for Agricultural Sustainability

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ABSTRACT

Agriculture was practiced for thousands of years without use of artificial chemicals. The artificial fertilizers, pesticides, insecticides and herbicides were first created during the mid 19th century. These fertilizerswere cheap, powerful, and easy to transport in bulk. These new agricultural techniques are beneficial in the short term. But had serious longer term side effects such as declines in soil compaction, erosion, and fertility. Besides these certain health problems created with the toxic chemicals entering in the food supply. Today scientists began to seek ways to remedy these side effects while still maintaining higher production in agricultural. The organic farming offers the global promise of a future in which food products and distributed in a healthy, ecologically, sustainable and fair manner. This has resulted humankind has just begun to realize the multiple benefits of organic farming. Forgoing reason this paper focused on the organic food and the increasing popularity of organic fruits and vegetables. The health benefits and other profitable issue of organic farming for agricultural sustainability are significant importance.

Key words: -agricultural sustainability, organic farming,food supply.

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Metal Oxide Composite for Biomedical field

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Abstract

Polyaniline and polyaniline/Iron oxide nanocomposites were synthesized by electrochemical in-situ polymerization technique. The formation of PANI/Iron oxide nanocomposites with regards to the structural properties of the materials were investigated by electrochemical parameters. Iron oxide in polymer matrix.show highest sensitivity. . Its good environmental as well as electrical conductivity tunable by appropriate doping make PANI an ideal active material for biomedical field

Keywords: Polyaniline and Polyaniline, composites, Electrochemical method superparamagnetic.

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Functionalization of Spinal Zinc ferrite and Cobalt ferrite nanoparticles with Chitosan and PEG for Water dispersible bacterial Surface activity

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Abstract

Functionalization of spinal ferrite is main important aspect for water dispersion and bacterial capture or bacterial surface activity. So here in this work we have synthesized zinc and cobalt ferrite nanoparticles by co-precipitation and combustion method then these are functionalized with chitosan and PEG polymers for water dispersion. After physicochemical characterization using XRD,TEM and VSM analysis their formation and surface capping have been confirmed. Furthermore we have elaborated their bacterial surface activity by antimicrobial agar well disc diffusion method higher surface activities have been observed towords E. coli bacteria.

Keywords:*Ferrite,Functionalization bacterial surface activity.*

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Formulation and Evaluation of Whey Based Ready-to-Serve Therapeutic Beverage

Siddika Inamdar, Dr. Vrunal V. More, Rushikesh Shelke

Abstract

Whey has excellent nutritional qualities and bland flavors which is easy to digest and has a unique functionality in a beverage system. The ready-to-drink beverage is formulated with concentrated whey, pineapple pulp along with an adequate amount of sugar, stabilizer, citric acid, and flavor. The health and nutritional benefits of orange further imparts the value to the formulated beverage. To formulate whey -based juice by the incorporation of pineapple pulp and whey powder at the level of 20 per cent, 40 per cent, 60 per cent and 80 per cent proportions.The ingredients range used for this formulation comprised of Whey Protein Concentrate (WPC) 4–8 g, Cane sugar 10–20 g and Guar gum (stabilizer) 0.75–1.25 g in 100 g of concentrated juice. The shelf-life of the final product is carried out both at room temperature (30±2ºC) and refrigeration temperature (7±1ºC) with and without addition of preservatives.

Keywords: Whey protein, Milk protein, Beverage, Shelf life.

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Effect of Biofertilizer changes on DPPH radical scavenging activity of Maize (*Zea mays* L.) Variety African Tall

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Abstract

The objectives of this research were to evaluate the performance of 1, 1- diphenyl - 2 - picrylhydrazyl radical scavenging activity (DPPH) at immaturity and physiological maturity stages, to the correlation studied antioxidant activities.The effect of different biofertilizers such as *Azotobacter* and Phosphate Solubilizing Bacteria (PSB) on 1, 1 - diphenyl - 2 -picrylhydrazyl radical scavenging activity in the Maize (*Zea mays* L.) variety African Tall. Maize cob harvested at dry kernel stage was significant and slightly higher than cob harvest at fresh kernel stage. It revels from the result, significantly different at ($p \leq 0.05$) higher in application of biofertilizers treatments. However, treatment with combined application of *Azotobacter* + Phosphate Solubilizing Bacteria (PSB) biofertilizer (A+P) biofertilizers had the highest 1, 1-diphenyl-2-picrylhydrazyl radical scavenging activity (DPPH) as compaired to control. The DPPH assay measures the ability of the maize seeds to donate hydrogen to the DPPH radical resulting in the DPPH solution. The higher antioxidant activity may serve as a new potential source of nutraceuticals and functional foods. Overall, *Azotobacter* and PSBbiofertilizers improved the quality and Antioxidant activity to a stronger scavenging potential.

Keywords: *Azotobacter,* PSB, African Tall, DPPH etc.

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Evaluation of the Physical, Chemical and Sensory Properties of Raisins Produced From Sonaka and Thompson Seedless Grapes

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Abstract

Grape (*Vitis sp.*) belonging to Family Vitaceae is a commercially important fruit crop of India. Grapes are eaten as raw or they can be used for making wine, raisins, jam, and jelly, which are very nutritious and rich source of minerals like potassium, phosphorus, calcium, magnesium, other micronutrients and different vitamins. Raisins are dried fruits of certain varieties of grapevines with a high content of sugar and solid flash. The color of control raisins is black while after the treatment of $MgCO_3$ Sonaka seedless raisins becomes black color and due to the treatment of $CaCO_3$ it results in development of chocolate brown and K_2CO_3 raisins shows yellowish brown color of Sonaka seedless variety. The raisins of Sonaka are smaller in diameter than Thompson seedless raisins. The wrinkles produced due to $CaCO_3$ and $MgCO_3$ are smaller than the K_2CO_3 treated raisins of both varieties. The sweetness tested by expert panelist indicates that the $MgCO_3$ and $CaCO_3$ pretreated raisins exhibit less sweetener in Sonaka and Thompson seedless raisins. While K_2CO_3 treated raisins were sweeter in two varieties of raisins. The sensory evaluation of raisins by expert panelist indicated that the K_2CO_3 pretreated raisins exhibits yellowish golden color, better elongation long wrinkles and more sweetness. Thus, the pretreated raisins showed its consumer acceptability which improves the market value.

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Phytochemistry of Medicinal Plant: *Withania Somnifera.*

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Abstract

The present communication deals with Pharmacognostical and preliminary phytochemical studies included macroscopic, macroscopy and phytochemical characteristics on whole plant of *Withania somnifera*. The collected plants were washed properly and dried under shade. Macroscopic study was done by observing parameter like colour, odour and taste by necked eyes. Phytochemical investigation revealed the presence of various phytoconstituents in each extract. It shows the presence of Alkaloids, Glycosides, Saponins, Flavonoids, Steroids and Tannins

Keywords: *Withania somnifera*, Phytochemistry, Solanaceae

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Study of Antimicrobial Activity of Michelia Champaca Flower Extract Loaded With Silver Nanoparticles

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Abstract

There is an increasing commercial demand for nanoparticles due to their wide applicability in various areas such as electronics; catalysis, chemistry, energy, and medicine nanoparticles are prepared by a variety of chemical methods which are not environmentally friendly. The extractions of Michelia chamapca flower were performed by Soxhlet extraction method. We report a rapid and convenient method to reductively prepare silver nanoparticles using silver nitrate. In this report we use methanolic and petroleum ether extracts from flower Of Michelia champaca. The extracts showed reducing properties, indicating formation of silver Nano particles which are found to be<200 nm in size. The synthesized compounds are characterized by UV spectroscopy and particle size analyser (PSA, Horibo SZ-100). Silver Nanoparticles of Michelia champaca extracts shows antibacterial activity against Grampositive bacteria Staphylococcus aureus and Gram-negative bacteria Escherichia coli.

Keywords: Michelia champaca, Soxhlet extraction, silver nanoparticles, staphylococcus aureus, E. Coli

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Effect of Carbon and Nitrogen Sources on The Growth of *Sclerotium rolfsii*Sacc., Causing Fruit Rot of Ridge Gourd

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Abstract

Fruit rot of ridge gourd (*Luffa acutangula* L.) caused by *Sclerotium rolfsii*Sacc., has been emerging as one of the biotic threats in the profitable cultivation of ridge gourd field. Therefore, the present study was undertaken with the objectives viz., effect of carbon and nitrogen sources on the growth of *Sclerotium rolfsii*Sacc., The nutritional requirement of the test pathogen was carried out by using various carbon and nitrogen sources. All six carbon sources were significantly utilized by the pathogen. Maltose gave a higher growth rate of both sensitive and resistant isolates while Dextrose showed slightly slower growth as compared to other carbon sources. Among the four nitrogen sources, Magnesium nitrate, Calcium nitrate and Ammonium nitrate were best for the growth of the test fungus while Zinc nitrate significantly inhibits the growth of the pathogen.

Keywords: Carbon, Nitrogen, *Sclerotium rolfsii*Sacc., Ridge gourd.

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Investigation the Diversity of Ants and Their Habitat in Vegetable Farms in Amravati, Regoin (Maharashtra), India

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Abstract

Ants are excellent indicators of disturbance due to their rapid response to changes in the environment. Because there was insufficient information regarding the diversity of ants in this region, the study looked at the diversity of ants in vegetable farms in the city of Amravati (Maharashtra). Given their diversity of species, social habits, and high densities, which contribute to a significant portion of the animal biomes on Earth, ants merit a special place in the study of ecology, including behavior. We attempted a study to assess the ant species richness in a variety of habitats in and around Amravati city because ants can be studied almost anywhere, from forest interiors below ground to the kitchen. Ants were collected from two different habitats with varying disturbance levels withthe help of pitfall trapsand hand collection methods.The present study was carried outduring December 2018 to February 2019. The sampled specimens representing 08 species belonged to 06 genera and three subfamilies. The most diverse subfamily was Myrmicinae (4 genera with 6 species), followed by Dolichoderinae (1generawith1species) and Pseudomyrmecinae (1 genera with 1 species).This study emphasizes the dominancy exhibitedby the subfamily Myrmicinae within the ant communities, due to their ability to adapt todifferentniches.

Keywords: diversity, ants, studyarea, distributions, Amravati, speciesrichness

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Diversity of Spider's Families Fauna in Foothill of Sahayadri Mountain of Wai , (Satara) Area. (M.S, India)

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Abstract

The biodiversity of Sahayadri foothills Wai having more diversity of Spider fauna. The foot hills of Wai characterized by of woodlands, deep vegetation, swamps , moderate rainfall area. Aim of this study to identify and distribution of spider families in this ecosystem. A net collected spider's comprise 6 families and 13 species, sampled from 26 May. 2022 to 26 July.2022 by using Beating, and Sweep netting, Ground hand collection methods. A Species of Gasteracantha (Spiny crab spider) family Araneidae and family Oxyopidae, Tetragnathidae, Theridiidae, Nephiliidae found Wai region. The present study aims to contribute our growing knowledge on the distribution and ecology of spider's communities of Wai region.

Keywords: Spiders family, diversity, Wai, Oxyopidae

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Study of Honey as a Sweet Remedy against Bacterial Supremacy

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Abstract

Different honey samples available commercially in India i.e. Dabur, Himalaya, Patanjali and Madhuban pure organic honey; in local market examined to study their antibacterial property against different bacterial strains including *Staphylococcus aureus, Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa* and *Acinetobacter baumani*; with Agar well diffusion method. All types honey showed inhibitory activityagainst *Staphylococcus aureus* and *Acinetobacter baumannii*. Here comparatively highinhibitory activity shown by Dabur and Patanjali honey against *Acinetobacter baumannii*.Madhuban honey failed to resist E.coli and *Klebsiella pneumonia*. Such difference ininhibitory action may be due to variation in antimicrobial components, source of honey ormay processing of honey or adulteration process. There is further need of quality assessment for the achievement ofbest antimicrobial honey. It is concluded that one can go for all the types of honey inspecially in case *Staphylococcus aureus* and *Acinetobacter baumannii* related bacterialinfection or associated symptoms as a basic and natural medicinal treatment or homeremedies.

Keywords: Honey, *Staphylococcus aureus, Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, Acinetobacter baumani*, Agar well diffusion method.

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Chitosan: Used as a Biopolymer in Complexes for Various Applications

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ABSTRACT

Chitosan is a polysaccharide molecule obtained by the alkaline hydrolysis of chitin. Chitosan is a natural linear biopolymer extracted from the exo skeleton of the sea crustaceans (crabs, prawns, lobsters, shrimps etc.). It is a sea food waste which is produced in abundance at coastal areas. It is the second most abundant polysaccharide next to cellulose.Chitosan is natural water coagulant/flocculent and is able to reduce turbidity, color, clay particles etc. from water. Additionally, considerable savings in chemicals and sludge handling is achieved by using a natural coagulant like Chitosan. Chitosan is a versatile bio polymer with unique structural features. It binds effectively with fine suspended particles, pollutants, bacteria, heavy metals etc.Polymer supported catalyst has potential applications for chemical synthesis, as it switched from homogenous catalyst to heterogenous ones.Major advantages of heterogenous catalyst are easy removal without loss of catalytic activity, and recycling.

In this paper we trace the applications of chitosan and its complexes are being studied the most as they are gaining significance as biochemical, antimicrobial and catalytic reagents. Hence the chitosan as a biopolymer and by considering its unique characteristics, researcher synthesized and used chitosan-based complexes for several applications.

Keywords: Chitosan, Schiff base

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DBUH-I_3 COMPLEX CATALYSED SYNTHESIS OF ARYLIDENE DERIVATIVES OF PYRAZOLE

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Abstract

The new organocatalyst amine-iodine-iodide complex was prepared and used as a catalyst for the synthesis of arylidene derivatives of pyrazole from ethyl acetoacetate, substituted aryl aldehyde and phenylhydrazine. The direct one-step multicomponent efficient synthesis was achieved with remarkable green advantages offered by this protocol such as short reaction time, the broad scope of a substrate, simple experimental procedure and moderate to a good yield of the desired product. The synthesized molecules were confirmed by spectroscopic analysis ^{1}H-NMR and ^{13}C-NMR.

Keywords: DBU-iodine-iodide complex, Pyrazole, Condensation, Arylidene pyrazole, Multicomponent.

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ETIOLOGICAL STUDY OF COLLAR ROT OF PIGEON PEA (*CAJANUS CAJAN*L.)CAUSED BY *SCLEROTIUM ROLFSII*.SACC.

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Abstract

Sclerotium rolfsii, causal agent of collar rot disease has recently emerged as an agriculturally important plant pathogen. It is a potentially serious disease in pigeon pea that occurs when reaches physiological maturity i.e., during flowering. The fungus incites necrotic lesions on stem and girdles the plant at the base leading to premature flower drop leading to complete witling and finally death of the entire plant. The mechanisms of infection remain to be fully elucidated.

The present study investigated etiology of collar rot of pigeon pea caused by *Sclerotium rolfsii* in pigeon pea seed and seedlings using light microscopy. Pigeon pea variety 'Bahar' was used in this study. Histopathological sections of seed, stem, root, and leaves were prepared and stained with safranin and trypan blue. Histopathology of the infected plant parts showed the presence of intercellular mycelia and microsclerotia in the cortex and vascular tissues. The germ tube colonized the plant with growth of seedlings following seed coat, cotyledon, stem, root and leaves. According to the results, the pathogen can penetrate and invade the seeds within 24 h post inoculation.

Keywords: Etiology, Collar rot of pigeon pea, Sclerotium rolfsii. Sacc.

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An Investigation Into The Role Of Cadmium In Increasing Incidences Of Cancer

Rutuja G. Kadam*

Abstract

Heavy metal's are a class of an Non- biodegradable pollutants in the environment that can enter into human bodies through different routes such as food consumption are the main route of exposure. Many of these metals are essential micro-nutrients. Such as Fe Cu, Zn, Cr, and As).but they can become toxic at higher Concentrations. Some Non-Essentiamicro-Nutrients(such as cd. Hg and Pb) which have unknown roles in living organisms, are toxic even at low Concentration. Due to industrialization & urbanization of villages heavy metal pollution & thereby Cancer Cases are increasing. There is need for understanding the root cause of cancer to properly tackle the problem. So, we here with made an effort in this regard. We evaluated the cadmium (cd) content of soil water and food including normal human. and patient tissues to find any possibilities of contamination. The study revealed that cd levels were recorded (0.01 -0.02 mg/kg).in hair sample of patients from Karad Kole. Though the cd. concentration in tested samples is none or low. Further studies however, may be necessary to Establish the Fact. Keywords:- Heavy metals role, Cadmium, Chromium, Types of cancer, etc

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Study and Development of Antibacterial Polyherbal Hand Wash

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Abstract

Skin being the most exposed part of our body requires protection from skin pathogens. The current COVID- 19 pandemic has seen a focus of education and information on handwashing aimed both at people working within the health sector as well as to the general public. Many of the chemical antiseptics are now available in market as alcohol based sanitizers, chlorhexidine products etc., their frequent use can lead to skin irritation and also resistant among pathogens. The aim of present work was to prepare formulations of poyherbal handwash from the leaves of *Blumea lacera* **(***Bhamurda*), *Azadirachta indica* (Neem) and *Ocimum sanctum (Tulsi)*. Patch test of the formulated hand wash shown no swelling, irritation or redness. Comparative study of formulated handwash with marketed handwash found the results with pH 7.76, colour greenish brown, homogenious texture, stable with foam retention of 12 ml and viscosity time in minutes 04: 24. Feasibility of process, utilization of readily available nearby medicinal plants, inherently safeproduct and low product development cost are the key strengths of present work. The screening of anti-microbial efficiency of the formulated poly herbal hand wash have shown potent anti-microbial activity against two different microorganisms*Staphylococcus aereus and Escherchia coli.*

Keywords: Poyherbal handwash, Blumea lacera (Bhamurda),Staphylococcus aereus and Escherchia coli.

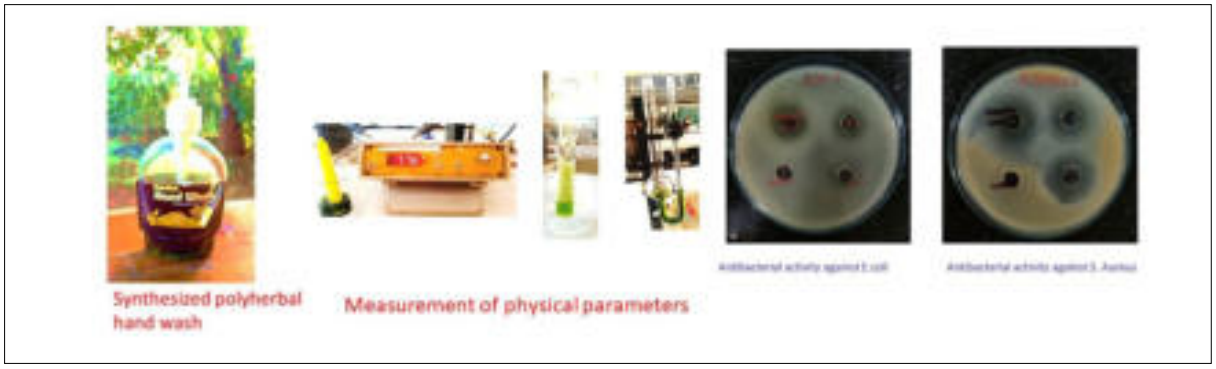

Fig.: Study parameters of new polyherbal handwash

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Overview Of Microsponges For Dermatological Applications

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Abstract

Dermatological disorders have an infinite psychosocial impact, causing significant impairment of patient's life. Topical therapy plays an important role in management of such disorders. Conventional topical delivery systems in overmedication / undermedication, resulting in adverse effects and reduction in therapeutic efficacy. Consequently, researchers are striving towards the event of other delivery systems for dermatological applications. From a last decade, microsponges emerged as an option for topical delivery. Their characteristic flyspeck size offers enhanced benefits, making them superior to the contemporary microcarriers. This review furnishes a comprehensive account of state of the art, important factors affecting the successful performance and mechanism of drug release from topically applied microsponges, along with characterization techniques. Then a list of marketed products and their applications for common dermatological disorders has been presented. In all, this paper is an attempt to a bibliographic foundation for researchers working during this field and foster further investigations during this arena.

Keywords: Microsponges, Acne, Salicylic Acid, Eudragit RS 100, et

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The Occurrence of Genus *Lepidocyrtus, Hypogastrura* Species of Springtails in Phaltan Tehsil, Maharashtra.

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Abstract

The Springtails are the most abundant Apteryogote. insect in the soil mesofauna. They inhabit both on the surface and the depth of the soil. They have great influence in functioning of the decomposer as a result of their feeding activities. They are great bio-indicators of environment. First Indian Collembolan Species described from Malabar Hill region. The present study deals with the Collection of springtails in different habitat such as Agricultural and Barren Land of Phaltan Tehsil, Maharashtra. The Collection is carried out during January 2021 to February 2022. The total 2 genera and 4 species are observed. The genera *Lepidocyrtus* is common genus and one of the largest genera.

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STRUCTURAL ORGANIZATION AND OPERATIONAL IMPORTANCE OF MOUTHPARTS OF*Periplaneta americana.*

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Abstract

American cockroach, *Periplaneta americana* have adapted mouthparts utilised for having different types of food. Cockroach have biting and chewing type of mouthparts, which comprises three types of appendages, a paired mandibles, a paired maxillae, a labium and having auxiliary mouth parts like the labrum and hypopharynx. Cockroaches were collected from grocers shop. Every mouthpart is specialized for different function. Labrum works as a upper lip and labium as lower lip of cockroach. Cutting and chewing of food is done by mandibles. Maxillae having function to hold the food by its claws of lacinia. Hypophyarynx supports movement of food in preoral cavity of cockroach. This present study reports structure and function of diffrerent mothparts which takes part in the process of holding, biting, chewing and movement of the food.

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STRUCTURAL ORGANIZATION AND OPERATIONAL IMPORTANCE OF HEAD AND MOUTH PARTS OF*Penaeus indicus*

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Abstract

Crustacean aquaculture is one of the oldest and economically important industries in the world and prawns contributes a lion's share in it. Indian white prawn (*Penaeus indicus*) inhabits the East cost of India, prawn sample were collected from the local vendors for its external morphological investigation and specimens snaps were captured for examination of external structures. The mouth is slit- like unpaired and median aperture on the ventral side of the cephalothorax. It is encircled by labrum, labium, mandibles, maxillae and first maxillipeds. The present study aimed to learn about the structure and its important features of different mouth parts and appendages of *Penaeus indicus*.

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REVIEW ON NANOTECHNOLOGY IN COSMETICS.

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Abstract

Now a days cosmetics are play an important role to maintain skin health. There is need to promote nanotechnology in cosmetics. “Skin is defined as in body’s first defence against disease and infection and it protects internal organ from injuries.” Nanotechnology is growing science and there is a whole lot to study and research in this field and this is just a begning of future technology which we’ll have in future.

Nanotechnology, the manipulation and manufacture of materials and devices on the scale of atoms or small groups of atoms. In nanotechnology nanoparticles (NP) are easily penetrate in skin and give effective result. In this review we will discuss about skin, cosmetics, nanotechnology in cosmetics, nanoparticles and it’s types, shape of nanoparticles, future aspects, toxicological effect on skin, etc.

Keywords: Nanoparticles, nanosliver, nanogold, hydrogel, nanoemulsion, buckyballs, nanoemulsion.

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Photocatalytic Applications of SpinelFerrite Nanoparticles for Wastewater Remediation

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Abstract

There is widespread concern over the presence of different pollutants in industrial wastewater outflow. It has long been difficult to treat and remove harmful organic pollutants such dyes, phenols, chlorophenols, and nitro-phenols. This is especially true when exposed to visible light. Several investigations have shown that these pollutants might be eliminated utilizing a photocatalytic method with SFNPs. Stability and persistence under photo-irradiation are crucial requirements for these photocatalysts'. SFNPs employ visible light energy and readily transform it into chemical energy to facilitate oxidation and reduction due to their low energy band gaps. Organic pollutant removal and degradation via photocatalysis are thought to be simple, effective, and ecologically acceptable methods. SFNPs are noteworthy because they can be utilized as photocatalysts (without any modification), in composites (with semiconductors surface-coated), and in the presence of oxidants like H_2O_2. Actually, when combined with other light-sensitive strong oxidants and semiconductors, their high photodegradation capability of pollutants is much strengthened. Recently, it was revealed that green-synthesised Fe_3O_4 MNPs could degrade the dye methylyne blue (93%) in approximately 75 minutes [1]. These MNPs also successfully reduced the 80 ppm load of Cr(VI) in 25 minutes; with the addition of a chelating agent, this time was reduced to 15 minutes.

Keywords: Ferrite nanoparticles, wastewater treatment, dye degradation, photocatalysis.

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[1] Rupali Chavan et al; 'Development of magnetically recyclable nanocatalyst for enhanced Fenton and photo-Fenton degradation of MB and Cr(VI) photo-reduction' *Mat Chem Phys* 293 (2023) 126964.

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CHARACTERIZATIONS OF $\propto^{A}$ - IDEALS IN A - DISTRIBUTIVE LATTICE

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Abstract

α^{A} - Ideals in a - distributive lattices is defined. To support the theory some examples are illustrated. Obtain characterizations ofα^{a}-ideals in a- distributive lattices.

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DBUH-I_3 Catalyzed Synthesis of Thiosemicarbazide Derivatives

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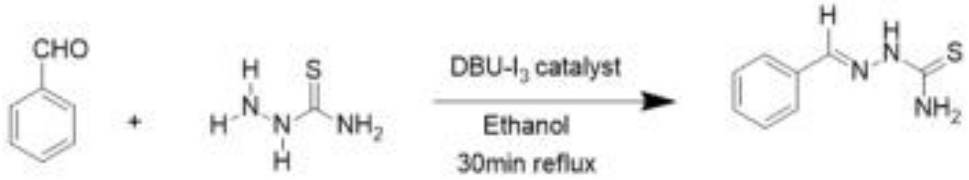
Abstract

A series of thiosemicarbazone (TSC) derivatives were synthesized by using novel DBUH-I_3 catalyst. TSC derivatives are obtained by condensation of thiosemicarbazide with suitable aryl aldehyde. Thiosemicarbazones are very important compounds due to their pharmacological properties. The present protocol has offered some advantages over other reported protocols such as the mild reaction condition, commercially available precursors, inexpensive catalyst, short reaction time, the broad scope of the substrate, high yield, simple isolation of the product, and environmentally benign method. The product was characterized by using IR and NMR spectroscopy. The ^{1}H and ^{13}C NMR analysis of the synthesized compound were unambiguously assigned.

Keywords: thiosemicarbazone, DBUH- $I_{3,}$, semicarbazide.

Scheme: Synthesis of thiosemicarbazone derivatives



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WASTE MANAGEMENT IN GARMENT INDUSTRY THROUGH ZERO WASTE PATTERN CUTTING (ZWPC)

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Abstract

Zero waste management is used for maximizing resources value, while minimizing environmental impacts. It is used in various sectors including waste management in garment industry. Garments (dresses) are made up of fabric; process of making garments follows as; selection of suitable fabric, pattern designing, pattern making and cutting as per pattern, joining these patterns by stitching, fusing or other techniques making the garment ready to wear. In this entire process almost at every stage we observe wastage in one or other forms like fabric wastage, toile, and papers used pattern marking, underutilization of manpower and available resources. Waste generated from garment industry is of two types' pre- consumption and post consumption. Fabric is the major concern compared to other forms when we speak about wastage in mass production as well as customized garment making. About 15% percent fabric wastage is produced out of this garment making process every year which estimates about millions of meters of fabric. This waste can neither be recycled nor up cycled, but it significantly increases the cost of ready to wear apparel and leads to Landfills or environmental pollution. In fashion industry the waste can be reduced substantially either by diminished consumption, recycling, up-cycling or use of advanced production processes. Designers and pattern cutters cannot see the waste, it is only known after the garment has been designed and manufactured. In order to overcome these issues pertaining to wastage produced in apparel making, a Zero- Waste Pattern Cutting ZWPC approach may give us the breakthrough. ZWPC in garment making can be effectively applied in pre-production process. ZWPC demands selection of suitable patterns, latest technologies such as computer aided designing and skilled manpower. With effective application of ZWPC wastage will be reduced, ultimately cost of the final product will be reduced moreover proper utilization of existing resources will be achieved. This can be applied in mass and customized scale of garment production.

Keywords: ZWPC, fashion, garments, wastage, landfill, mass production.

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Z-ELEMENTS IN LATTICE MODULES

C S Manjarekar and U R Biraje

Abstract

In this paper we introduce the concept of Z-elements which is generalization of Z-ideals in commutative ring. Various characterizations of Z-elements are obtained. If M is section semi complemented lattice modules such that $\bigwedge\{N \mid N \in \max(M)\} = 0_M$ then it is shown that every element of lattice module M is Z-element.

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Spinel Ferrite Used In Hyperthermia Application

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Abstract

Spinel ferrites have received special consideration due to their several biomedical applications such as drug delivery and hyperthermia treatment for cancer. Applications involving biology have unique needs. Because it is difficult to identify the iron atoms of the well-known iron oxide from those of hemoglobin, it becomes undesirable. Using mixed ferrites, which have a variety of magnetic characteristics, is a potential solution. Due to their time-saving benefits, low inherent toxicity, simplicity of synthesis, physical and chemical stabilities, and acceptable magnetic characteristics, these ferrites have drawn particular interest. This study provides an overview of the physical ideas of spinel ferrite, the hyperthermia principal, magnetic characteristics, and synthesis techniques of nanosized ferrites based on the significance of ferrite particles in certain spinel ferrite for hyperthermia therapy.

Keyword: Cancer**,** Hyperthermia, Ferrites

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Synthesis and characterization of spray pyrolysed $Ni_xZn_{1-x}Fe_2O_4$ thin films

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Abstract

Thin films of $Zn_{1-x}Ni_xFe_2O_4$(where x = 0.0, 0.2, 0.4, 0.6, 0.8, 1.0) have been prepared using a spray pyrolysis technique onto the quartz substrates. The Rietveld powder structure refinement analysisof $Zn_{1-x}Ni_xFe_2O_4$ thin films was carried out by X-ray diffraction data. Lattice parameter decreases with composition. Based on the occupancy of the atoms cation distribution was proposed. The X-ray photoelectron study shows the binding energy are in agreement with the Fe 2p1/2 and having the satellite structure.

Keywords: $Ni_xZn_{1-x}Fe_2O_4$ thin films; Rietveld Analysis; Dielectric Properties; Magnetic properties.

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Zinc Ferrite is an Efficient and Recyclable Catalyst for the Synthesis of 2, 4, 6-Triarylpyridines under Solvent- free Conditions

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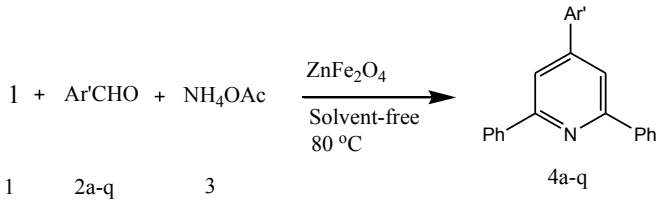
Abstract

Kröhnke pyridines have been widely used as photo sensitizers [1], chemo sensors [2], and intermediates in the synthesis of luminescent materials, herbicides, insecticides, surfactants, and therapeutic drugs [3]. The methods for the synthesis of 2,4,6-triarylpyridines involved catalysts such as cyanuric chloride, PPA-SiO_2, $H_{14}[NaP_5W_{30}O_{110}]$, PEG1000-DAIL, ionic liquids, PFPAT, TrCl, ZnO nanopowder, Fe_3O_4@TiO_2@$O_2PO_2(CH_2)_2NHSO_3H$ or $HNTf_2$, AcOH, DBH, $MgAl_2O_4$ nano-crystals and exclusive of catalyst. Even though above methods have their own merits, most of them are associated with one or more weaknesses such as use of precious and commercially unavailable catalyst, use of organic solvents, tedious work up procedures, high reaction temperature and time.

In continuation of our work on ZnO [4], we report here a simple, efficient and clean one pot three component procedure for the synthesis of 2, 4, 6-triarylpyridines in presence zinc ferrite ($ZnFe_2O_4$) as heterogeneous catalyst under solvent-free conditions.



Scheme 2

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Synthesis of Benzimidazole and Benzothiazole Derivatives Catalyzed by Wet Zinc Ferrite under Solvent Free Conditions

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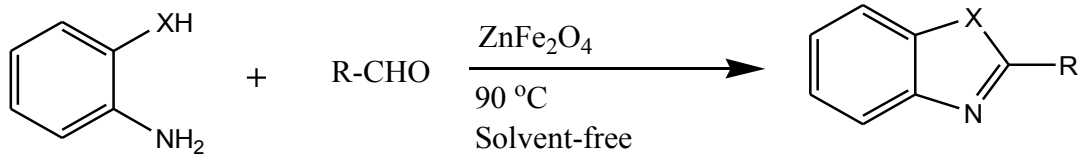
Abstract

Benzimidazoles and benzothiazoles are fundamental N-heterocycles. Their framework serves as key intermediate in several organic reactions[1].They have shown a broad spectrum of pharmacological activities such as antiulcer, antihypertensive, anticonvulsant, and antdiabetics.[2] The most classical rout applied in the last decade involved cyclo-condensation of *o*-phenylenediamine or *o*-aminothiophenol with aldehydes using catalysts such as nano-ZnO/nano-Al_2O_3 /nano-ZMS-5 (EtOH, reflux), $MgCl_2.6H_2O$/THF, Al-PILC/MeOH, DDQ/acetonitrile, Poly(melamine-formaldehyde)/toluene, TiO_2-ZrO_2/acetonitrile, NaCN/DMF,$TiCl_3$(OTf)/ethanol,Au/CeO_2/tirfluorotoluene, $Ce(NO_3)_3.6H_2O$/DMF, and Au/TiO_2 nanoparticles/ $CHCl_3$:MeOH. In continuation of our research on the development of environmentally benign synthetic methodologies using metal oxides,[3,4] we report here a convenient protocol for the synthesis of benzimidazole and Benzothiazole derivatives using zinc ferrite ($ZnFe_2O_4$) as a heterogeneous catalyst in aqueous medium.



1 2 3a - z
26 examples

X = NH, S

Scheme 1

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Condensation-Aromatization for Synthesis of 2-(4-nitrophenyl)-1H-benzimidazole by Silica Immobilized Brønsted-Lewis Acidic Ionic Liquid (Si-BLAIL)

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Abstract

Herein, taking the advantageous of both Brønsted and Lewis acidic site of Si-BLAIL the condensation-aromatization reaction has been carried out. The striking distinctiveness of work is optimum reaction condition, easy work-up, high yield, catalyst recyclability, non-inertness of reaction flask, simple catalyst loading method. The decreases in the amount of catalyst and reaction time shows good to high (71% - 93%) yield suggests about the involvement of some interesting mechanism such as cooperative catalysis. The mechanism has been hypothesizes as, the Si-BLAIL increase the efficiency of condensation reaction possibly by providing the proton in 2-position of cationic imidazolium ring of BLAIL through the hydrogen bond interaction with carbonyl group and nucleophilic activation during aromatization by hydrogen bond acceptor ability of Lewis adduct anion of BLAIL. The catalyst Si-BLAIL shows massive affirm for industrial applications. The Si-BLAIL has identified as the best acid catalyst for 2-(4-nitrophenyl) benzimidazole synthesis with additional benefits of cooperative catalysis.

Keywords: Cooperative catalysis, Heterogeneous catalyst, SEM, BLAIL, equivalence point etc.

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An Efficient One-pot Synthesis of Quinazoline Derivatives Catalyzed by Wet Zinc Ferrite under Solvent Free conditions

Ashwini J. Gaikwad[a] and Parmeshwar E. More[a]*

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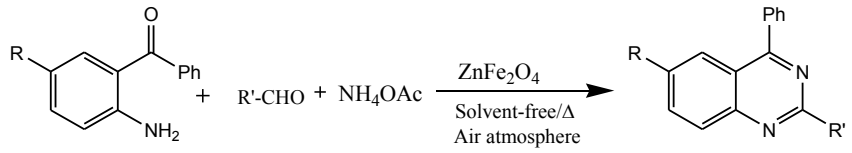
E-mail: drpemore@gmail.com

Abstract

Quinazoline (or 1, 3-diazanaphthalene) is a core component of many naturally occurring alkaloids [1] and life saving drugs [2]. Several appropriately substituted quinazoline derivatives have been shown to have antifungal, anti-malarial, antihypertensive, antiviral, anti-inflammatory, anticancer, antibacterial, and anti-tuberculosis activities [3]. In general, these methods were found to suffer from the use of commercially unavailable starting materials, multistep reaction procedures, higher reaction temperature and time, lack of selectivity, hazardous volatile organic solvents, toxic and expensive metal catalysts. In continuation with our work on the development of environmentally benign solvent-free reactions [4],we report here an efficient one-pot three component synthesis of quinazoline derivatives catalyzed by wet zinc ferrite ($ZnFe_2O_4$) under solvent free conditions in an open atmosphere (*Scheme1*).



1 2 3 4

Scheme 1

R = H, a
R = Cl, b

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WATER QUALITY STATUS OF UJANI RESERVOIR, MS. INDIA, WITH SPECIAL REFERENCE TO PHYSICO-CHEMICAL PROPERTIES

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[2] Principal, MJS Mahavidyalaya, Shrigonda, Ahmednagar, MS. (India)

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Abstract

The Ujani reservoir is main source of water to Pune, Ahmednagar and Solapur districts for different purposes like agriculture, small scale industries, electricity generation, drinking water, fishing and tourism. Bimonthly changes in physico-chemical parameters of water like temperature, pH, total dissolved solids (TDS), alkalinity, Calcium hardness, Magnesium hardness, total hardness, Nitrates, Chlorides, Phosphates, dissolved Oxygen (DO), biochemical oxygen demand (BOD) and electrical conductivity (EC) from fifteen different sampling sites including backwater wetland sites along Bhima river basin and catchment area of Ujani reservoir were analyzed for two years from November 2020 to September 2022. The sites selected for study were Daund (S-1), Ajnuj-Devulgaon (S-2), Pedgaon (S-3), Baradgaon Sudrik (S-4), Khed-Shimpora (S-5), Rajegaon-Bhigwan (S-6), Khanota (S-7), Diksal (S-8), Kondhar Chincholi (S-9), Kumbhargaon (S-10), Dalaj (S-11), Palasdeo (S-12), Parewadi (S-13), Chikhalthan No.1 (S-14) and Shiral (S-15). Most of the physic-chemical parameters at some selected sampling sites were beyond permissible limit prescribed by IS, ICMR, BIS and WHO, indicating the water quality is neither potable nor suitable for irrigation purpose. Seasonal variations in physico-chemical parameters play vital role in structuring the biological community in and around the water bodies. Similarly, these factors played an important role in structuring aquatic bird biodiversity.

Keywords: Bhima River, Biodiversity, Physico-chemical properties, Ujani reservoir, Wetland.

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Zinc ferrite catalyzed highly efficient and convenient synthesis of quinazolin-4(*3H*)-one derivatives under solvent-free conditions

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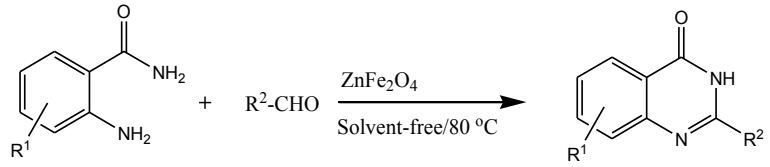
[a]*P.G. Department of Chemistry, Agricultural Development Trust's, Sharadabai Pawar Mahila Arts, Commerce and Science College Shardanagar, Baramati-413115*

*e-mail: drpemore@gmail.com

Abstract

Quinazolin-4(*3H*)-ones are privileged structural motifs [1].Quinazolinones have been reported to possess biological and pharmaceutical activities such as antimicrobial [2], anti-malerial, anti-tubercular, anti-hypertensive, sedative, and anticancer [3]. The most classical route leading to synthesis of quinazolinone derivatives involved condensation of 2-aminobenzamide with aldehyde followed by the oxidation of aminal intermediate. However, these procedures were found to suffer from use of organic solvents and excess amount of toxic bases or hazardous oxidizing agents such as DDQ [14], $KMnO_4$, MnO_2, CuCl, I_2/DMSO/O_2, Cu_2ZrO_3, $PhI(OAc)_2$, t-BuOOH, $Bi(NO_3)_3.5H_2O$, $[Fe_3(BTC)(EDB)_2.12.27H_2O]$, and DMSO. In continuation of our ongoing contribution towards the development of environmentally benign solvent free synthetic methodologies [32-34], we report here the synthesis of quinazolin-4(*3H*)-ones *via* oxidative cyclo-condensation of 2-aminobenzamide with aldehydes by using environmentally benign zinc ferrite ($ZnFe_2O_4$) as a catalyst under solvent-free conditions (Scheme 1).



1 2 3a-t

Scheme 1

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A dry ash induced green synthesis of 1,5-benzodiazepines

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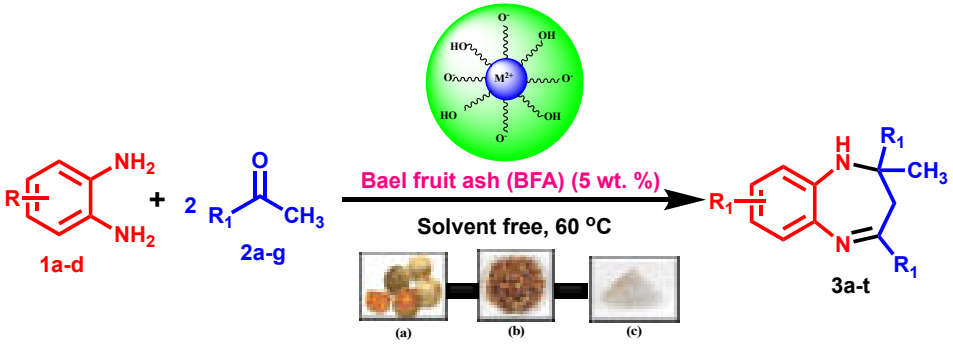
Abstract

Herein, we explore the synergetic effect of bael fruit ash (BFA) as a natural agro-waste biodegradable feedstock for one-pot multicomponent synthesis of bioactive 2,3-dihydro-1*H*-1,5-benzodiazepines via pseudo three-componentcyclocondensation of aromatic 1,2-diamines with radially available ketones containing active methyl or methylene group respectively under solvent-free conditions at 60 °C. To the best of our knowledge, the pronounced synergetic effect of dry bael fruit ash as non-conventional catalyst is being described for the first time. The reaction proceeds in neat BFA under solvent-free conditions in very short reaction times, and therefore, it is an evergreen and environmentally sound alternative to the existing protocols for 1,5-benzodizepines synthesis.



Keywords: *Pseudo three-component reaction, 1,5-benzodiazepines, bael fruit ash, natural resource, heterogeneous catalyst, Green chemistry.*

References

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Photocatalytic degradation of methylene blue dye using GO-Ag_2O/TiO_2 nanoparticles synthesized from *Jatropa curcas* leaf extract.

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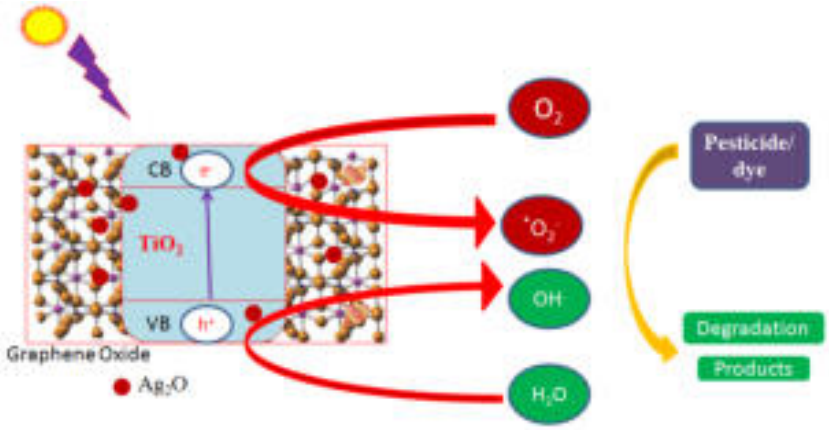
Abstract

In present study degradation of methylene blue on TiO_2 nanoparticles decorated with Ag_2O on graphene oxide surface is reported. The catalyst was prepared using *Jatropa curcas* leaf extract as reducing and caping agent.[1] Graphene oxide (GO) was synthesized by low temperature hydrothermal method. GO gives the surface area for the adsorption of dyes and also play role in photodegradation by capturing electron.[2] Characterization of synthesized material was carried out using different analytical such as SEM-EDS, X-ray Powder Diffraction (XRD), BET and FTIR analysis. The catalyst shows impressive photocatalytic performance for degradation of methylene blue dye. It was observed that the catalyst GO-Ag_2O/TiO_2 gives 79.81 % degradation of methylene blue after 65 minutes under control conditions.

Keywords: Photocatalytic Degradation, TiO_2, Dye, Nanoparticles, Graphene oxide.



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"DIVERSITY AND ASSESMENT OF INDIGENOUS LOCAL MEDICINAL PLANTS FROM RELIGEOUS HILLS IN HATKANGALE TAHSIL".

S. T. Ingle

(Dept. of Botany, D. K. A. S. C. College, Ichalkaranji, Dist. - Kolhapur-416115) (M. S.)

Abstract

Hatkanangle tahsil is popular for holy places in Kolhapur district. The holy places are Bahubali hills, Ramling hills, Babu-Jamal Darga hills, Dhuleshwar hills, Raspeeth hills (Buddha Hills, Narande hills are situated in outsources of Sahayadri ranges of Western Ghats. The tops and Plains in these holy places ranges comprising deep black soil while slope comprising gravel soil. An attempt has been made for survey and documentation of medicinal Plants in religious holy places like as Babujamal darga hills, Ramling hills, Dhuleshwar hills, Bahubali hills, Raspeeth hills, Tal. – Hatkanangale, Dist. Kolhapur which has great significance in utilization of wild resources of Etano-medicinal plants and local medicinal plants Jaddi-Butti. During the Study survey, 165 plants assessed by Quadrate method. These are found to have medicinal values as remedy for different health problems to local people. It is revealed that, these wild resources (medicinal plants) are utilized by local people as per their needs. These medicinal plants are very popular in local peoples and farmers. These plants are commonly in daily problematic incidents.

Keywords:

Babujamal darga hills, Ramling hills, Dhuleshwar hills, Bahubali hills, Raspeeth hills (Buddha hills, Local - medicinal plants, Assessment.

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Isolation of urease producing bacteria to produce biocement via MICP process.

P.S. Rayate[1,2], B.A. Bhanjale[3], S.S Yeulkar[4]

[1,3,4] *P.G Department of Microbiology, S.V.K.T College, Deolali Camp, Nashik.*

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Abstract

In the present study alkaliphilic bacteria, isolated from paddy field i.e. rich in urea was used for production of biocement. Urea hydrolysis is carried out by enzyme urease and is the most effective way of the generating calcium carbonate via producing CO^{3+} and NH^{3+}. Ammonia increases the pH in the environment causing Ca^{2+}& Co^{3+} to precipitate in the form of calcium carbonate, which can be used as biocement. It is one of the mechanisms of microbially induced calcium carbonate precipitation (MICP). Among the 8 isolates, potent urease producer which can tolerate urea up to 3.5% was used for the study. Tap and Borewell water having hardness of 22mg/ml & 17mg/ml was used for the biocement production. Urease activity was calculated using electrical conductivity method and it was in the range of 1.602-1.901 mS/min. In vitro biocement was produced by isolate(B) by incubating it for 7 days and the biomass precipitated was filtered, air dried and analysed by SEM and FTIR. The present ecofriendly approach can be potentially useful for removal of water hardness along with production of biocement.

Keywords: *Biocement, Urease, Hardwater, SEM, FTIR etc.*

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An efficient environment friendly one pot synthesis of bis (pyrazolyl) methane derivatives

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Department of Chemistry, Vivekanand College, Kolhapur (Autonomous)

Abstract

An environment friendly one pot three-component reaction of an aromatic aldehydes (1.0equivalent), phenyl hydrazine (2.0 equivalent) and ethyl acetoacetate (2.0 equivalent) in alcoholic medium (5ml) via Knoevenagel condensation followed by Michael addition reaction in the presence of solid base sodium ethoxide as an effective catalyst has been designed for synthesis of bioactive and medicinal heterocyclic compounds 4,4' (aryl methylene)bis(3-methyl-1-phenyl-1H-pyrazol-5-ols derivatives. These compounds possess biological as well as medicinal properties. The proposed protocol gives moderate to excellent yields under reflux condition. This novel and convenient synthetic method has followed the principles of green chemistry.

Keywords: bis (pyrazolyl) methanes, EAA, Green solvent, MCRs, Phenyl hydrazine, Sodium ethoxide.

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Antifungal activity and Preliminary Phytochemical Analysis of Leaf Extracts of *Anodendron paniculatum* and *Ellertonia rheedii* Wight.

Bommegowdna A Mauna, Manasa C. K., Dr. Parameshwar Naik T.

Abstract

Anodendron paniculatum is commonly known as "Maniballi" and *Ellertonia rheedii* as "Naraballi" where both belongs to Apocyanaceae family. The plants shows antimicrobial, antibacterial, anti fungal, antiseptic activities. The ethenolic solvent extracts from leaves of *Anodendronpaniculatum* and *Ellertonia rheedii* were assayed for antifungal activity against fungal strains such as *Tinea corpsis* and *Tinea unguium*. The inhibitory zones were compared with the standard antibiotic Cefotoxime. Phytochemical screening of the crude extracts revealed the presence of different secondary metabolites such as alkaloids, phenolics, saponins, flavonoids, terpenoids and protein. The ethenolic solvent leaves extracts of both plants exhibited strong antifungal activity against *Tinea corpsis* and *Tinea unguium* tested fungal strains and relatively lowest Minimum Inhibitory Concentration (MIC) value in the range of 2-6micro g/ml and 2-5micro g/ml were obtained from ethanol leaves extracts.

Keywords: *Anodendron paniculatum*, *Ellertonia rheedii*, Leaves extracts, Phytochemical analysis, Antifungal activity.

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Role of pH in the Synthesis of Metal Sulphide Nanomaterials Thin Film: Review

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Abstract

Metal sulphide nanomaterials have garnered a lot of attention because of their amazing inconsistency of compositions and structures with beleaguered physical and chemical properties. Metal sulphides nanomaterials are highly desirable materials for optoelectronic devices, low cost and environmentally friendly energy storage or conversion systems. Different physical and chemical synthesis techniques under controlled conditions have been utilized for oriented growth of various metal sulphide nanomaterials. As we know, pH is one of the crucial parameter in the synthesis of nanomaterials. The endeavor of this study is to discuss the role of pH in the synthesis of metal sulphide nanomaterials.

Keywords: Metal sulphide nanoparticles, thin film, pH effects, Applications.


Current Development of Nation :
India is a great land mass of agriculture sector 61% of population depends on agriculture, And its contribution is 33 of total GDP Currently agriculture fields are contaminated with harmful chemicals. This contamination is harmful for farmers as well as consumers. Examples of harmful chemical substances are Dichlorovas, Emmimectinbenzoite Chlorophyrotos Landacylathrin, Melathon, etc. These chemicals are banned in developed countries but these are openly used in India. So that it a affecting farmers life as well as consumers
Destruction caused :
These chemicals causes cancer, reproductive harm, blindness and even can leads to death. These affects are seen in the person who is spraying and the consumer also, it can cause cancer because of mutation, Currently government neglect this situation
Effect on Pollinating Insects :
Honey bee is important insect which carries pollination in various crops If this type of insect going to die which are beneficial to pollination, automatically the production rate of agriculture sector will be decreased and also the economy decreases. 80% of honey bees colonies are already destroyed by this chemicals. If honey bees disappears from earths surface people would no longer going to survive more than four years. (Albert Einstein)
SUSTAINABLE DEVELOPMENT GOALS
Science for development of nation :
(To tackle this problem and have a great nation)
• To have a great nation food quality should be great. And for great quality food cultivation should be healthy.
• Testing should be mandatory for farmers who are cultivating vegetables and fruits. Putting ban on chemicals like Dichlorovas, Emmimectinbenzoite, Chlorophyrofos, Landacylathrin, Melathon, etc.
• To encourage pesticides and chemical industry towards biopesticides
• Government should educate literate farmers who don't know the bad effects of these chemicals
• If we successfully able to produce good quality of food automatically nation will have a great health and move towards the development.
• MRL = Maximum Residue Index
Are You Eating Healthy Fruits And Vegetables
Our Contribution:
• Member of international fair trade (fair trade is a strategy for poverty alleviation and sustainable development).
• It aims to greater equity in international trading system
• No any harmful chemicals are used by
• Spreading awareness among the illiterate farmers

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Laboratory Scale Magnetostriction Setup and Measurement of Co-efficient of Magnetostriction on $Co_{0.9}Ni_{0.1}Fe_{2-x}Mn_xO_4$ Ferrite

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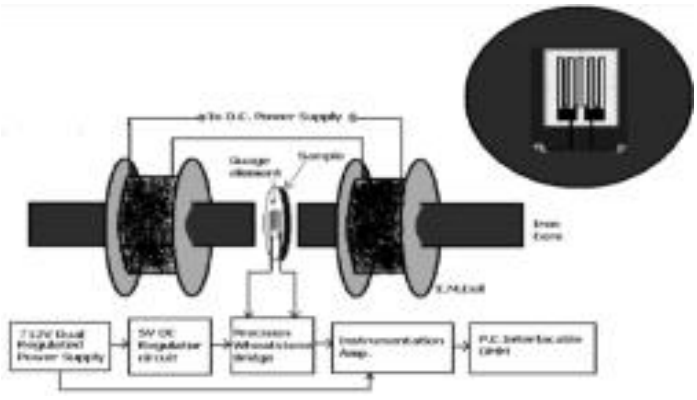
Abstract

The literature available on measurement techniques for studying the magnetic propertie sis too limited. The present paper reportsan instrumentation setup for the measurement of coefficient of magnetostriction λ. The efforts towards design, development, calibration and standardization of the setup. To confirm the correctness and accuracy of thesetup, measurements ofλ are carried out on $CoFe_2O_4$ ferrite prepared using similar sinteringconditions, where the earlier reports on measurement of λ are available. The setup is furtherstandardizeandemployedforthemeasurementofλon$Co_{0.9}Ni_{0.1}Fe_{2-x}Mn_xO_4$(CNFMO) ferrite for x= 0.0, 0.1, 0.2, 0.3 and 0.4 compositions. The measurements are in good agreement withthereported values.



Keywords: *Magnetostriction; Tensometrictechniques; (CoNi) (FeMn)2O4.*

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Synthesis and characterization of NiCoLDH for supercapacitors application

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Abstract

In this work, the nanosheets like nickel-cobalt layered double hydroxides (NiCo-LDH) electrodes were deposited on a stainless-steel substrate via low cost, one-step hydrothermalprocess. A variety of characterization techniques were used to analyse the resultant NiCo-LDHfilm. XRD, SEM as well as supercapacitor performance applications were investigated. Thenanosheets NiCo-LDH electrode exhibits a high specific capacitance of 535 F/g at a currentdensity of 1 A/cm2 and capacity retention rate was 80% over 3000 cyclic voltammetry cycles.An optimized electrode exhibit energy density of 42.72 Wh/kg at 384.48 W/kg power density.Excellent electrochemical energy storage performance of the NiCo-LDH electrodes will besignificantly improved ionic transformation along synergistic effect of an Effective chargetransfer,whichislinkedtowell-dispersedinterconnectnanosheets.

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Structural and Optical Properties of PVA Thin film doped with CuSo4

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Abstract

A polyvinyl alcohol polymer composite film doped with Cuso4 in the molar ratio 85:15 was prepared by Solution cast technique (SCT) and further sonicated by UV Sonicator to disperse the nanoparticles in the solution. Structural properties were studied by X-ray diffraction (XRD) technique which confirms the polycrystalline nature of thin film with a preferred orientation along (002) plane. The complex formation of salt with the polymer was confirmed by Fourier transform infrared (FTIR) Spectroscopy. Optical properties of the PVA and CuSo4 doped solution were studied with the help of UV Vis spectrophotometer.

Keywords: Polymer composite, SCT, Sonicator, PVA

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Kinetics and mechanism of oxidation of metformin hydrochloride by enneamolybdomanganate (IV) in hydrochloric acid medium

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[b]Department of Chemistry, Miraj Mahavidyalaya, Miraj 416410, Maharashtra State, India

Abstract

The reaction between metformin hydrochloride (MFN) and enneamolybdomanganate (IV) was studied in hydrochloric acid medium under pseudo-first-order conditions keeping MFN excess. The orders in both the reactants were found to be unity each while the hydrogen ion catalyzes the reaction. The active species of the reactants were found to be protonated oxidant, H_6 [$Mn^{IV}Mo_9O_{32}$], and diprotonated metformin, $MFNH_2^{2+}$. The increase in ionic strength did not affect the rate of the reaction while the decrease in relative permittivity decreases the rate of the reaction. The stoichiometry indicate a mole of oxidant reacts with a mole of MFN leading to methyl biguanide as the product. The product was identified by LCMS-MS analysis. The reaction proceeds with the formation of MFN nitronium ion in a slow step which further hydrolyzes to give the final product. The effect of anionic surfactant, sodium lauryl sulphate, and neutral Triton X-100 have the accelerating effect on the rate of reaction. The activation parameters have been calculated from the temperature effect on the rate of reaction and they support the proposed mechanism.

Keywords: oxidation, kinetics, mechanism, metformin, enneamolybdomanganate (IV)

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New records of Meliolaceous Black Mildew Microfungi from Maharashtra State

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Abstract

The present investigation deals with an account of five *Meliolaceous* black mildew microfungi collected from Ratnagiri and Sindhudurg districts (Maharashtra). It is revealed that, *Meliolaaethiops* var. *moullavae* on *Moullavaspicata*; *M.altissimae* on *Vitexaltissima*; *M.cycleae* on *Cycleapeltata*; *M.petchii* on *Strychnos potatorum* and *M.ramosii* on *Homonoiariparia* are found to be new to the state of Maharashtra.

Keywords: Biodiversity, Black mildew, Foliicolous, Host, Konkan, Maharashtra, Meliola, New record, Taxonomy, Western Ghats

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EFFECT OF AM FUNGI ON PROTEIN, CHLOROPHYLL AND ENZYME ACTIVITY IN FINGER MILLET UNDER SALT STRESS

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[2] BPHE Societies Ahmednagar College, Ahmednagar-414001, Maharashtra, India
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Abstract

Soil salinity is a major abiotic stress adversely affecting crop production worldwide due to its impact on plant growth. Salinization of soil is increasing in many parts of the world particularly in arid and semi-arid areasand become a serious problem for agriculture. AM fungi could enhance the ability of plants to cope with salt stress by improving plant nutrient uptake and ion balance protecting enzyme activity and facilitating water uptake.The present studydeals with the use of AM fungi in alleviation of salt stress in *Eleusinecoracana* L. Garten (finger millet) which helps in increasing crop yield.In this study different concentration of NaCl (25 mM, 50 mM, 75mM and 100 mM) were used for irrigationand it shows increasing concentration of NaCl decreased the growth in non-AMF inoculated finger millet plants as compared with AMF inoculated plants It is observed that root and shoot protein and chlorophyll content are increased in AMF inoculated finger millet plants. It also effect on enzyme activity particularly SOD activity is higher in AMF inoculated plants and decreased with increasing NaCl concentration in Non AMF inoculated plants but catalase activity (CAT) do not show any significant change with increasing NaCl concentration.

Keywords: Soil salinity, AM Fungi, Finger millet

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Sustainable and Green chemistry: Need of Current Scenario

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Abstract

Sustainable and green chemistry are interdisciplinary fields that aim to develop chemical processes and products that minimize environmental impact, conserve natural resources, and promote human health and safety. Sustainable chemistry encompasses a broad range of principles, including the use of renewable resources, the reduction of waste and pollution, and the design of chemicals and materials that are non-toxic and biodegradable. Green chemistry is a subset of sustainable chemistry that specifically focuses on the design of chemical processes that are inherently safe and efficient, with minimal waste and toxicity. The 12 principles of green chemistry provide a framework for achieving this goal, emphasizing the importance of designing safer chemicals, using renewable feedstock, minimizing energy and water usage, and designing processes that are inherently safe. There are many practical applications of sustainable and green chemistry, including the development of biodegradable plastics, the use of renewable energy sources in chemical manufacturing, and the production of safer and more effective pharmaceuticals. These fields are critical for addressing global challenges such as climate change and environmental degradation, and will continue to play an important role in the future of chemistry and materials science.

Keywords: environmental impact, natural resources, renewable energy etc.

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Biology of Pseudoscorpion from Sangli District of Western Maharashtra. (India)

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Abstract

In present study survey of Pseudoscorpions was carried out from 27 Feb. 2021 to 25 Feb. 2022. In the survey three pseudoscorpion species have been recorded. These are belonging to the two genera namely Anatemnus and Atemnus. The morphotaxonomical study indicates that the reported species are showing different characteristics. The results are discussed in light of recent references.

Keywords: Pseudoscorpion, Western Maharashtra.

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Green Synthesis of Iron Oxide Nanoparticle from *Ficus Carcia*: Characterization and Application towards Heterocyclization

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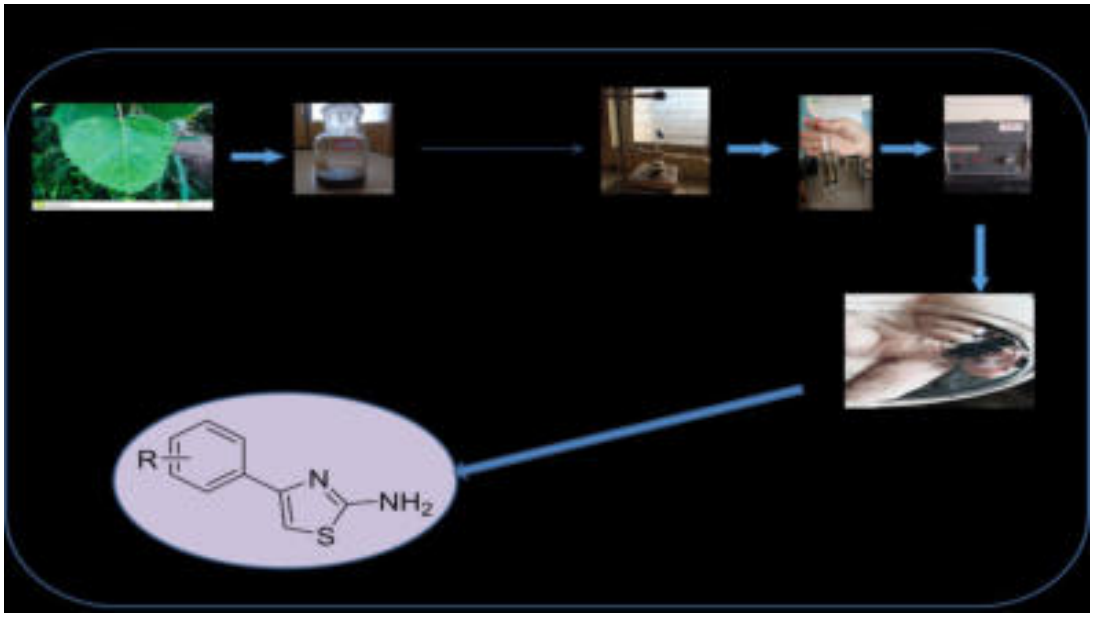
Abstract

Synthesis of nanotechnology is rapidly growing with utilized in a wide range pharmaceutical and commercial product throughout the world. In the present study we focused on the green synthesis of iron oxide nanoparticles using *Ficus carcia* green leaf extract. Leaf extracts were used for ecofriendly extracellular synthesis of stable iorn oxide nanoparticles ($FeCl_3$) by treating an aqueous ferric (0.01M) solution and using the plant *Ficus Carica* leaf extracts as reducing agents. The bio-reduced iron oxide nanoparticles were characterized UV, FTIR and XRD technique. The environmentally friendly green synthesis in ecofriendly approach to conventional chemical synthesis and can potentially be used in various area such as food cosmetics and medical application.

Key words- Ficus Carcia, Iron oxide, nanoparticles,



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‘‘Iron Nanoparticle-Bentonite Hybrid Using Leaves of Syzygium Cumini Plant from India: Design and Assessment in Heterocyclization

Arya S. Patil, Kirti S. Patil,Ujjwala B. Patil, Kalyani S. Shinde, Pushpa A. Kashid, Ajay N. Ambhore*

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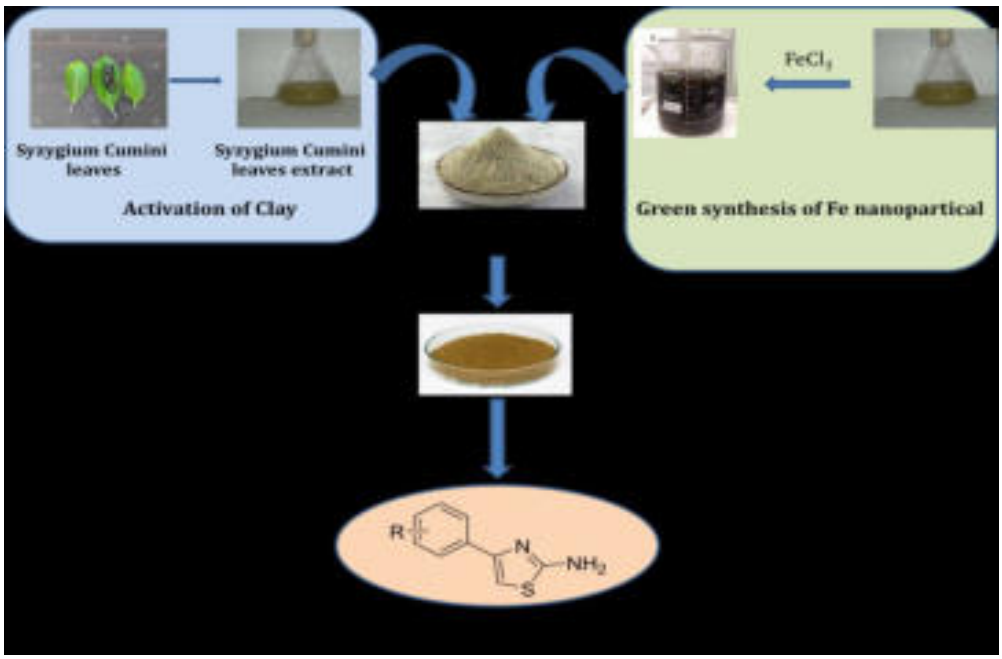
(*corresponding author Email ID: ambhoreajay@gmail.com)

Abstract:

An environment friendly synthesis process has been developed with the aid of Syzygium Cumini leaves extract. Small fragmented leaves of Syzygium Cumini are mixed with double distilled water for preparation of Iron (Fe) nanoparticles supported on activated bentonite. The extract from plant leaves of Syzygium Cumini acts as both reducing agent and also as a capping agent for converting $FeCl_3$ to FeNPs. The formation of catalyst is identified by visual observation of the colour change of solution brown to black. The synthesized FeNPs are supported on modified clay and they were sent for characterization by using FTIR and XRD.

Keyword- Syzygium Cumini leaves extract, Morus alba leaves extract, Bentonite clay



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One-pot multi-component green synthesis of some new benzylidene-imino-thiazolyl-pyrazol-3-ol derivatives and evaluation of their anticancer, DNA binding and antioxidant activities

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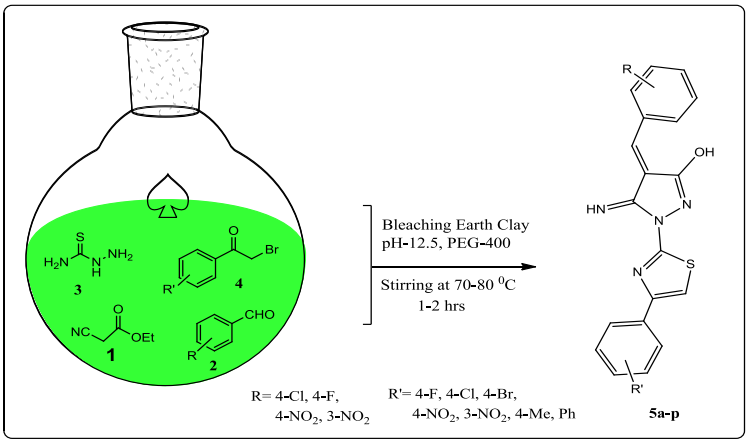
Abstract

Multi compound reactions (MCRs) are continuously relies on high-speed organic synthesis in the drug invention. It offers compelling advantages over regular linear type synthesis with respect to speed, diversity and efficiency for the discovery of new lead compound or lead optimization employing combinatorial chemistry. At the same time exploration of clean and green chemical processes using green catalysts has made main aim in synthetic research. With the intent to achieve all the above facts here in this chapter we report one-pot MCR route for the synthesis of benzylidene-imino-thiazolyl-pyrazol-3-ol derivatives using Bleaching Earth Clay (pH 12.5) in PEG-400 as a green reaction media. The selected compounds were studied for interaction with Calf thymus DNA (CT-DNA) using electronic spectra, viscosity measurement and thermal denaturation studies. Upon binding to CT-DNA, the absorption spectrum underwent bathochromic and hypsochromic shifts.



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Bael Fruit Ash Water Extract (BFAWE): A greener benchmark for the synthesis of 4*H*-benzochromenes

Megha U. Patil,* [a] Sachin K. Shinde,[a] Suresh S. Patil, [b] Omkar Mali, AkshayJadhav, [a] Vaibhav Patil, [a] Pravin Bhosale[a]

[a] Synthetic Research Laboratory, PG Department of Chemistry, PDVP College,Tasgaon, Sangli-416 312 (MS), India. Affiliated to Shivaji University, Kolhapur.

[b] Raje Ramrao College, Jat

**Corresponding Author: E-mail*: mupatil30@gmail.com; Fax. (0233) 223 2181.

Abstract

A simple and environmental-friendly synthetic protocol has been developed for the synthesis of tetrahydrochromeno[4,3-b]chromene-6,8-dione derivatives by condensation of 4-hydroxycoumarin with aromatic aldehydes and dimedone in the presence of bael fruit ash water extract (BFAWE) in aqueous medium. This green protocol was further extended for structurally diverse benzylpyrazolylcoumarins by condensation of equimolar quantity of ethylaceto acetate, hydrazine hydrates, 4-hydroxycoumarin and aromatic aldehydes in good to excellent yields. The advantage of this method includes a mild, an efficient and highly economical protocol under aerobic conditions at very short reaction time, under ligand/external catalyst/external promoter-free conditions. This protocol is better and more practical alternative to the existing protocols for greenprocesses.

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Studies on Livestock Predation and Human Leopard (*Panthera pardus*) Conflicts in Shirala Tehasil of Sangli District Maharashtra, India.

Jadhav V. M.

Department of Zoology, Padmbhushan Dr.Vasantraodada Patil Mahavidyalaya, Tasgaon

Abstract

Human wildlife conflict (HWC) is major issue in India. In many parts of Maharashtra leopards live in close proximity to human settlements with occasional livestock predation. Leopards are capable of living and breeding even in degraded forests and croplands and survive on wild prey, feral and domestic dogs as well as on livestock. In present study one human death and 496 losses of domestic animals is recorded from study area. Despite of high density of livestock domestic and feral dogs are frequently hunted. Increased population of feral dogs mostly because of waste from hotels, chicken and mutton shops. Protective measures such as focusing on effective livestock protection and awareness in the local people to be taken to avoid conflicts.

Keywords: Human wildlife conflicts, livestock predation, leopard, feral dogs.

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Epidermal Growth Factor Accelerated Wound Contraction in Wound Licking Permitted and Prevented Groupsin Sialoadenectomised Mice

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Abstract

Saliva is natural source for the various growth factor to restore the skin tissue integrity at wound site. Licking of wounds accelerates early wound closing.Submandibular gland secrets growth factors like epidermal growth factor (EGF), Nerve Growth factor (NGF), Transforming Growth Factor (TGF) etc. This study was aimed to investigate the role of exogenous EGF on wound healing in absence of submandibular gland in licking permitted and prevented mice. For this study 24 male mice of age 2.5 months were sham operated and 24 male mice of age 2.5 months weresialoadenectomised (removal of submandibular gland). Both the sham operated and sialoadenectomised mice were divided into following 4 groups i) Wounded area not allowed to lick ii) wounded area not allowed to lick and external EGF given intraperitoneally (30 µg/kg), iii) wounded area allowed to lick iv) wounded area allowed to lick and external EGF given intraperitoneally(30 µg/kg).Analysis of wound area recovery was done by using photographs and morphometry. Highly significant difference was observed between area of wound of control and sialoadenesctomised mice on 3rd day to 15th day in licking permitted and prevented groups. It showedthat sialoadenectomy slowed down the wound healing process. Faster wound healing was observed in EGF treated sham operated licking permitted group. While EGF treated licking prevented and permitted sialoadenectomised groupson 3rd day showed2.4-foldrecovery, on 5th dayshowed 1.6-fold recovery than the sialoadenectomised licking prevented and permitted groups and not much difference was observed on 7th and 15th days. These results revealed that exogenous EGF compensates the role of submandibular gland in wound healing of sialoadenectomised mice.

Keywords: Wound healing, sialoadenectomy, saliva, epidermal growth factor

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A green and highly efficient synthesis of pyrazolopyranopyrimidines

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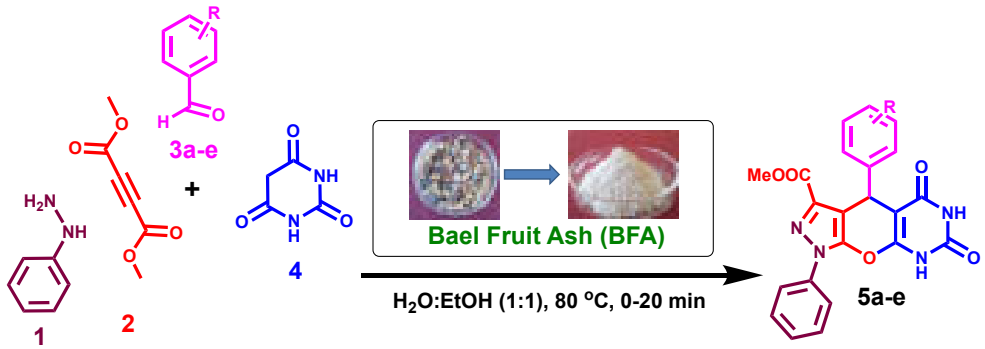
Abstract

A green and highly efficient protocol for the synthesis of triheterocyclic pyrazolopyranopyrimidines has been developed via a one-pot four component condensation of phenyl hydrazine, dimethyl but-2-ynedioate, aromatic aldehydes and barbituric acidusing bael fruit ash (BFA) as a natural mixed oxides base catalyst derived from waste dry rinds of bael fruit. BFA is a natural, non-toxic waste, easily biodegradable, water soluble highly basic catalyst obtained from renewal resources. This methodology provides a mild and fast route to structurally diverse tricyclic fused pyrazolopyranopyrimidines in good to excellent yields. Simplicity, a green solvent, an easy work-up process, natural waste and easily availability of the catalyst are the main advantages of this method.



Keywords: Multicomponent reaction, Pyrazolopyranopirimidine, Dimethyl but-2-ynedioate, Natural Catalyst, Green synthesis,

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Liquid – Liquid Extraction and Separation of Zirconium (IV) from Succinate Media and its Separation from Other Toxic Metals

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Abstract

Liquid–liquid extraction of Zirconium (IV) from succinate media was carried out with 0.08M, N-N-octylcylohexyl amine in dichloromethane and xylene from 0.04 M sodium succinate solution. Zirconium (IV) wasquantitatively extracted with 10 mL 0.08 M N-N-octylcylohexyl amine in dichloromethane and xylene for 3 min.Zirconium (IV) from the organic phase was back stripped with three 10mL portions of 0.3M nitric acid.The optimum conditions have been evaluated based on a critical study of weak acid concentration,extractant concentration, period of equilibration and effect of diluents. The zirconium IV from aqueous phase was determined by Spectrophotometric method by using Alizarin red S indicator. The amount of Zirconium (IV) was computed from a calibration curve.

The method was free from interferences of a large number of cations and anions. Zirconium (IV) was separated from associated elements in its binary mixture with Mo(VI), Nb(V), Re(VII), La(III), Ti(IV), Th(IV) and Al(III). The proposed method was applied to synthetic mixtures. The results of analysis indicate that trace amounts of Zirconium (IV) could be separated effectively from higher amounts of other elements. The method is simple, selective, rapid and eco-friendly.

Kaywords: N-N-octylcylohexyl amine, sodium succinate, Zirconium (IV), dichloromethane, Alizarin red S, back stripping, calibration curve,synthetic mixtures, selective.

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Synthesis, and Characterization of Zn Substituted Li–Ni Nano Ferrites

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Abstrsct

Nanosized Li–Ni–Zn ferrites with general chemical formula $Li_{0.5}$ $Ni_{0.75-x/2}$Znx/2 Fe_2O_4 (0<x <1) were synthesized from a simple polymer matrix based precursor solution. The solution was composed of metal nitrates, polymer (PVA) and disaccharide (sucrose). Thermolysis/flame pyrolysis of the precursor mass in an external temperature resulted in the oxide phase formation. X-ray diffraction studies confirm the formation of single phase ferrites. The micro structural analysis was carried out by scanning electron microscopy (SEM). The average grain diameter was estimated by the Scherrer method and grain diameter is found to vary from 16 nm to 33 nm.

Keywords: Nano Ferrites, XRD, SEM

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Investigation of Antiglycation and Antioxidant Potential of *Morus Alba* and *Garcinia Indica* Plant Leaves.

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Abstract

The major cause of variouspost diabetic complications is non-enzymatic glycation of the proteins. Medicinal plants having therapeutic potential against glycation are pivotal to treat diabetic complications. In this regard, with the aim of evaluation of antiglycation and antioxidant potential of two different plant extracts.50 grams offine powder ofleaves of *Morus alba* and*Garcinia indica* were extracted in 250 mlethanol. In vitro antiglycation activity of extracts were examined by BSA glucose assay and the DPPH free radical scavenging, FRAP and ABTSassays were used to evaluate antioxidant activity. Results clearly showed that these medicinal plants exhibited antiglycation and antioxidant activities. Among these two investigated medicinal plants, *M.alba*exhibited 78.08 percent antiglycation inhibitory activity compared to *G.indica* that showed 13.63 percent antiglyacation inhibitory activity. According to DPPH, FRAP and ABTS assay results, antioxidant potential of investigated *M. alba*was higher than *G.indica*. It can be concluded that *M.alba* with strong antiglycation activity and good DPPH, ABTS and FRAPradical scavenging activity has high therapeutic potential against glycation-associated diabetic complications.

Keywords: antiglycation, antioxidant, diabetic complications, *M.alba, G.indica*

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Nesting Site and Nesting Material of House Crow (*Corvusslendens*) In Raje Ramrao College Campus, Jath, Dist. Sangli (M.S.), India.

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Abstract

The present study was carried out the nesting site and nesting material of house crow in Raje Ramrao College campus, Jath. The total area of campus is 28.33 acres. Total 33nests were reported to identify the nest materials. Out of these 6 nests on Neem tree, 16 on Nilgiri, 1on Peepal, 8 on Ashoka tree and 2 on Coconut tree. The majority of nests which were observed on Nilgiri trees in between 2 to 3 branches. The observed nest materials are twigs, dried large sticks, dried grass, paper piece, pieces of wire, plastic threads, fibers of coconut tree. Plant leaf and unidentified material are also present inside of the nest. The majority of material which is used for constructing the nests are dried sticks and grasses. To identify the nest materials unusednest was observed.

The present work is focused on nesting sites and nesting material of *Carvus splendens* at because there is no detail study available in this campus area.

Keywords: Nesting site, nesting material, College campus, Maharashtra.

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Green Synthesis, Characterization, Catalytic and Antibacterial Applications of ZnO Nanoparticles

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Abstract

In the areas of organic catalysis, photocatalytic processes, the biomedical field, and the textile industry, biosynthesized metal and metal oxide nanoparticles have attracted a lot of interest. This study describes Zinc Oxide nanoparticles (ZnO NPs) synthesis using the aqueous extract of *Thevetia peruviana*flowers by co-precipitation method. Phytochemicals in *Thevetia peruviana* flowers act as a stabilizing agent and $ZnSO_4.7H_2O$ is used as a precursor for the synthesis of ZnO NPs.The structural and optical properties of the green synthesized ZnO NPs were studied using UV–Visible spectrum, Fourier Transform Infrared Spectroscopy (FT-IR), X-ray diffraction (XRD), and HR-SEM, EDX, and FE-TEM. The significant antibacterial activity of ZnO Nps was checkedagainst pathogenic bacterial strains namely $Gram^{+}$ve bacteria (Staphylococcus aureus) and $Gram^{-}$ve bacteria (Escherichia coli) and concluded that the ZnO NPs have a good ability to resist microbes. Furthermore, with excellent yields, one-pot synthesis of pyranopyrazole derivatives catalyzed by ZnO nanoparticles in aqueous media at room temperature is reported.

Keywords: *ZnO NPs, Biosynthesis, Thevetiaperuviana, pyranopyrazole, Antibacterial activity*.

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Evaluation of E. Coli Contamination in Drinking Water in Chiplun City

Samruddhi Ghumare
D.B.J. College, Chiplun

Escherichia coli is the primary microbiological water quality indicator in the water sector, and current guidance maintains that it signals recent faecal contamination and various illness. Poor drinking water quality has been linked to a variety of illnesses, brought by micro-organisms that cause diarrhoea, particularly in impoverished areas. In this study, the quadrant technique was used to investigate the association between E. coli and recent faecal contamination in drinking water.

Utilizing E. coli as a measurement tool, the study's goal was to assess if public health is affected by water in Chiplun. For analysis, 8 different samples were collected from places such as hotels, café, stations, and a few others. In general, the study found that, significantly higher E. coli count have the highest illness risk among the water samples that were examined. However, studies demonstrating E. coli growth in the environment has brought this into doubt in terms of public and water safety.

The degree to which E. coli interacts with its human in this context is shown with categorization into levels of risk and how it affects Public Health. To conclude with findings from the study, suggested that some of the water sources were very seriously contaminated as compared to others and were above acceptable safely limits.

However, studies demonstrating E. coli growth in the environment has brought this into doubt in terms of public and water safety.

Keywords: E. coli, Public Health, Chiplun, Safety

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Impact of Anthropogenic Activities on Water Quality and Plankton Communities in the Warana River

Priyanka Pharane

Abstract

Analysis of water samples for planktonic diversity has been carried out for four sampling stations of river warana stretched over a distance of 50 kms from Kakhe to Shigaon from Kolhapur district. The investigation was carried out for a period of one year at four different sampling sites i.e. Sampling station A (Kakhe), Sampling station B (Chikurde), Sampling station C (Ghunaki) and Sampling station D (Shigaon). In the present study of river warana, Among the zooplankton, Protozoa, Rotifera, Cladocera, Copepod, Ostracods constitute the main component and in phytoplankton Diatoms were dominated and class Blue green algae, green algae was found least during study period. Majority of zooplankton shows maximum occurrence and abundance during the high salinity period.Planktons are a major component of food web structure in aquatic ecosystems. Their distribution and community structure are driven by the combination and interactions between physical, chemical, and biological factors within the environment. In the present study, water quality and the community structure of phytoplankton and zooplankton were monthly investigated from march to December 2022 at 4 sampling sites along the gradient course of the Warana River (Kolhapur district). The study demonstrated that the warana River was eutrophic with the average values of total phosphorus concentration 0.17 mg/L, total nitrogen concentration 1.98 mg/L, and Chl a 54 μg/L. Temperature and nutrients (total phosphorus and total nitrogen) are key factors regulating plankton abundance and distribution in the Warana River.

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Brief review on *Gliricidia sepium*

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Abstract

The *Gliricidia sepium* used in many countries for many reasons such as live fencing, fodder, coffee shade, manure and rat killer. *Gliricidia sepium* is leguminous plant containing good source of protein and sufficient amount of minerals. This plant is medium sized with height reaching 10-12 m, widely distributed in India. This plant is used medicinally for therapeutic purpose. *Gliricidia sepium* is well known for its strong anticancer , antioxidant, antiviral and antibacterial properties. Various parts of *Gliricidia sepium* like leaves, flowers, seeds etc, shows different properties like multi enzyme, Antibacterial, Larvicidal, Antioxidant, Ovicidal and Pupicidal activity. Crude extract of *Gliricidia sepium* is an excellent resistant for controlling mosquitoes. This plant is having many traditional applications to treat cough, asthma, urticaria, rashes, burns, scabies, dermatitis acts as an antibacterial and antipruritic for infections.

Keywords: Gliricidia sepium, Antibacterial, Larvicidal, Antioxidant, Ovicidal, Pupicidal.

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"Synthesis and Spectroscopic Characterization of Some Novel 2-Amino-1,3,4-Thiadiazole"

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Abstract

In chemistry a sub-family of azole compounds isthiadiazoles. Thiadiazole structure is a five-membered heterocyclic compound containing one sulfur and two nitrogen atoms. Depending on the relative positions of the nitrogen and sulfur heteroatoms, there are four possible structures that exist. These forms do not interconvert and hence are structural isomers and not tautomers. However, compounds bearing them as structural motifs are fairly common in pharmacology.[1][2][3]Heterocyclic chemistry compounds have been an interesting field of study for a long time. For new drug development, heterocyclic nuclei i.e.,1,3,4-thiadiazole constitute an important class. In recent decades, the synthesis of novel thiadiazole and the investigation of their chemical and biological behavior have gained more importance. This article highlights the main methodology for the synthesis of this heterocyclic compound i.e., 2-amino- 1,3,4-thiadiazole using substituted benzoic acids and thiosemicarbazides in presence of phosphorous oxychloride. They are characterized by M.P., TLC, and spectroscopic techniques i.e., FT-IR, UV, and NMR. 2-amino-1,3,4-thiadiazole nucleus possesses numerous biological properties like - antitumor, antimicrobial, anti-inflammatory, anticonvulsant, and antidiabetic activities. Many of the reported 2-amino-1,3,4-thiadiazole derivatives can be considered lead compounds for drug synthesis, and several of them have demonstrated higher antimicrobial activity in comparison to standard drugs.

Keywords: Thiadiazoles, heterocyclic compounds, thiosemicarbazides, antimicrobial activity, antibacterial activity, antifungal activity.

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"2-Amino- 1,3,4-Thiadiazole as an Antimicrobial Scaffold"

More A. L.[*1], Dr.Chougule A. M.[2], J. V. Kuwar[3]

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Abstract

Infections caused by bacteria and fungi continue to be a problem in healthcare despite advances in medicine. There is a lot of interest in the development of new antimicrobial compounds as more bacteria become resistant to antibiotics used in therapy and more invasive fungal species become resistant to existing antifungal medications. Among the organic chemicals with biological activity used as medications in human and veterinary medicine or as insecticides and pesticides in agriculture, heterocyclic compounds are crucial. Thiadiazoles are nitrogen-sulfur heterocycles with a variety of uses in both medicinal chemistry and as the structural building blocks of biologically active molecules. The effectiveness of the thiadiazole nucleus is shown by the drugs that are currently being used. 1,3,4-thiadiazoles and some of their derivatives have been the subject of in-depth research because of the wide range of pharmacological activities they exhibit. The main goal of this research was to highlight the 2-amino-1,3,4-thiadiazole moiety-containing derivatives' primary antimicrobial properties. The versatile moiety thiadiazole has a wide range of biological functions. A "hydrogen binding domain" and a "two-electron donor system" are the roles played by the thiadiazole moiety. Also covered are substituted 2-amino-1,3,4-thiadiazole and its derivatives that exhibit antimicrobial activity.

Keywords: Antimicrobial, Anti-fungal, Thiadiazole,pharmacological.

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Antifungal activity and Preliminary Phytochemical Analysis of Leaf Extracts of *Anodendron paniculatum* and *Ellertonia rheedii* Wight.

Bommegowdna A Mauna, Manasa C. K., Dr. Parameshwar Naik T.

Abstract

Anodendron paniculatum is commonly known as "Maniballi" and *Ellertonia rheedii* as "Naraballi" where both belong to Apocyanaceae family. The plants shows antimicrobial, antibacterial, anti fungal, antiseptic activities. The ethenolic solvent extracts from leaves of *Anodendronpaniculatum* and *Ellertonia rheedii* were assayed for antifungal activity against fungal strains such as *Tinea corpsis* and *Tinea unguium*. The inhibitory zones were compared with the standard antibiotic Cefotoxime. Phytochemical screening of the crude extracts revealed the presence of different secondary metabolites such as alkaloids, phenolics, saponins, flavonoids, terpenoids and protein. The ethenolic solvent leaves extracts of both plants exhibited strong antifungal activity against *Tinea corpsis* and *Tinea unguium* tested fungal strains and relatively lowest Minimum Inhibitory Concentration (MIC) value in the range of 2-6micro g/ml and 2-5micro g/ml were obtained from ethanol leaves extracts.

Keywords: *Anodendron paniculatum*, *Ellertonia rheedii*, Leaves extracts, Phytochemical analysis, Antifungal activity.

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Inland Water Quality Monitoring Using Sentinel-2 and Landsat-8: A Comparative Study on Different Lakes in Uttarakhand, India

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[2]Department of Petroleum Engineering, Graphic Era Deemed to be University, Dehradun, Uttarakhand, India

Abstract

Sentinel-2A and Landsat-8 can provide a comprehensive view of inland water quality over time. By integrating data from both satellites, water resource managers can gain a better understanding of water quality dynamics in inland lakes and make informed decisions for managing and protecting these valuable resources. The present study demonstrates the applicability of harmonizing Sentinel-2 MSI and Landsat-8 OLI satellite imagery products to estimate mean Secchi depth (Zsd), chlorophyll-a, mean Lake Surface Temperature (LST), mean Trophic State Index (TSI) (1-100) and mode Trophic State Index class (TSI class). The comparative temporal analysis of water quality for natural and artificial reservoirs/lakes including Naini Lake, Deoria Tal, Dodi Tal,Tehri Lake, and Ramganga reservoir was carried out. Climate change and anthropogenic influence in inland water bodies motivated this study.The current lake monitoring investigation employs an atmospheric correction hypothesis derived from standard ocean-color approaches.

Keywords: Lake monitoring, Google Earth Engine (GEE), Secchi Depth, Chlorophyll-a, Trophic State Index.

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Impact of Farmponds on Agricultural Development of Nashik District

Handge Satish Balasaheb & Dr. Nikam Subhash Namdeo

Abstract

The more than 62% of Indians directly dependent on agriculture, its problems cannot be ignored. Therefore, it is important to understand the problems related to farming activities and provide accurate recommendations. The severity of drought has long-term effects because it inhibits capital accumulation and makes farmers economically and politically vulnerable as a society. A region of Maharashtra known for frequent droughts is the Nashik region. Rainfall in the region is low in the western part of the region. The Maharashtra government has started offering subsidies to encourage poor farmers to set up agro ponds on their properties and harvest rainwater. National Horticultural Mission, Rashtriya Krushi Vikas Yojana and Jalyukt Shivar (Magel Tyala Shettale) are few of the government aid programs that played an important role in the construction of artificial agricultural pond in Nashik district. In Nashik district, 10,223 cultivation ponds were completed in various tehsils under various programs between 2011 and 2021. Artificial agricultural ponds are unevenly distributed in space and time across the 15 tahsils that make up Nashik district. Farmers in rural areas can increase agricultural production thanks to artificial agricultural ponds, which play a key role in increasing agricultural productivity. It is important to build more and more farm ponds in Chandwad, Sinnar, Malegoan, Yeola, Niphad, Satana, Deola and Nandgoan tehsils in Nashik district and other drought prone areas. . When building farm ponds, the water budget of each community must be taken into account. A farm pond is a farmer's reservoir. The study's hypothesis that "ponds on farms have been shown to be effective in harvesting water and minimizing the difficulties caused by drought" was accepted as a result.

Keywords - Aquaculture, Artificial farm pond, Agriculture Production,Technologies,Social and economic issues.

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Anticancer and Antioxidant β-D-Glucopyranose (1→2) α-D-Fructofuranose Disaccharide Derivative from *Tridax procumbens* L.

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Abstract

Isolation phytochemical study of a *Tridax procumbens* L. aerial part methanol extract permitted the identification of compound 1, β-D-Glucopyranose (1→2) α-D-Fructofuranose derivative with anticancer and antioxidant activity. The structure of the compound was determined by comprehensive spectroscopic analysis, including TLC, FTIR, 1D NMR, and LC-HRMS. Compound 1, is a disaccharide derivative containing O-acetyl and aminomoiety to a disaccharide made up of β-D-Glucopyranose (1→2) α-D-Fructofuranose derivative the antioxidant capacity of the compound was evaluated using a DPPH assay. The result was significant at ($P < 0.05$) with IC_{50} = 0.0423 μg/mL compared with standard Ascorbic acid and Gallic acid. The compound show moderate cytotoxicity against human breast cancer cells MCF-7 (IC_{50} = 5.06 μg/mL) and did not show activity against MDA-MB-249 cell lines by using MTT assay.

Keywords: *Tridax Procumbens L.; Glycosides; Anticancer activity; Antioxidant*

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Lipid contents variation or changes in freshwater bivalve, *Lamellidens marginalis* from Bhima River at Siddhatek during different seasons in different region of body

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Abstract

Lipid contents variation or changes in the different soft body tissues of Lamellidens marginalis (75-79mm in shell length) were collected from Bhima River at Siddhatek from Ahmednagar district. The content of lipid found maximum in foot during summer and also maximum in gonad during the season of monsoon and winter. The freshwater bivalve Lamellidens marginalis shows more changes in the lipid contents from gonad, as it undergoes different stages like development, maturation and spawning during different seasons.

Keywords: Lipid, bivalve, Lamellidens, marginalis, bhima, seasons.

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Sodium Lauryl Sulphate (SLS): A proficient anionic detergentfor green synthesis of polyhydroquinolines

Rutuja M. Patil, Pranali S. Bhosale, Divya R. Jadhav, Tejaswini S. Ugare, Deepali M. Gosavi,Sachinkumar K. Shinde*

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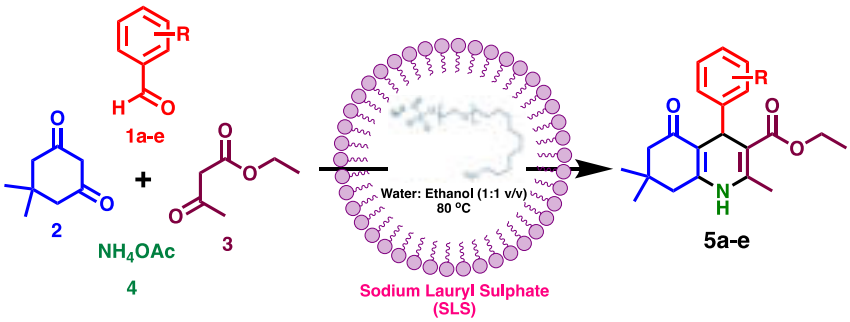
Abstract

The sustainable and cost-effectiveprotocolfor one pot four component synthesis of polyhydroquinolines in green media was first time carried out in very effective sodium lauryl sulphate (SLS) as a surfactant type catalyst. The green features of this method include the use of water soluble surfactant type catalyst, which provides a micellar media for effective cyclocondensation reaction. Ethanol at higher temperature worked as a co-surfactant leading to selective synthesis of polyhydroquinolines along with enhanced product yield. It was also noticed that the condensation using co-surfactant proceeded rapidly and was superior to the reported procedures with respect to the reaction time and yield of product. To maintain better surfactant: co-surfactant ratio for this cyclocondensation, critical micelle concentration (cmc) was determined by electrical conductivity method. The use of readily available, low cost, inexpensive and water soluble catalyst in replacement to hazardous acids and toxic chemical surfactants is a promising alternative for the organic reactions.



Keywords: *Surfactant, Critical Micelle Concentration, Sodium Lauryl Sulphate, Hantzsch pyridine, 1,4-dihydroquinilones, Green synthesis,*

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Analysis of Soil Samples for Its Physicochemical Parameters from Hilly Area of Patan Tehsil Satara District M.S. (India)

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Department of Zoology

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Abstract

Hilly area in the Patan Tehsil District Satara is located in the Western Ghats. The study area is surrounded by forest and paddy fields. The soil is the most important constituent which fulfills all the basic needs of human beings. Soil is an essential component to flourish plant growth. Thus the physico-chemical study of territory is very significant because both physical and chemical properties are responsible for soil productivity. In the present investigation the physicochemical study of soil is based on various parameters like pH, moisture, density, texture, water holding capacity, organic matter, chloride, nitrate, phosphorus. This knowledge provides baseline information about quality status of soil for proper implementation of the other management practices.

Keywords: Soil composition, physico-chemical parameters, quality status.

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Captan Induced Histopathological Alterations In Kidney Of Fresh Water Fish *Rasbora Daniconius.*

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Abstract

The present study aims to investigate the histopathological changes in kidney of fresh water fish *Rasbora daniconius.* The fishes were exposed to captan in acute toxicity experiment for 96 hrs. The LC0 and LC50 concentration were 0.5 mg/L and 1.5 mg/L respectively.

During acute exposure (LC0 concentration) to captan the epithelial lining of the tubule showed degenerative nuclei. The slough from the cells was filled in the lumen of tubule. The epithelium of the tubule showed disorganization of cells. Haemopoietic tissue shows hypertrophy and disarrangement. Glomerulus was disturbed. During acute exposure (LC50 concentration) the epithelial cells of the tubule showed disorganization and degeneration of nuclei. Renal tubule shows disarrangement and lumen of tubule was filled with slough from cells. Blood clots were reported at some places. Some empty spaces were reported in the tissue. Disarray and hypertrophy was observed in haemopoietic tissue.

Keywords: Captan, *Rasbora daniconius*, histopathology, kidney.

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Occupation Health Hazards and Risks to the Workers at the Rearing and Reeling Sections of Sericulture Industry

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Abstract

Background: Occupational health hazards among the persons exposed to various organic dusts have been known for many centuries Agricultural production has its own unique ergonomic hazards and musculoskeletal injury problems. Sericulture is the important labor-intensive and agro based cottage industry, providing gainful occupation to around 7.56 million persons in rural and semi-urban areas in India.

Objective: To identify the occupational health hazards and workplace and monitor workplace environment of the sericulture industry from Kolhapur and Satara district of Maharashtra, India.

Methods: All the subject were followed by interview and data regarding the demographic status, workplace environment, occupational diseases, respiratory problems at workplace and musculoskeletal problems were collected by standard questionnaire. Light, humidity, temperature, respirable suspended particulate matter (RSPM), sulphur dioxide (SO_2) and oxides of nitrogen (NOx) were monitored for ambient environmental checking.

Results: The temperature, humidity, noise and light are major environmental stress where RSPM, SO_2, NOx are major ambient air pollutants. These environmental factors were significantly observed in the sericulture industry. In silk and sericulture industry respiratory tract diseases, allergies and injury represent the most important group of occupational hazards. In addition to that extreme workload induces musculoskeletal problems in workers. The most common complained hand/wrist pain, shoulder pain, neck pain, back pain, legs pain due to excessive workload and lack of workers.

CONCLUSION: The present study revealed that the occupation health hazards and risk are involved in the rearing and reeling sections of sericulture industry. Work related asthma, respiratory diseases, allergy, injury and musculoskeletal discomfort were observed significantly in sericulture industry worker. The workplace environment consists of physical, physiological, chemical and biological hazards which are hazardous to health of workers.

KEYWORDS: Hazards in sericulture, occupational health, workplace environment.

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Development and Validation of UV-Spectrophotometric Method for Macitentan Bulk Drug and Formulation

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Abstract

A simple, accurate, precise, inexpensive, rapid, and sensitive UV visible spectrophotometric method has been developed for the determination of Macitentan in drug substances. The developed method was validated according to ICH guidelines. Drugs were analyzed by UV/Vis spectrophotometry and validated for linearity, precision, precision and specificity, detection limits, and quantitation limits. The solvent used was 0.1N HCl and the wavelength corresponding to the maximum absorbance of the drug was 274 nm. The linear response over the concentration range of Macitentan from 10 to 70 µg/ml was plotted with y=0.0114x-0.0042 and regression coefficient r2=0.9991. Accuracy ranged from 93.83 to 104.2%. Intraday and intraday accuracy was found to be within limits. To determine the sensitivity of the method, the limit of detection (LOD) and limit of quantification (LOQ) were determined and were 7.78µg/ml and 21.25 µg/ml, respectively. The percent drug content was determined to be 101.6 by assay. The drug was confirmed by interpretation of the UV spectrum. Therefore, the proposed method has been validated and can therefore be used for routine analysis of Macitentan in pharmaceutical dosage forms.

Keywords: Macitentan, Intraday, Concentration, Spectrophotometry

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Ionic Liquid Catalysed Synthesis of Dihydropyrimidinones

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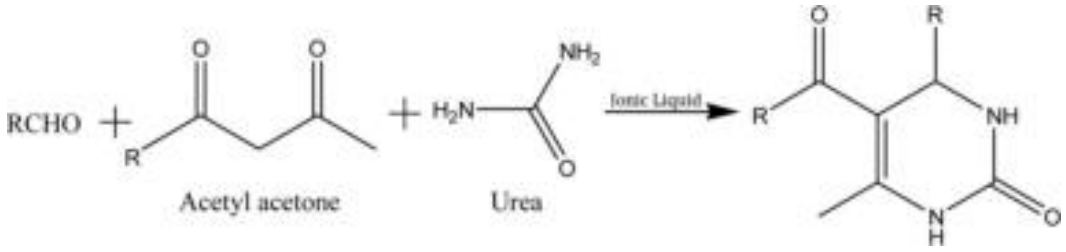
Abstract

A simple, efficient, cost-effective, recyclable and green approach has been developed for the synthesis of dihydropyrimidinone analogs *via* the Biginelli reaction. The methodology involves a multicomponent reaction catalyzed by "Ionic Liquid". These reactions were performed by three-component condensation of different types of an aldehyde, ethyl acetoacetate,and urea at room temperature by using Ionic Liquids.The advantages of this green chemistry approach the excellent yield, operational simplicity, short time, and the avoidance of the use of organic solvents and friendly preparation.In these reactions Ionic Liquid used as a catalyst as well as solvent.

Keywords: Ionic Liquid, diketones, dihydropyrimidinone, Biginelli.



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Cost effective fodder from sugarcane waste – bagasse by fungallignin degradation

Pawar N.A., Sabale R. M., Chavan V. V., More K. S., Jagtap S. A., Dr. Jayant Rathod

Abstract

The conversion of bagasse (agricultural waste) to fodder will solve most pressing problem of sugarcane industry. As compared to jowar straw (₹ 12/Kg), bagasse (₹ 2/Kg) is affordable, if we reduce the lignin content as it reduces milk production in cattle. In the presentstudy, different fungi were collected, isolated and used to biologically degrade lignin. Various fungal cultures were collected from fields at Shardanagar and Lasurne, Pune, MS, India and named them as SF1, SF2, SF3, SF4, SF5 and LF1. The monocultures were prepared and the enzyme activity was checked by using standard methylene blue test. The spores were countedand inoculated in bagasse for degradation of lignin and its percentage were estimated at the interval of 10 days. After 10 days, control lignin percentage was 10.8% and the content of lignin degraded by fungi were SF1-9.5%, SF2- 8.0%, SF3- 7.4%, SF4- 7.69%, SF5- 8.5% andLF1- 7.35%. The reduction of lignin was found to be approximately 50%, while it was 45 daysas reported by Andlar et al., 2018. The LF1 culture was identified as *Schizophyllum commune* and it is reported that it has anticancerous property thus it can't be harmful to cattle. The bestlignin degradation was shown by LF1, SF3 and SF4. Thus, the above strategy can be used to degrade the bagasse and form cost effective fodder.

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Eco-friendly conversion of bagasse into a value-added compound with a potential reduction of Greenhouse gases.

Akshada D.Jagdale, Priyanka P.Burange, Prachee D. Mohite, Neha D. Shelke, Dr.Jayant P. Rathod

Abstract

The combustion of 1 tone of bagasse emits 200-400Kg of CO_2. Using bagasse as feedstock for biofuels and cattle feed production significantly reduces greenhouse gas emissions. Cockroaches have a diverse community of gut bacteria that effectively degrade sugarcane bagasse's lignocellulosic component. The bacteria were isolated from the hindgut and midgut of the cockroach. The bacterial isolates were screened for lignolytic activity using methylene blue screening. The bacteriashowing lignolytic activity were picked and inoculated on bagasse. The estimated percent of lignin in initial bagasse was 10.6% and hemicellulose is 20.1%.The treated bagasse with 30 days intervals shows a reduced percentage of lignin up to 8.1% and hemicellulose up to 18.4%. Thus, converting bagasse into value-added compounds using eco-friendly methods can help reduce greenhouse gas emissions and promote sustainable development.

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Medicinal Plantsin the Prevention of Gouty Artritis.

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Abstract

Gout is a disease belonging to the group of rheumatoid disorders. Global gout therapeutic agent was valued at USD 2.78 Billion in 2021 and is expected to grow at a CARG of 13.7% within 15 years. As a result of some disorders in the uric acid metabolism, deposition of its crystals takes place in tissues and organs. It causes pain of joints and forming of tophi. The limit of serum uric acid in the blood is 6.5 mg%. Modern drugs used for subsiding lowering serum uric acid are associated with potent adverse effect. These commonly used therapeutics agents often, do not achieve desired result. On the basis of Traditional herbal medications is growing to treat and control gout symptoms and associated complications. Many plants like *Gossypium herbaceum, Hibiscus sabdariffa, Tinospora cordifolia, Ficus carica, Piper longum, Withaniasomnifera, Curcuma longa, Zingiber officinale, and Tribulus terrestris* and so on are used for treatment in gout. Many have reported mechanism of action while many have been used traditionally.Some of these plants exhibit anti-gout effect by different mechanisms like inhibition of xanthine oxidase, anti-inflammatory activity, and antioxidant activity.As the Current available treatments are effective, but show various side effects, so the herbal medication could be used in gout. Although these agents are generally effective, they also present significant risk in patients who have cardiovascular, metabolic and gastrointestinal disorder.Natural herbs are commonly utilized to treat a variety of disorders without causing side effects.

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Studies on Human-Wildlife Conflict with special reference to Leopard (*Panthera pardus*) and Livestock predation from Sangli District

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Abstract

Human-Wildlife Conflict (HWC) is a major issue in India and Maharashtra is not an exception for this. In many parts of Maharashtra, Leopards live in the close proximity of human settlements and hence livestock are vulnerable for the predation. Western part of Sangli district, especially, Shirala tehsil is covered with forest area and included in Sahyadri Tiger Reserve (STR). Along with this, adjoining tehsils also have scanty vegetation which joins forest with human settlements. In the present study, preliminary surveys have been conducted to understand the relationship between HWC with special reference to Leopard and Livestock predation from the Sangli district. The study revealed that leopards are capable of dwelling, forging and breeding even in the degraded, fragmented and croplands for the survival. During the survey, it has been recorded that single human victim and 496 livestock were died from Shirala tehsil alone. Pet dogs and feral dogs were also predated frequently from this area. The population of feral dogs is continuously increasing because of adequate availability of food generated from hotel waste, waste from slaughterhouses, and domestic waste. This might be one the strongest reason for the ingress of leopards in the human settlements. The present study suggests that protective measures should be taken to protect human as well as life of livestock on the priority basis. This can be achieved by proper discard of waste especially from hotels and slaughterhouses and also through awareness programs to convey human wildlife coexistence among the local people.

Keywords: Human-wildlife conflicts (HWC), Livestock, Predation, Feral Dogs, Awareness, Coexistence

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Soil Analysis of Ambeshwar Sacred Grove after Rainy Season, District Kolhapur, Maharashtra

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Abstract

Ambeshwar is the dense sacred grove situated in Shahuwadi Tehsil of Kolhapur district. It is reserved by local people for their deity and named as Ambeshwar. The study revealed that the N, P, K count has been found to be enhanced due to proper leaf litter decomposition.

Keywords: *Dense, sacred grove, deity, enhanced, leaf litter, decomposition.*

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One Drop Organocatalyzed Multicomponent Synthesis of Pyrazolo[1,2-*B*]Phthalazine-Diones and Pyrazolophathalazinyl Quinolines

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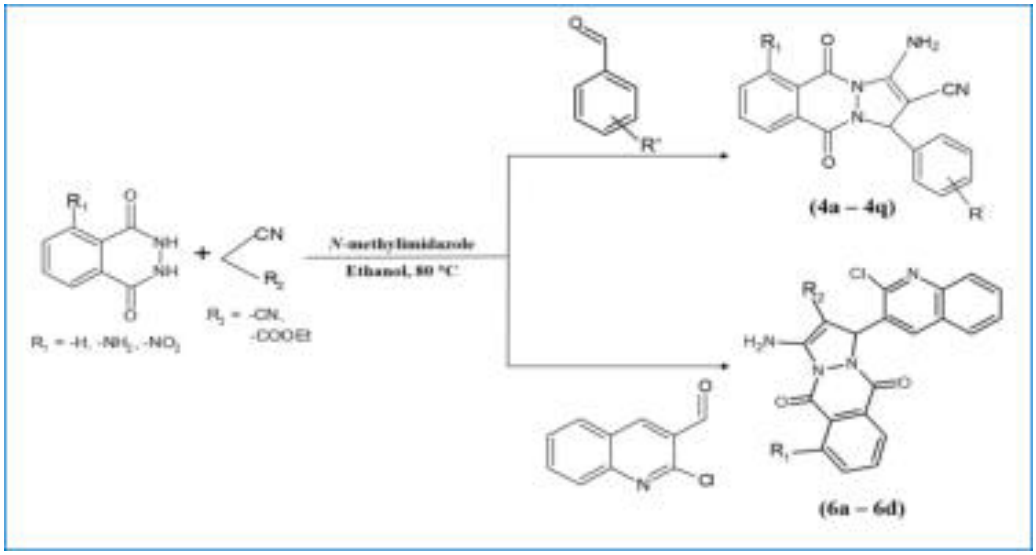
Abstract

The catalytic potential of organocatalyst *N*-methylimidazole is explored in the multicomponent reactions of aromatic aldehydes, malononitrile and 2,3-dihydro-phthalazine-1,4-dione / 5-amino-2,3-dihydro-phthalazine-1,4-dione for the synthesis of pyrazolo[1,2-*b*]phthalazine-diones in ethanol under reflux conditions. The protocol has been successfully extended for the synthesis of pyrazolophathalazinyl quinolines using one pot three component reactions of 2-Chloro-3-quinoline carboxaldeyde, malononitrile / ethyl cyanoacetate and 2,3-dihydro-phthalazine-1,4-dione / 5-nitro-2,3-dihydro-phthalazine-1,4-dione. The reported method describes a straightforward and highly efficient protocol with remarkable advantages, including wide substrate scope, ready availability, lower cost of catalyst, operational simplicity, and good to high isolated yields along with in-flask catalyst recycling.

Keywords Organocatalysts, Multicomponent reactions, 2-Chloro-3-quinolinecarboxaldeyde, Phthalhydrazides, Pyrazolo[1,2-*b*]phthalazine-dione derivatives



Scheme: Synthesis of pyrazolo[1,2-*b*]phthalazine-diones and pyrazolophathalazinyl-quinolines using *N*-methylimidazole

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Biosynthesis of silver nanoparticles using *Pongamia pinnata* (L.)Pierre

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Abstract

In the field of material sciences, one of the fiery topics for research has been biologically synthesizing nanoparticles from plant derivatives and studying their applicability. Nanoparticles provide a promising and alternative platform of eco-friendly technologies. Silver nanoparticles were successfully synthesized using crude karanj leaf (*Pongamia pinnata*) extract at room temperature. The current work happening on nanocatalysts focuses on the scope of application of green catalysts. The synthesized silver nanoparticles have been characterized by UV-Vis Spectroscopy, (XRD) X-ray diffractometry and Scanning Electron Microscopy (SEM). Nanoparticles provide a promising and alternative platform of eco-friendly technologies.

Keywords: Pongamia pinnata, silver nanoparticles, XRD

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Cost Effective Fodder from Sugarcane Waste –Bagasse by Fungal Lignin Degradation

Pawar N.A., Sabale R.M., Chavan V.V., More K.S., Jagtap S.A., Dr. Jayant Rathod

Abstract

The conversion of bagasse (agricultural waste) to fodder will solve most pressing problem of sugarcane industry.As compared to jowar straw (₹ 12/Kg), bagasse (₹ 2/Kg) is affordable, if we reduce the lignin content as it reduces milk production in cattle. In the present study, different fungi werecollected, isolated and used to biologically degrade lignin. Various fungal cultures were collected from field's atShardanagar and Lasurne, Pune, MS, India and named them as SF1, SF2, SF3, SF4, SF5 and LF1. The monocultures were prepared and the enzyme activity was checked by using standard methylene blue test. The spores were counted and inoculated in bagassefor degradation oflignin and its percentagewere estimated at the interval of 10 days.After 10 days, control lignin percentage was 10.8% and the content of lignin degraded by fungi were SF1-9.5%, SF2- 8.0%, SF3- 7.4%, SF4- 7.69%, SF5- 8.5% and LF1- 7.35%. The reduction of lignin was found to be approximately 50%, while it was 45 days as reported byAndlar et al., 2018. The LF1 culture was identified as *Schizophyllum commune*and it has anticancer property thus it can't be harmful to cattle.The best lignin degradation was shown by LF1, SF3 and SF4. Thus, the above strategy can be used for cost effective fodder.

Keywords: fodder, lignin, fungi, 10 days- 50% degradation, anticancer property,eco-friendly.

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Degradation of Vegetable Waste into Organic Compost Along With Mitigation of Greenhouse Gases

Dhanashree Nevase and Dr. Jayant Rathod

Abstract

Huge quantity of vegetable waste (around 931million tons per year) generated from kitchen of food eateries. Improper disposal of this organic waste causes serious health issues and unhygienic conditions occurs at disposable area. When food waste ends up in landfill, it decomposes anaerobically and releases methane emissions, a greenhouse gas that is 28 times more potent than carbon dioxide. To degrade this waste properly and convert it into usable form is important. Seven isolates of cellulose degrading bacteria were isolated from biogas slurry and soil, by growing them on different microbiological growth media. To check cellulose degrading activity of organisms, cellulose Congo red agar media was prepared and zone of clearance around the colony was measured. The diameter of the colony and zone of clearance ranged between 0.4 mm – 1.7 cm and 2.0 cm - 4.2 cm respectively. Cellulose degrading activity of organisms was checked on Whatman filter paper. The degradation time by microbes were measured on vegetable waste and dry leaves in 50:50 proportions. It was observed that isolates showed degradation of waste in 10 days as compare to 14 days, as reported in literature. The organic compost generated was tested on fenugreek plant and improved growth was observed in organic compost set as compare to control. The organisms will be utilized for degradation of kitchen and agricultural waste along with production of organic compost.

Keywords: *Cellulose degrader; organic compost; vegetable waste; Reduction; Greenhouse gases.*

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Evaluating the Potential for Growth of Artificial Intelligence

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Abstract

We can effectively comprehend customers when we combine AI and ML, or machine learning, for acquiring and analyzing social, historical, and behavioral data. Chatbots that provide tailored real-time client support might be placed in high-traffic locations to answer simple queries, give advice, or aid with purchase placement. We may also send highly personalized emails by evaluating themes of interest and recognizing trends to provide relevant content recommendations. AI may be used to examine enormous datasets and make quick judgments. We may also use AI apps like NLP (Natural Language Processing) to determine how clients engage with a business. Chabot's, machine learning, and algorithms are examples of AI technologies that may help us better understand a customer's pain areas, expectations, and satisfaction levels. Artificial intelligence has the potential to revolutionize a variety of sectors, including medical, commerce, and software development. And this potential is finally being realized. By 2025, the AI sector is expected to be worth $126 billion. As remote work and dependence on technology have become the new everyday norm, AI has become increasingly important for many enterprises. From the Internet of Things to cyber security, information technology (IT) affects virtually every aspect of business, government, finance, and beyond. Despite being a "old" industry, the IT industry still has a lot of inventors. In this study researcher has made recommendations for some of the most promising AI businesses with a diverse variety of use cases across various sectors; this study is about the top 20 emerging IT start-ups with major ideas for automating and upgrading the future digital infrastructure.

Keywords*:* Artificial Intelligence, AI, start-ups, technology, machine learning, algorithms

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"Green Synthesis of Nanoparticles in Advance Various Methods"

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Abstract

In the past few years, nanoparticles have been applied in various fields of science and technology, ranging from material science to biotechnology. Green synthesis of metallic nanoparticles has become a new and promising field of research in recent years. Nanoparticles of varied shapes and sizes can be synthesized by using physical, chemical, or biological pathways. Chemical and physical methods are used to synthesize NPs; however, biological methods are preferred due to its eco-friendly, clean, safe, cost-effective, easy, and effective sources for high productivity and purity. The different mechanical, optical, magnetic, and chemical properties of NPs have been related to their shape, size, surface charge, and surface area. Detection and characterization of biosynthesized NPs are conducted using different techniques such as UV-vis spectroscopy, FT-IR, TEM, SEM, XRD, etc

Keywords: Green Synthesis, Nanoparticles, Characterization etc.

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Study the Variability in UV Irradianceover Kolhapurusing Microtops-II

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Abstract

The highly advanced Microtop II ozonometer has been used for the measurement of ozone over Atigre village near to Kolhapur. Micrometer II ozonometer contains the five optical filters (five channels) for solar irradiance measurements at five different wavelengths (305.5 nm, 312.5nm, 320.5nm, 936 nm and 1020 nm). Out of five, sequentially first three filters are used to measure the ultra-violet (UV) irradiance which are coming from the sun.The UV irradiance a measured in the form of voltage by the photodiodes incorporated in the instrument. Atigre village (16.74°N latitude, 74.37°E longitude, 604 meters altitude above sea level) is placed at low latitude stations and it isa unique station for the atmospheric study since it is covered by many small as well as large scale industries and urban activity. In this work, we have studied the variabilities in the UV irradiance and it'sseasonal, daily and diurnallyvariability for the considered time periods. The inverse relationship between the ozone and UV irradiance is very well known. The increase in UV irradiance indicates the loss of stratospheric ozone concentration. We observed that the UV irradiance is decreased from monsoon to winter and then after it increased towards the summer season. The apparent position of the sun is also responsible for such variation. We also found that the UV irradiance varies daily representing synoptic variation in the ozone and the effects of the weather conditions on the ozone. We have considered some days in a particular month to represent the diurnal behavior of the UV irradiance. The characteristic bell shaped UV irradiance diurnal structure is obtained which shows the seasonal variation in its amplitude. We have discussed the possible mechanism for variation of UV radiations in the Kolhapur region.

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Development of a Sustainable Superhydrophobic Coating by Polymer Layer Deposition on Candle Soot Surface via Dip Coating Technique

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Abstract

A robustsuperhydrophobic coating has been developed by depositing the polymer layer on the candle soot (CS) surface viadip coating technique.The weak physical interaction of the CS particlesthe substrate, results weaker the stability and robustness. In order to improve the mechanical propertiesof CS surface, we applied a thin layer of polystyrene (PS), polyethylene (PE), polypropylene (PP), and polyvinylidene fluoride (PVDF) on CS surface.The as PS, PE, PP and PVDF layer deposited CS surface revealedwater contact angles around 170°, 174°, 175°, and 171° with sliding angles of 2°, 1°, 1°, and 3° respectively. All polymer layer deposited CS surfacenot only exhibited excellent superhydrophobic but also self-cleaning surface property. Among them PP coated CS surface showedbetter stabilityagainst water jet impact as well as water drop impact tests.Even after 50 cycles of sandpaper abrasion and 20 cycles of adhesive tape peeling tests, the PP polymer deposited CS surface maintained superhydrophobic properties. The PP is a better polymer to improve the long-term durability of CS surfaceconfirmedby the mechanical durability tests.Therefore this approach can be used for potential industrial application.

Keywords: Candle Soot, Lotus leaf, polymer coating, Self-Cleaning, and Superhydrophobic.

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Nutritional Evaluation of Plant Leaf Powder of *Brassica Nigra* as Feedstuff In Formulated Diet for Growth of Indian Major Carp, *Cirrhinus Mrigala*

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Abstract

Fish culture greatly contributes to the socioeconomic welfare of rural population and provides high quality proteins for human consumption. In fish farming, nutrition is critical because feed represents 40-50% of the production cost. To reduce cost of fish meal, locally available ingredients such as agricultural byproducts and plant proteins included in diet for partial or total replacement of the expensive Protein source. In present study attempts have been made to assess the partial replacement of fish meal protein, *Brassica nigra* for Cirrhinus *mrigala.* The results showed that, increase in fish body weight and fish muscle protein content upto 50% inclusion level. The present results concluded that, *Brassica nigra* is promising source of plant protein used for partial replacement of fish meal in the formulated diet.

Keywords: Fish feed formulation, *Brassica nigra*- protein source

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Bacillus Siamensis as Biocontrol Agent against Rhizome Rot Causing Plant Pathogens

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Abstract

India is the largest producer of Haldi (turmeric) in the world, as suitable environment available, due to environmental conditions there is problem of disease. Rhizome rot disease, which causes 50% economic loss or damage in commercial production. We have isolated three biocontrol agents (BCA's) against few plant pathogens and checked their Morphological, Biochemical characteristics and identified by using molecular technique 16S rRNA. Identified organisms are *Bacillus licheniformis SSJ*, *Bacillus tequilensis SSJ*, and *Bacillus siamensis JSS.* The isolated organisms can be used in future as biocontrol agents, biofertilizers and biopesticides.

Keywords: *Bacillus siamensis, Biocontrol agents, Curcuma longa Linn., Biofertilizers and biopesticides.*

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Review on the Development of XRD in Samarium - Dysprosium Substituted Magnesium Ferrite

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Abstract

The present research work describes synthesized Sm - Dy Substituted Magnesium ferrite by a simple and inexpensive Combustion method. This method is one of the most important for the synthesis of nanomaterials. The Combustion method is used to obtain the nanoparticles which possess good chemical homogeneity, high purity, and lower calcination temperature. The $Mg[(Sm)_{0.6}(Dy)_{0.4}]_xFe_{2-x}O_4$, $Mg[(Sm)_{0.5}(Dy)_{0.5}]_xFe_{2-x}O_4$, $Mg[(Sm)_{0.4}(Dy)_{0.6}]_xFe_{2-x}O_4$ ferrite materials were successfully synthesized by chemical combustion route. The presence of nominated peaks in the XRD pattern confirmed the formation of cubic spinel ferrite phase with the presence of ortho-ferrite phase due to rare earth ions. It is observed that the intensity of ortho-ferrite phases increases with an increase in rare earth content.The formation of the ortho-ferrite phase will be producing structural distortion and thereby induces strain in the material, which modifies structural, magnetic, and electrical properties.

Keywords: Combustion method, Magnesium ferrite**,** nanomaterials

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BMI - A Simple and Easy Method to Assess Probable Health Issues in Students

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Abstract

Health depends on age, food we eat, life style, exercise and many other factors. BMI that is Body Mass Index which is measured between weight (kg) with height (m^2). It is easier and low cost method that indicates health related problems by the BMI number in which classification into normal, problematic and probable problematic. This is very good basic index for health issues if any. Students can be made aware and suggested consulting a Physician to avoid future health issues. Data is collected of 12^{th} std. students from Y.C.I.S college satara. A survey carried of some students at college level also shows the BMI in red region

Keywords: Height scale, Weight machine, BMI chart, students BMI cards.

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Investigation of Luminescence Properties of Ce^{3+} Doped $Li_2Al_4O_7$ Phosphor

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Abstract

The Ce^{3+} doped $Li_2Al_4O_7$ phosphors were prepared by the solution combustion synthesis. The prepared samples were characterized by the x- ray diffraction technique (XRD), ultraviolet-visible spectroscopy technique (UV- VIS), Fourier transform Infrared spectroscopy technique (FT-IR) and photoluminescence (PL) technique. From XRD it was observed that the prepared Ce^{3+} doped $Li_2Al_4O_7$ and pure $Li_2Al_4O_7$ had the cubic crystal structure. The calculated energy band gap of 1 m % , 5 m% and 10 m% Ce^{3+} doped $Li_2Al_4O_7$ were 2.73 eV and 2.62 eV respectively and for $Li_2Al_4O_7$ host it was observed 2.82 eV. Transmission FT- IR spectra showed the vibrations corresponding to Li—O, Al—O and Al—O—Al bonds in the range 550 to 800 cm^{-1}. The maximum emission intensity observed at 365 nm under the 272 nm excitation recorded using the PL technique. The emission was observed in the UV region therefore this phosphor may be applicable in UV emission lamps and scintillators.

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Some Results of Differential Subordination and Superordination by Using Generalized Differential Operator

Miss. Sarika Nilapgol

Abstract

This paper deals with some differential subordination and superordination results of analytic function using generalized differential operator.

Keywords: Analytic function, differential subordination, differential superordination, dominant, subordinant.

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Bioefficacy of Phenylmethane Sulfonyl Fluoride on Larval Triacylglycerol Acylhydrolase Activity of *Hellula Undalis* (Fabricius)

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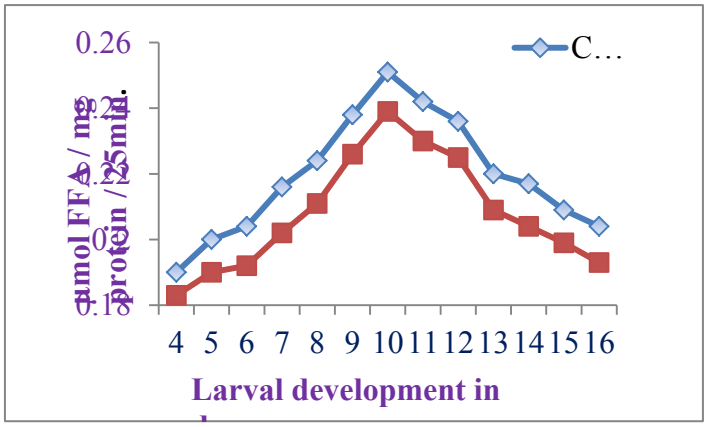
Abstract

Partial characterization of larval triacylglycerol acylhydrolase (EC 3.1.13) of *Hellula undalis* (Fabr.) revealed pH 7.7, incubation time 20 minutes, temperature 37°C, enzyme concentration 1% and substrate concentration 5% and km 9.38 mM. The triacylglycerol acylhydrolase activity is observed from 4-day larvae to 16-day larvae. The maximum lipase activity was observed in 10-day larvae. The lipase activity of 10-day control larvae was 1.05 fold more than Phenylmethane Sulfonyl Fluoride treated larvae, Arithmetic mean and standard deviation 0.2079 and 0.0230 of *H. undalis*. The inhibitory role of Phenylmethane sulfonyl fluoride on larval triacylglycerol acylhydrolase of *H. undalis* has been attempted in the present paper.

Keywords: Triacylglycerol acylhydrolase, larva, Phenylmethane sulfonyl fluoride (PMSF), *H. undalis*. (F).



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Polystyrene and Octadecyltrichlorosilane Dip Coated Superhydrophobic SS Mesh for Oil-Water Separation

Akshay R. Jundle[1],Sagar S. Ingole[1], Pradip P. Gaikwad[1], Rutuja A. Ekunde[1], Rajaram S. Sutar[1],A. K. Bhosale[1]and Sanjay S. Latthe[2]*

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Abstract

A superhydrophobic coating was produced on stainless steel (SS) mesh using the dip coating technique. On stainless steel mesh (SS), a layer of polystyrene (PS) and followed by a layer ofoctadecyltrichlorosilane (OTS) was deposited back-to-back eight times. The water contact angle (WCA),rolling angle, and oil contact angle (OCA) of the prepared coatings were 155±2°, 7±2° and 0°, respectively. The nano-level folds on micro-level bumps were observed on the stainless-steel mesh (SS) surfaceduring the surface microstructure study, which contributed to the surface's superhydrophobicity.The oil and water separation ability of coatings was tested using various oil and water mixtures, including petrol, diesel, kerosene, vegetable oil, and coconut oil. Thesuperhydrophobic mesh has showna separation effectiveness of more than 97% for low viscous fluids and less than 85% for high viscous oils. Low-viscous oils penetrated into the mesh at a higher rate than high-viscous oils. Bending, twisting, adhesive tape peeling, and sandpaper abrasion testing were used to assess the mechanical strength of the coating; the results demonstrated that coated mesh exhibited outstanding mechanical rigidity. Furthermore,the superhydrophobic mesh has revealed exceptional heat stability and self-cleaning ability.

Keywords: *Oil-water separation, stainless steel mesh, superhydrophobic, and superoleophilic.*

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The Sio_2-PS Composite Coated Superhydrophobic *Tectona Grandis Leaf* Mesh for Oil-Water Separation

Sagar S. Ingole[1], Akshay R. Jundle[1], Pradip P. Gaikwad[1],Rutuja A. Ekunde[1],Rajaram S. Sutar[1],A. K. Bhosale[1]and, Sanjay S. Latthe[2]*

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Abstract

In the present study, the nanocomposite of SiO_2 nanoparticles and polystyrene (SiO_2-PS) was deposited on the naturally dried *Tectona grandis leaf* mesh through the dip coating method. The leaf mesh demonstrated a water contact angle of 157 ± 2° and 8 ± 1° of water roll-off angle after being coated with 40 mg/ml of hydrophobic SiO_2 nanoparticles in a 15 mg/ml of PS solution. The crater-like structure of the superhydrophobic leaf mesh effectively separates oils with an absolute viscosity of less than 55 cP from oil-water mixtures such as petrol, kerosene, diesel, and coconut oil using gravity-driven oil-water separation. The coated mesh also maintains its separation efficiency of 95% for up to 18 separation cycles. This low-cost and eco-friendly approach is a promising method for reducing oil-water pollution in future.

Keywords: Tectona Grandis Leaf Mesh; Wettability; Superhydrophobic;Superoleophilic;Oil-Water Separation.

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A New Validated UHPLC-PDA Method for Simultaneous Quantification of AbirateroneAcetate, Its Six Specified Process Impurities, and Four Degradation Products and Confirmation of All Analytes Based On Molecular Weight

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Abstract

This article describes a simple, new, fast, time-saving, and cost-effective UHPLC method that was developed and validated for simultaneous quantification of Abiraterone acetate, its six process impurities, and four degradation products in bulk and tablet form. Moreover, when coupled with a mass spectrometer detector, the proposed method provides additional advantages for confirmation of peak and correct identification based on molecular weight. The eleven peaks were separated on a Waters Acquity BEH C18, (150 mm length, 2.1 mm I.D., 1.7 µm particle size) column maintained at a 50.0 °C temperature. Using 0.05% formic acid in 10mM ammonium formate, acetonitrile, and methanol as mobile phases in gradient elution at a flow rateof 0.40mL/min. provides excellent separation at 260 nm. The linearity curves of all analytes showed promising results with a correlation coefficient of 0.999 with a lower limit of detection and quantification. A forced degradation study on solid Abiraterone acetate proved its specificity with improvements and significance. This proposed method provides the best separation with a lower flow rate, which offers faster analysis, reduces wastage and cost, and specifies the greener advantages compared to reported methods. The outcome of the specificity, linearity, precision, and accuracy as per ICH guidelines proved that the proposed method is fast, time-saving, and cost-effective for the intended purpose.

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Title - Isolation of Ponceau 4R Degrading Bacteria from Textile Effluent

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Abstract

Water pollution is the main problem nowadays due to industrialization and increasing pollution. The wastewater generated from various industries is primarily treated and discharged into waterbodies leading to water pollution, soil pollution as well as it disturbs the aquatic flora and fauna. There are various techniques to treat this wastewater like filtration, flocculation, chemical oxidation, chlorination, ozonation, coagulation but due their high cost and secondary pollution these techniques are of limited value. To overcome this situation biological methods by using microorganisms and plants are of new interest among researchers. There are certain microorganisms like algae, fungi, bacteria which synergistically show their effect on treatment process by their various enzyme systems and complex metabolism. The soil present at the site of effluent treatment plant contains various microbial communities which are acclimatized to that environment and having potential to degrade various toxicants fromeffluent.

Keywords – Biological methods; Enzymes; Microbial communities; Soil pollution; Toxic dyes Water pollution.

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"Synthesis and Characterizations of Nickel Oxide Thin Film for Supercapacitor Application"

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Abstract

Nickel Oxide (Nio) thin films were successfully deposited by simple Electrodeposition Technique by using Nickel Chloride onto copper substrate at room temperature. Influence of substrate temperature on structural, surface morphological, optical and, electrical properties were studied using X- ray Diffraction, Scanning Electron Microscope and, Contact angle meter. XRD results reveal that, films are average grain size is 40.83 nm. XRD results reveal that films are polycrystalline with single phase cubic structure and crystallinity of the film increases as the temperature increases. Scanning electron microscopy studies indicate that, a strong dependence of the surface texture and grain size on the various experimental conditions. It shows that particles shown is micaceous an of lakes with dispersed sandwich and cauliflower in shape. This may be occurred due to urea used in the synthesis process as hydrolysis controlling agent. The porosity of the films increases after annealing which was observed from the SEM study. Contact angle of nearly 0˚ correspond to complete wetting. This clearly indicates the films having superhydrophilic nature.

Keywords: Electrodeposition method, XRD, SEM, Nickel oxide etc.

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Todays Impact of Environmental Changes on Biodiversity Conservation

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Abstract

Now a day, the most of the human beings have tried to make their life so comfortable and needful. In old days, the atmosphere, water, climate and the environment, aquatic ecosystem, were being balanced according to the laws of nature and environment they are depend on one another. But in current criteria, human being started cutting the number of forests, deforestation, the new constructed houses, society and industries for the causes of deforestation. Due to this, the numbers of bird's nests are destroyed. In industrial revolution, the number of rivers and seas are being polluted. In present days various industries such as thermal power station, paper industries, cement factories are causing pollution in atmosphere due to which depletion in ozon layer, melting of polar ice, rise in sea level, rise in atmospheric temperature & climate change destroy the biodiversity conservation. Hence it is essentioal and needful to save the biodiversity conservation.

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"A Study of the Mechanisms Underlying the Anti-Inflammatory Effect of *Mucuna Atropurpurea* in Carrageenan-Induced Paw Edema in Rats"

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Abstract

The aimof the present studywas to investigate the therapeutic effect of *Mucuna atropurpurea*seed extract (MASE) on carrageenan induced rat model as an anti-inflammatory mechanism.MASE at the dose of 400 mg/kg, significantly inhibited rat paw edema induced by carrageenan.MASE decreased the oxidative stress by reducing malondialdehyde (MDA)content, respectively along with up regulated glutathione (GSH), superoxide dismutase (SOD), catalase, and glutathione reductase (GR) activity in*M. atropurpurea* treated rats. Furthermore, the upregulated gene expression of the ROS-related inflammatory mediators COX-2, iNOS, and TNF- α as well as IL-1β, and IL-6 in the inflamed paw tissue were greatly decreases. whereas histopathological finding showed that neutrophil infiltration was greatly reduced by MASE treated rats at concentration of 400 mg/kg. Our findings conclude that *M. atropurpurea* water extract showed potent anti-inflammatory activity

Keywords: Mucuna atropurpurea, oxidative stress, anti-inflammatory, gene expression, neutrophil infiltration

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The Development of Self-Cleaning Superhydrophobic Coating Using PDMS and Candle Soot Nanoparticles Composite by Spray Technique

Pradip P. Gaikwad[1], Sagar S. Ingole[1], Akshay R. Jundle[1], Rutuja A. Ekunde[1], Rajaram S. Sutar[1], A. K. Bhosale[1],and Sanjay S. Latthe[2]*

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Abstract

Over the last decade, candle soot (CS) nanoparticles have gained attention due to their easy synthesis process, low cost, hydrophobic property, and potential applications. In the present work, candle wax was burned to create CS nanoparticles, which were then collected from the middle of the flame. The coating composite was prepared by dispersing CS nanoparticles (100 mg) in a solution of polydimethylsiloxane (PDMS) (0.3 mL) dissolved in chloroform (5 mL) and spray-coated on glass micro slides. The as-prepared coating exhibited a water contact angle of 167° and a low sliding angle of 5°. The scanning electron microscopy (SEM) analysis showed CS nanoparticles agglomerated, formed nano-voids produced rough structured surface.As a result, the coating met the criteria for the Cassie-Baxter state.The results of the adhesive tape peeling test and sandpaper abrasion test indicated that the coating was capable to maintain its superhydrophobic properties for up to four cycles of the adhesive tape test and seven cycles of the sandpaper abrasion test. Furthermore, the coating demonstrated good resistance against water jet and water drop impact tests.While dust particles were randomly spread on the coated substrate, the dust was easily removed with rolling water droplets that proved the coating's self-cleaning properties to be excellent. Such an approach is promising for large-scale industrial applications.

Keywords: Candle Soot nanoparticles; superhydrophobic coating andself-cleaning coating.

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Development and Evaluation of Herbal NanoemulgelFormulation for Psoriasis Management

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Abstract

The present investigation aims to screen the potential of methanolic extract of *Clerodendrum inerme* for psoriasis management through in silico, in vitro and in vivo testing. CIE was subjected to phytochemical and spectroscopic analysis to determine presence of vital phytoconstituents. Molecular docking of phytoconstituents from the *Clerodendrum inerme* showed good binding ability towards the selected anti-psoriatic targets particularly TNF-α andIL 23. Eventually, the reliability of results of virtual analysis and antipsoriatic potential of *Clerodendrum inerme* were tested by an anti-oxidant assay using DPPH radicals (60.83 ± 0.37%, ascorbic acid 78.37±0.62%), anti-proliferative activity against A-431 cells (38.81±0.83, 5 FU (46.15±0.95) and anti-inflammatory activity based on protein denaturation method (51.92±1.27%, aspirin (77.11±1.19%). Extract of *Clerodendrum inerme* was identifiedby the UV and IR spectroscopy. Nanoemulsion of CIE was developed with spontaneous emulsification method Formulated batches were characterized for, Thermodynamic stability, pH, particle size (184nm±1.27), zeta potential (-717.5mV), Refractive index etc. The hydrogelof carbopol 934 was prepared and characterised for the, washabilty, consistency, homogeneity, phase separation, viscosity, pH, rheology, spredabilty, TPA and stability study. In vivo activityassessed with IMQ induced Balb c mice shows the promising results with comparison to extract and marketed formulation. Our findings fortify the potential of *Clerodendrum inerme* as a potential agent for the management of psoriasis.

Keywords: Insilico, Psoriasis, DPPH, Nanoemulsion.

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Comparative Study on Incidence of Seasonal Diseases in Commercial SilkwormCrossbreeds MV1 × S8 and PM × FC2 (*Bombyx Mori* L.) in Kolhapur, Maharashtra

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Abstract

In the present study incidence of seasonal diseases in newly developed silkworm crossbreeds MV1 × S8 (Cavery gold) and PM × FC2 (Mysore gold) was conducted at Department of Zoology, Jaysingpur college, Jaysingpur. During, 2020-2021 and 2021-22 larvae of these crossbreeds were examined for grasserie (BmNPV), Flacherie (BmIFV), BmDNV, Muscardine (*Beauveria bassiana),* we have reported all these diseases during study.Incidence of diseases was recorded more in PM × FC2 as compared to MV1 × S8. Flacherie and Grasserie were higher in PM × FC2 as it depends on season. Muscardine disease during winter season was on the pick during winter season. Study shows the scenario of disease incidence which affects the productivity of cocoon.

Keywords: MV1 × S8, PM × FC2, BmNPV, BmIFV, BmDNV, Beauveria bassiana, Productivity.

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Studies on the Plants Used In Kolhapur District for the Treatment of Skin Diseases and Burns

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**Botany Department, KET's V.G.Vaze Collegeof Arts, Science andCommerce (Autonomous), Mulund (E), Mumbai

Abstract

Kolhapur is one of the district from Western Maharashtra, situated at 16.3935^0 N, 74.1240^0E.Radhanagari, Gaganbawda, Shahuwadi and Panhalataluka of Kolhapur district are located in hilly area are having rich vegetation, were focused for the present study. The populations of the study area are using the plants available in the surroundings for the treatment of various diseases and ailments. Present investigation of the study area deals with the plants used in the treatment of skin diseases and burns. 11 plant species belonging to 11 families were recorded during the present study.

Keywords: Skin diseases, burns, Kolhapur district, medicinal plants

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Metal Oxide Composite for Biomedical Field

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Abstract

Polyaniline and polyaniline/Iron oxide nanocomposites were synthesized by electrochemical in-situ polymerization technique. The formation of PANI/Iron oxide nanocomposites with regards to the structural properties of the materials were investigated by electrochemical parameters. Iron oxide in polymer matrix show highest sensitivity. Its good environmental as well as electrical conductivity tunable by appropriate doping make PANI an ideal active material for biomedical field.

Keywords: Polyaniline and Polyaniline, composites, electrochemical method superparamagnetic.

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Development of Alkynyl Functionalized Mixed Ligand Ni(II) and Zn(II) Complexes

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Abstract

Nickel(II) and Zn(II) complexes of type [Ni**(L_1)(phen/bipy)**]X(**1a-6a**) and [Zn**(L_1)(phen/bipy)**]X(**1b-6b**)(Where **L_1**= 4-((2-hydroxy-4-trimethylsilyl)ethynyl)benzylidene)amino)-1,5-dimethyl-2phenyl-1,2-dihydro-3H-pyrazol-3-one; phen.= 1,10 Phenanthrolene; bipy =2,2'bipyridine; X= ClO_4^-, BF_4^-, PF_6^-. have been prepared and characterized based on elemental analyses, FTIR, ^{1}H NMR and mass spectral studies. ^{1}H NMR studies determined the molecular structure of ligand **L**.

Keywords: *Alkynyl Functionalized Schiff Base, Ni(II), Zn(II) complexes.*

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Analysing and Minimizing Complexity of the triangular-Rectangular Number Algorithm Using Pells Equation Using Python 3

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Abstract

The aim of this research paper is to study the properties of Triangular-Rectangular numbers with the help of recurrence relations which will lead to minimize the time complexity and space complexity for such algorithms with the help of Pell's equation and components of Pell's equation using machine learning algorithms.

Mathematics Subject Classification:

11B83	Special sequences and polynomials
11B37	Recurrences
68Q25	Analysis of algorithms and problem complexity
65D20	Computation of special functions and constants, construction of tables
33F05	Numerical approximation and evaluation of special functions
65Q30	Numerical aspects of recurrence relations

The On-Line Encyclopedia of Integer Sequences:

OEIS A029549

ACM Computing Classification System:

G.1.6	Mathematics of ComputingNUMERICAL ANALYSISOptimization
I.2.6	Computing MethodologiesARTIFICIAL INTELLIGENCELearning

Keywords: Triangular number, rectangular number, Pell's Equation, Pell-Fermat Equation, Python 3, Recurrence Relation.

Oneness of Natural Number: Special Series and Their Mappings

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Abstract

The aim of this paper is to optimize algorithm for Collatz Sequence which is exponential in nature and has factor 2. To study the properties of Collatz sequence of odd natural numbers and all natural numbers. To check the sum of odd sequence results in a perfect square or not, sum of complete sequence results in square or not and at last, to check whether odd sequence consist of all odd terms in an arithmetic sequence or not and mapping them with natural numbers.

Mathematics Subject Classification:

11B83 Special sequences and polynomials

40J05 Summability in abstract structures

65B10 Numerical summation of series

KEYWORDS:

$3n + 1$ conjecture, Collatz conjecture, Collatz function, Hailstone sequence, Hasse algorithm, hit factor, HOTPO, Kakutani's problem,Thwaites conjecture, Ulam conjecture, Collatz Square Numbers, Collatz Odd Square Numbers, Collatz Partial Odd Square Numbers., Collatz Complete Square Numbers, Collatz Complete Odd Square Numbers, Collatz Pair Square.

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Seasonal Effect Of Ph On The Respiration Of A Freshwater Bivalve Mollusc, *Indonaia Caeruleus,* From Thebhima River At Pandharpur, Maharashtra.

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Abstract

Molluscans are considered a significant part of the aquatic ecosystem. Bivalve mollusks play a similar role in the aquatic food chain. These bivalves are widely spread in a variety of aquatic environments. The internal physiology of the bivalve molluscs is influenced by changes in the external environment. The quality of the water is deteriorating faster due to natural and human phenomena, which affect many resources. Due to changes brought about by physical, chemical, or biological factors, they directly affect the natural quality of the aquatic environment. Humans directly affect and have an impact on things like agricultural productivity, aesthetic values, recreational activities, life styles, industrial capability, etc. because of their natural activities. Due to these various natural resources like land, water, air, and vegetation getting adversely affected, These results include the release of large quantities of domestic sewage and enter the stream and river and, in an untreated state, result in a reduction of oxygen levels and producing pathogenic bacteria.

The present investigation is an attempt to study the effect of pH on the oxygen consumption of the freshwater bivalve mollusc, Indonaia caeruleus, during three different seasons. The changes in the rate of oxygen consumption were compared with the control group and indicated changes in the rate of respiration. To understand the effect of pH on respiration, in three different seasons, the animals were exposed to pH 6.0 and pH 8.0 experimental groups for duration of 15 days. The rate of oxygen consumption was determined from the control as well as the pH 6.0 and pH 8.0 experimental groups on the 5th, 10th, and 15th days. The results indicate that the physiological functions of *Indonaia caeruleus* are more severely impaired due to pH variation in different seasons due to the stress of change in the surrounding media.

Key words: pH, respiration, *Indonaia caeruleus*, Bhima River.

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Chickpea Leaf Exudates Bronsted Acid-Type Biosurfactant Forheterocyclization: A Green Protocol For Quinoxalines Synthesis

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Abstract

CLE as a natural catalyst as well as a biosurfactant for cyclocondensation of *o*-phenylenediamines and benzil derivatives for the synthesis of quinoxalines in water at room temperature.The structures of the final compounds were confirmed with the aid of IR, ^{1}H NMR, and ^{13}C NMR spectroscopy.CLE as a natural biosurfactant provides a micellar media for effective organic transformation.The CMC of *Chick pea leaf exudates*wasdetermined by the conductivity method. In comparison to theconventional methods, this synthetic pathway complies with severalkey requirements of green chemistry principles such as the utilizationof renewable feedstock, auxiliary aqueous conditions, waste prevention,and atom economy along with the use of biodegradable catalyst.Thus, the reported protocol offers an attractive option because of itsecological safety, environmental acceptance, sustainability, and lowcoststraightforward work-up procedure.

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One Pot Synthesis of Tetrahydrobenzo[*A*]-Xanthen-11-One Derivatives Catalyzed by Acacia Concinna Extract

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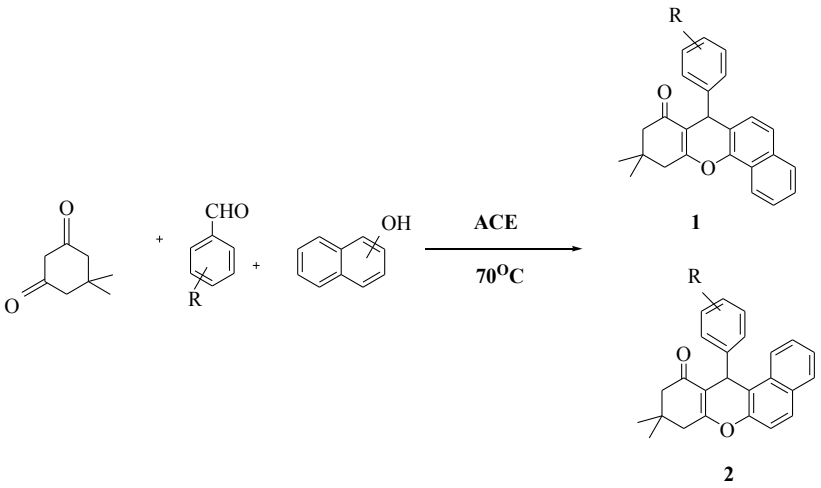
Abstract

A one-pot multicomponent reaction of aldehydes, dimedone and 1- or 2-naphthols is described to afford tetrahydrobenzo[α]xanthen-11-one derivatives catalyzed by Acacia concinna extract as a mild, inexpensive, and environmentally benign catalyst. The products were synthesized successfully in good to excellent yields.

Keywords: tetrahydrobenzo[*a*]-xanthen-11-one, dimedone, acacia concinna, multicomponent reaction.



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A Review on Superhydrophobic Surfaces: Fundamentals, Fabrications and Applications

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Abstract

Superhydrophobic surfaces are highly hydrophobic i.e., it extremely difficult to wet. Superhydrophobic surfaces are the tendency to repel water drops and absorb oil drops. The water contact angle of superhydrophobic surfaces is greater than 150°, the oil contact angle is less than 5°, and the sliding angle is less than 5°. Itis showing the lotus effect. Superhydrophobicity is observed inthe lotus leaves, insects, and some other plants in which their leaves would not get wet.This phenomenon is due to the unique surface structure of the lotus leaf and also the presence of a low surface energy material on the surface of the leaf. For the formation ofa superhydrophobic surface, the surface must show hierarchical micro- and nano-roughness and low surface energy. Efforts have been taken to form superhydrophobic surfaces for a variety of applications. There are many applications of superhydrophobic surfaces such as self-cleaning surfaces, oil-water separation surfaces, anti-icing surfaces, anti-corrosion surfaces, anti-fogging surfaces, and water-resistant surfaces. In this article, the fundamental principles of superhydrophobic surfaces, some recent trends in the fabrication of superhydrophobic surfaces, and their applications are reviewed and discussed.

Keyword: Superhydrophobicity, Superoleophobicity, Lotus effect, Self-cleaning, Oil-water separation, Water-repelling, Oil Contact Angle, Water Contact angle, Anti-icing, Anti-corrosion.

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Conversion of Lignocellulosic Sugarcane Bagasse Waste into Glucose For Biofuel Purposes

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Shardabai Pawar Mahila Arts, Commerce and Science College, Baramati

Abstract

Sugarcane bagasse is one of the most abundant byproduct of agroindustries. It generates 30-40% bagasse. Sugarcane bagasse contains approximately 40-50% cellulose and 30-35% hemicellulose and lignin 10-24% that can be converted into fermentable sugars like glucose by chemical treatment. In this study, we performed experiments on bagasse by acidic and basic method under autoclaved condition. Cellulose, hemicellulose and lignin in bagasse is converted into Glucose chemically. Normal sugarcane bagasse contains12.04% lignin the most complex component was degraded by chemically. After treating bagasse by acidic treatment the lignin percentage was reduced up to 5.18% and by alkaline treatment the lignin percentage was reduced up to 6.32%. The Glucose concentrationfound in acid treated (1.5%) bagasse was 12.09 mg/ml. The glucose concentration found in alkali treated (1.5%) bagasse was 4. 58 mg/ml. Thus, 1.5% acid treatment of bagasse has given more concentration of glucose for future Biofuel and other metabolite production.

Keywords: Sugarcane Bagasse; Lignocellulosic; Biofuel; Alkaline; Acidic; Metabolite; Glucose

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Zooplankton Diversity Indices and Seasonal Variations Iningale Pazar Lake Palus Tehsil District Sangli (Ms)

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Absract

Zooplankton diversity indices and its seasonal variation were studied during June 2016 to May 2017. A total of forty twodifferent species were found. Among these nineteen species of rotifer belongs to five families, thirteenspecies of cladocera belongs to five families, five species of copepod to twofamilies, five species of protozoa belongs to fourfamilies were identified.The higher density of zooplankton was observed during summer seasondue to availability of foodand lowest in winter and rainy season due to predation. The species diversity of zooplankton was determined by using diversity indices like species richness(S), evenness (E) and Shannon-Weaver index (H). The maximum values of Shannon-Weaver index (H) were recorded 1.24 to 2.0 in summer season and species richness value varies from 1.8 in winter season and 2.1 in rainy season. Evenness value varies from 0.92 in summer to 0.95 in rainy. It was noticed that zooplankton population, richnessandevenness was maximum in summer and minimum in winter and rainy season.

Keywords: *Zooplankton diversity,richness(S), evenness (E), Shannon-Weaver index (H)*

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Analysis of Mycoflora Isolated from Different Varieties of Soybean and its Effect on Sprouting

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Abstract

Fungi associated with four soybean (*Glycine max* L.) varieties namely Ahilya 1,Ahilya 2, Ahilya 3 and Ahilya 4 were identified using blotter paper method. Nine fungal species namely *Alternaria alternata* (Fr.) Keissl., *Aspergillus flavus* Link, *Aspergillus niger* van Tieghem, *Aspergillus oryzae* (Ahlburg) E. Cohn, *Fusarium oxysporum* Schlecht. Emend. Snyder & Hansen. *Macrophomina phaseolina* (Tassi) Goid., *Mucor* sp., *Penicillium italicum* Wehmer and *Sclerotium rolfsii* Sacc. were found associated with the seeds of selected soybean varieties. The highest fungal incidence (100%) was recorded in Ahilya 3 where all the seeds were found fungal contaminated followed by Ahilya 1 (48%), Ahilya 2 (44%) and Ahilya 4 (42%). Seed germination in surface-sterilized and non-sterilized seeds ranged from 96-100% and 88-96%, respectively. The difference in germination between surface-sterilized and non-sterilized was insignificant in all the varieties except Ahilya1. However, radicle length was significantly lower in non-sterilized seeds as compared to sterilized ones. The highest value of correlation coefficient (r = 0.95) was recorded between *P. italicum* and germination followed by r = 0.72 between *S. rolfsii* and radicle length.

Keywords: *Mycoflora, Glycine max, Blotter paper method, sprouting*

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Synthesis and Anticancer Evaluation of Tryptophan Derived Copperand Zinc Complexes with B-Carboline

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Abstract

The development of preferentially selective cancer chemotherapeutic is a new trend in drug research. However unbearable side effects and drug resistance limits their clinical application which creates a thrust for alternative chemotherapeutic designs. Consequently, the broadpharmacological spectrum of β-carboline ligands against tumor growth prompted synthesis and probe of their corresponding metal complexes for improved competence as a multimechanistic anticancer. Hence, in our present work biocompatible tryptophan derived copper and zinc complexes with Harmane (β- carboline) were designed, synthesized and characterized, using FTIR, ^{1}H NMR, ^{13}C NMR, XRD, FE-SEM-EDX which valid the proposed structure; the results indicate that the zinc and copper ion respectively coordinate tothe ligands to give distorted square pyramidal complexes and Magnetic susceptibility confirm paramagnetic nature of Cu-complex as well diamagnetic nature for Zn-complex . Furthermore it is planned to screen our complexes for their anticancer activity.

Keywords: Tryptophane, Harmane (β-carboline), Cu-complex, Zn-complex, Anticancer activity

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Effect of Temperature and Relative Humidity on Seed Crop Performance of FC3(CSR50 × CSR52) and FC4 (CSR51 × CSR53) Silkworms (*Bombyx Mori* L.) in Kolhapur, Maharashtra

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Abstract

FC3 and FC4 are very highly climate sensitive hybrids which cannot tolerate diurnal and seasonal fluctuations. Deviations in humidity and temperature levels below and above certain critical limits affects larval growth and development. In present study several experiments were carried out in four different temperatures i.e. 20±3ºC, 24±3ºC, 28±3ºC and 32±3ºC each with three relative humidities i.e. 50%, 70% and 90%. The results of the present study show that the rearing of the silkworms in four different temperatures and relative humidities affects on the larval and cocoon weight, size and health. Our findings/observations clearly indicate that the 28±3ºC temperature and 70% relative humidity was best for larvaland cocoon parameters of FC3 and FC4 hybrids.

Keywords- Cocoon parameters, *Bombyx mori*, humidity, temperature

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Effect of Convex Lens on the Performance of Solar Cell

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Abstract

In order to understand how well photovoltaic power generation performs, it is necessary to analyses the electrical performance parameters of the photovoltaic cell generated using solar energy. Identify the factors that influence them, the effect study on the power generation efficiency of solar cell was obtained by examining its link with influencing elements.

In this work we examine how the solar radiation passing through the convex lens affect the various parameters including output power, short circuit current, open circuit voltage of polycrystalline silicon solar cell. I-V characteristics of these cells were plotted at room temperature by keeping various distances between source and solar cell. In the presence of lens and without lens. The maximum point's output voltage and current were measured in the presence of lens between light source and photovoltaic cell.

Result of the experiments shows that in the presence of lens light intensity is high and it will result in better solar cell performance in terms of generating electricity.

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Environmentally Benign Synthesis of Quinoline-3-Carbonitrile Derivatives via One Pot, Modification

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Abstract

Bleaching earth clay catalyzed multicomponent reaction of Heterocyclic aldehyde, 2-cyanoacetohydrazide and substituted Anilines; In PEG-400 is carried out. This method has been applied for the synthesis of quinoline-3-carbonitrile with good to excellet yield. In this study a comparison is made on triethylamine, piperidine, and morpholine with Bleaching earth clay and with no catalyst. The studies revealed that bleaching earth clay and PEG-400 are more effective than other catalyst and solvents. It increases the yield of product with less time consumption. All the synthesized compounds were characterized for their spectral analysis.

Keyword: Bleaching earth clay (BEC), PEG-400, Heterocyclic aldehyde, recyclability.

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Screening of Cost-Effective and Most Efficient Soilless Media for the Growth of Cucumber (*Cucumis Sativus*) in Dutch Polyhouse

Dr. Jayant P. Rathod, SamikshaPisal, PreetyJadhav and Pranali Randive

Abstract

The advanced technology of soilless agriculture is used nowadays to overcome the shortcomings of traditional agriculture using soil for plant growth. For the same choosing the right and cost-effective media is the need of an hour in India. Different soilless media are Coco-peat, Vermicompost, Rice straw, Bagasse, etc. In the current study, the most effective soilless media were screened based on the growth parameters of the cucumber climber. The experiment was carried out in a Dutch playhouse at CoE in Vegetables, Baramati, Pune, Maharashtra. The experiment was performed in triplicates with two different sets (Set I- media with nutrients and Set II- media without nutrients). The above-mentioned media were used as complete supporting media and in the combination of 50-50%. The Vermicompost showed the best results as 100% supporting media and in combination. The cost of Vermicompost and Coco-peat is same (Rs. 8/Kg) and it can be replaced with vermicompost based on our studies. Vermicompost in combination with other soilless media (rice straw, bagasse) also gave good results and can be used to reduce the cost (Rs. 5-6/kg) of soilless media. Also, the Vermicompost plants did not require the nutrients till the 40th day and showed similar plant growth as compared to other sets with nutrients. It will reduce the cost of nutrients and can add to farmers' income.

Keywords: Soilless media; Coco-peat; Vermicompost; Rice straw; Bagasse; Dutch polyhouse; Cost-effective

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Zinc Ferrite is an Efficient and Recyclable Catalyst for the Synthesis Of 2, 4, 6-Triarylpyridines Under Solvent- Free Conditions

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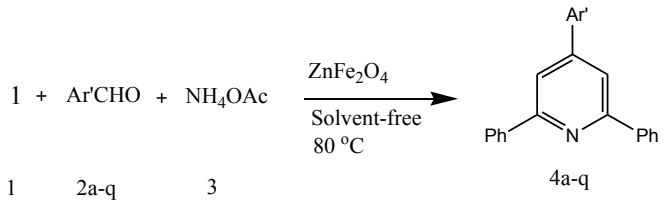
Abstract

Kröhnke pyridines have been widely used as photo sensitizers [1], chemo sensors [2], and intermediates in the synthesis of luminescent materials, herbicides, insecticides, surfactants, and therapeutic drugs [3]. The classical method for the synthesis of 2,4,6-triarylpyridines involved cyclo-condensation of acetophenones, benzaldehydes and ammonium acetate in the presence of various catalysts such as cyanuric chloride, PPA-SiO_2, $H_{14}[NaP_5W_{30}O_{110}]$, PEG1000-DAIL, ionic liquids, PFPAT, TrCl, MIL-101-SO_3H, DPTA, $ZrOCl_2$, TiO2–SO_3H, $Bi(OTf)_3$, ZnO nanopowder, Fe_3O_4@TiO_2@$O_2PO_2(CH_2)_2NHSO_3H$ or $HNTf_2$, AcOH, DBH, $MgAl_2O_4$ nano-crystals and exclusive of catalyst. Even though above methods have their own merits, most of them are associated with one or more weaknesses such as use of precious and commercially unavailable catalyst, use of organic solvents, tedious work up procedures, high reaction temperature and time.

In continuation of our work on ZnO [4], we report here a simple, efficient and clean one pot three component procedure for the synthesis of 2, 4, 6-triarylpyridines in presence zinc ferrite ($ZnFe_2O_4$) as heterogeneous catalyst under solvent-free conditions.



Scheme 2

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Socio-Economic Status of Village Banali, Jath

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Abstract

Socio-economic status of villages in developing country is a major issue in contemporary world. In India, share of rural population is more, near about 65% population ofIndia is living in rural areas. The issues which rural population having is different. But now days, things are changing drastically. Livelihood status is changing accordingly. Rural economy is mostly depending on agriculture and allied activities. Indian agriculture is also facing climatic diversities. Water scarcity is also major problem of Indian agriculture. Livelihood status is unknowingly depends on the development of agriculture. If the climatic condition is good, then production of agriculture is also having great impact on the villagers' life. Socioeconomic determine the living standard as it is as indicator of level of knowledge, skills and income which are conditions for living.

Keyword: Socio-economic, agriculture etc.

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General Assessment of Solid Waste Management in India

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Abstract

Waste it is defined as any material that is not useful and does not represent any economic value to its owner, the owner being the waste generator. Depending on the physical state of waste, wastes are categorized into solid, liquid and gaseous. Solid Waste includes Solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste and other non-residential wastes, street sweepings, silt removed or collected from the surface drains, horticulture waste, agriculture and dairy waste, treated biomedical waste excluding industrial waste, bio-medical waste and e-waste, battery waste, radio-active waste etc.

Keywords: e- waste, biomedical waste, Industrial waste, radioactive waste.

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The Application of Solar Technologies for Sustainable Development of Agricultural Sector in India

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Abstract

Solar energy is the most abundant of all energy resources and can even be harnessed in cloudy weather. The rate at which solar energy is intercepted by the Earth is about 10,000 times greater than the rate at which humankind consumes energy. There are many advantages of using solar-technologies also to the farmers. Besides offering a reliable energy source to the farmers, for example solar pumps offer a cost-effective and environment-friendly alternative for irrigation. Moreover, it is beneficial for the remote areas in the country where electricity is still a privilege to the farmers. The present study is a state of art on the numerous new and feasible technologies of solar energy applications in the agricultural sectors. It discusses about the importance of solar energy as environmental clean technologies and the most reliable energy source. This study covers different types of solar energy systems like as solar photovoltaic and solar thermal for pumping water, drying crops, cooling the storages, Agrivoltaics and producing heating/cooling greenhouses. It has been proven that photovoltaic systems and/or solar thermal system would be the suitable options in agricultural application and especially for the distant rural area.

Keywords: Photovoltaic systems , solar water pump system, Solar drying, Solar cooling storages, agrivoltaics.

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Human Development Index (HDI): A Study of Satara District of Maharashtra (India)

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Abstract

The Human Development Index (HDI) is a summary composite index that measures average achievement of particular nation in three basic aspects of human development. These aspects are known as 1.A long healthy life 2.the Knowledge 3.A decent standard of living. Present research high lighting the level of human development in Satara District through constructing HDI for the district Maharashtra State. The Satara District is moderately populated district in the state. This district has made remarkable progress in the field of education, industrialization and medical sciences. This has been made tremendous change in literacy. District has large number of schools

This district is getting benefited by proximity of highly developed cities like Pune and Mumbai.

The study find out that Satara District lies in medium level of HDI.

Key words: HDI, Literacy, index, life expectancy.

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Synthesis, Characterization and Catalytic Application of Al-MCM-41 for the Preparation of 2H-Indazolo[2,1- B]Phthalazine-Trione Derivatives

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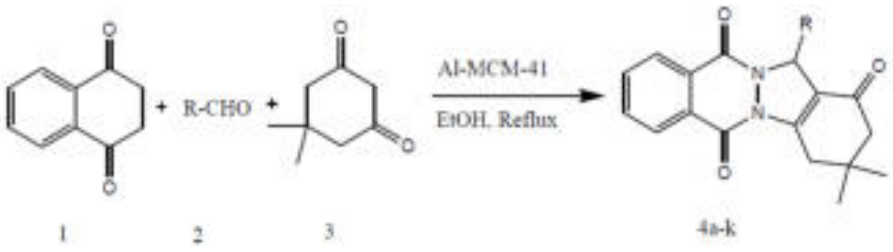
Abstract

Phthalazine derivatives have attracted much attention due to their wide range of applications such as antimicrobial, antifungal and anti cancer activities.[1,2]An efficient synthesis of 2H-indazolo[2,1-b]phthalazine-1,6,11(13H)-trione derivativesfrom the three-component condensation of dimedone, arylaldehyde, phthalylhydrazideusing reusable Al-MCM-41 catalyst. MCM-41 material synthesized using slagas a silica source, which is the waste product steel production.Al $^{3+}$a trivalent cation replaces forSi^{4+}, the framework possesses a negative charge that can be compensatedby a proton to form a Bronsted acid site.[3]



Scheme 1

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Effect of Carbon and Nitrogen on the Growth of *Sclerotium Rolfsii*sacc., Causing Fruit Rot of Ridge Gourd

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Abstract

Fruit rot of ridge gourd (*Luffa acutangula* L.) caused by *Sclerotium rolfsii*Sacc., has been emerging as one of the biotic threats in the profitable cultivation of ridge gourd field. Therefore, the present study was undertaken with the objectives viz., effect of carbon and nitrogen sources on the growth of *Sclerotium rolfsii*Sacc., The nutritional requirement of the test pathogen was carried out by using various carbon and nitrogen sources. All six carbon sources were significantly utilized by the pathogen. Maltose gave a higher growth rate of both sensitive and resistant isolates while Dextrose showed slightly slower growth as compared to other carbon sources.Among the four nitrogen sources, Magnesium nitrate, Calcium nitrate and Ammonium nitrate were best for the growth of the test fungus while Zinc nitrate significantly inhibits the growth of the pathogen.

Keywords: Carbon, Nitrogen, Sclerotium rolfsii Sacc., Ridge gourd.

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Protective Effect of *Petroselinum Crispum* Extract on Histology of Sublingual Gland Ofd- Galactose Induced Aged Male Mice

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Abstract

The aging is generally characterized by the declining in ability to respond to stress, increasing homeostatic imbalance and increased risk of diseases. Aging promotes free radical formation in the cell. Free radicals formed due to aging or various reasons are scavenged by antioxidants. In present study antioxidant rich plant, *Petroselinum crispum* (mill), was used to assess free radicals generated during aging. Five groups of mice were used duringthe experiments. Study was restricted to sublingual gland. Histological sections of gland were stained with haematoxylene and eosine. Study shows damage in sublingual gland in D-galactose induced mice as compare to control. Parsley corrected the histological structure of sublingual gland as well as weight of mice in D-galactose induced aged animal.

Keywords: Aging, sublingual gland, histology, D-Galactose, *Petroselinum crispum.*

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Seasonal Variations In Physico-Chemical Parameters Of Bhagyanagar Lake In Khanapur Tehsil, District Sangli (M.S), India.

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[2]Department of Zoology, P. D. V. P. College, Tasgaon. (MS) India.

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Abstract

The present study was aimed to see the seasonal variation of Physico-chemical parameters of water samples collected from Bhagyanagar Lake located inSangli district. For the present study, carried out during February, 2022 to January, 2023. The water parameters such as pH, Electrical conductivity, Total hardness, Total dissolve solids, Total alkalinity , Calcium, Magnesium, Phosphate, Sulphate, Nitrate were measured and analyzed by standard methods.The present study indicates that the mean seasonal valuesof phosphate, sulphate and nitrate are withinpermissible limits by Indian standards.The result revealed that the water in Bhagyanagar Lakesuitable for drinking purpose.

Key words: Alsand Lake, Bhagyanagar Lake, Physico-chemical parameters, etc.

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A Study on Butterflies (Rhopalocera) Diversity in Raje Ramrao Mahavidyalaya Campus, Jath, Sangli District, Maharastra State, India.

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Abstract

A study on butterfly diversity was carried out in Raje Ramrao College Campus, Jath Tehsil of Sangli district, Maharastra state, India. Field studies were made to record the diversity of butterflies at college campus in Jath during 2020 to 2022, a total of 35 species of butterflies were recorded from 30 genera belong to 4 families. Butterflies are wonderfully diverse in shape, size and their colours. They also perform some important ecological significance. The most important function they involved in pollination. They also act as an ecological indicator.

The study area (College campus) is rich in butterfly diversity and further research could be conducted to obtain more details and documentation on butterfly diversity for the conservation and development of butterfly garden.

Keywords: Diversity, Butterfly, Conservation, Campus

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Seasonal Variations in Physico-Chemical Parameters of Bhagyanagar Lake Inkhanapur Tehsil, District Sangli (M.S), India.

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Abstract

The present study was aimed to see the seasonal variation of Physico-chemical parameters of water samples collected from Bhagyanagar Lake located inSangli district. For the present study, carried out during February, 2022 to January, 2023. The water parameters such as pH, Electrical conductivity, Total hardness, Total dissolve solids ,Total alkalinity ,Calcium, Magnesium, Phosphate, Sulphate, Nitrate were measured and analyzed by standard methods.The present study indicates that the mean seasonal valuesof phosphate, sulphate and nitrate are withinpermissible limits by Indian standards.The result revealed that the water in Bhagyanagar Lakesuitable for drinking purpose.

Keywords: Alsand Lake, BhagyanagarLake, Physico-chemical parameters, etc.

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Study of Diversity of Birds in Chandgad City and Near Area of Chandgad, Dist- Kolhapur (Maharashtra)

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Abstract

Present study work is done in Lock down period of COVID-19 and this period was important time for avifauna with less human disturbances. The survey of availability and distribution of bird species in Chandgad city and near area during the lockdown and post lockdown period was carried regularly. The present bird diversity in Chandgad city and near area of Chandgad Tehsil, District Kolhapur (MS) India was done from March 2020 to June 2021. A total of 80 bird species belonging to 10 orders were reported from study area. The observation shows that bird's diversity from Chandgad city and near forest is rich and greater number. It was also observed that the less pollution, well climatic conditions, cultivated and wild vegetation available in good, which was the important factor for richness of bird numbers and with less human disturbance in the study areas of Chandgad city in Lock down period. During the study period, some migratory birds are also recorded.

Keywords: Bird species, lockdown, post-lockdown, Chandgad city.

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Vegetative Morphology Study for Species Identification

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Abstract

MTR consists of a succession of hills and valleys, marked by abrupt changes in altitude, aspect and gradient. The forest was under great biotic pressure; it was important that management authorities should handle this issue as a priority work. The vegetation site was consisting mostly of middle and small sized trees, due to the hot dry climatic conditions, except *Tectonagrandis.*The present research work was based on this survey and study it was possible to derive the specific requirement to define the species in the softwareform with its necessary information. List of tree species was generated with its local and scientific names and their taxonomical identification to make data ready for computation study.The Melghat Tiger Reserve is situated in the Satpura range of hills within the 'Central Highlands' province of the Deccan Biogeographic Zone of Peninsular India. MTR in the southern Satpuras is located in Dharni and ChikhaldaTahasils of Amravati District of Maharashtra (21^0 15' N to 21^0 45' N Latitude and 76^0 57' E to 77^0 30' E Longitude) about 50 km from Parathwada. MTR consists of a succession of hills and valleys, marked by abrupt changes in altitude, aspect and gradient. The southern part of the reserve is more rugged than the rest of the region. The area is drained by a number of streams in addition to 5 major rivers viz., Khandu, Khapra, Sipna, Garga and Dolar, whcih form the tributaries of Tapti river. The drainage is towards north and northwest of the reserve. Central India represents the major forest cover of the country. Melghat Tiger Reserve is one of them, having tropical dry deciduous type of forests. The forest cover in this area is so large, complex and huge that it is very much difficult to understand it properly without applying computational tools. The large number of trees species are distributed in this region show significant diversity among them.

Keywords: MorphologyBiodiversity,Species, Identification etc.

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Ionic Liquid Catalyzed Green and Efficient One Pot Four Component Synthesis of Pyranopyrazoles

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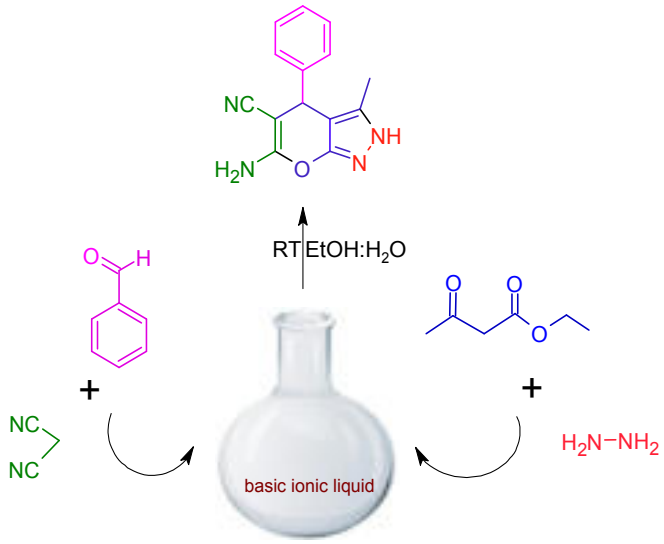
Abstract

Pyranopyrazoles and its derivative are an important class of drug intermediates in the pharmaceutical industry, due to their biological activity such such as antimicrobial, antiviral, antifungal, antitumor, antidepressant, antidiabetic, and anti-inflammatory etc.

The present method involves a simple and highly efficient approach for the synthesis of a series of pyranopyrazole derivatives was achieved via a one-pot, four-component reaction of aromatic aldehyde ,hydrazine hydrate, malononitrile, and β-keto ester in EtOH-H2O by using a basic ionic liquid, i.e.,1-[3-(dimethylamino)propyl]-1,4-diazabicyclo[2.2.2]octan-1-ium hydroxide at ambient temperature. The synthesized compounds were characterized by IR, ^{1}H and ^{13}C NMR Spectroscopic methods. The attractive features of this protocol are higher yields, short reaction times, straightforward workup procedure, and purification of products by non-chromatographic methods, i.e. by simple recrystallization from ethanol.



Keywords: Pyranopyrazoles, Multicomponent reaction, One-pot synthesis, basic ionic liquids,

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Use of Natural Colorsin Pharmaceutical Preparations

Tejaswini Padale

Abstract

The growing public knowledge of the therapeutic benefits of natural dyes has boosted the market for natural dyes on a global scale. Colorants are mostly employed to provide pharmaceutical dosage forms look. Various pharmaceutical preparations, including tablets, tablet coatings; capsules (hard gelatin, soft gelatin), liquid orals, dental pastes, ointments, and salves, all require coloring. Colorants may be necessary to improve the aesthetic appearance, promote stability, provide standard preparations, or identify a specific formulation. Due to increased awareness of natural dyes' positive qualities, there is now a greater demand for them on a global scale. The medicinal herbs are frequently used to treat a wide range of illnesses. The information regarding the use of natural colorants in pharmaceutical formulations is described in the current review.

Keywords: Natural dyes, therapeutic benefits, Medicinal herbs, Pharmaceutical formulation, Medicinal plant.

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In Vitro Screening and Molecular Docking of Some Euphorbiaceae L. Plants as Anti-HIV

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Abstract

Recent antiviral screening has demonstrated that some Euphorbiaceae L. species are effective against virus infections. With the aim of finding plants containing antiretroviral compounds, the Putative HIV Protease Inhibitory activity of extracts from E. hirta L. (Euphorbiaceae) and E.tirucalli L. against HIV-1 protease enzyme were studied. As Pepsin has a quite close resemblance in proteolytic activity with HIV1 protease, this enzyme was used as a substitute of HIV-1 Protease to check out anti-HIV activity of plant extracts. Aqueous extract of E. hirta L. extract showed a significant effect on the enzymatic activity of pepsin, up to 90% and E.tirucalli L. extract shown least effect on the enzymatic activity of pepsin as compared to standard drug activity of Pepstatin A. Molecular docking study of chemical constituents of Euphorbia hirta L. showed promising interactions with HIV-1 Protease enzyme.

Keywords: HIV-1 Protease, Euphorbiaceae L. plants, Antiretroviral compounds.

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Control of Insect Pest with the Help of Spiders in the Orange Fields of Jalgaon Jamod Tahsil, District Buldhana, Maharashtra State

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Abstract

Spiders are among the most abundant insectivorous predators of Terrestrial ecosystem. Spiders are one of the most diverse animal groups in the World. They mostly feed on insects, even though they may also feed on various other kinds of prey. Spider's predatory capacity can have an effect in decreasing densities of insect pests, when they are used to balance the effect of insecticides and Pesticides. If pesticides are avoided, spiders can invariably take shelter in the fields feed on the pests and increase the productivity.

The invariable use of an ample range of pesticides has caused many side effects, like loss of biodiversity, the problem of secondary pests, insecticide resistance, residual toxicity, the recovery of insect pests and Environmental Pollution. Spiders consume a large number of small creatures and do not injure vegetation. During the present study I have reported **114 Species** belonging to **17 Families and 58 Genera of Spiders in Orange fields of Jalgaon jamod Tahsil, District Buldhana, Maharashtra State.** Spiders of Families Araneidae, Clubionidae, Corinnidae, Eresidae, Gnaphosidae, Hersilidae, Linyphiidae, Lycosidae, Oxyopidae, Philodromidae, Salticidae, Scytodidae, Sparassidae, Tetragnathidae, Theridiidae, Thomisidae and Uloboridae were recorded during the investigation. Some spiders are among the most effective predators of leafhoppers, caterpillars, and other pests. Aphids are infrequently important pests of Oranges. Some Spiders and Spider lings are main control agents of aphids. Due to destroying the pest or insects, spiders are friends of farmer.

Keywords: Insect Pest, Spider, Orange fields, Jalgaon jamod.

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[P-DABCO]Cl/PEG-400: An Efficient Recyclable Catalytic System for the Synthesis of Quinoline Derivatives

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Abstract

Here in we report, synthesis of quinoline derivatives by one-pot multi-component reaction between cynoacetic acid hydrazide, substituted aromatic aldehyde and aromatic amine using [P-DABCO]Cl/PEG-400. This reaction route carries variety of characterization to become efficient pathway foe title compound. The catalytic system for this transformation is heterogeneous, reusable and mild with short reaction and with quantitative yield of product. Thus, this green pathway attracts the researchers for simple and efficient transformation with simple isolation and purification for desire product.

Keyword: [P-DABCO]Cl, PEG-400, quinoline derivatives

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In Vitro Screening and Molecular Docking of SomeEuphorbiaceae L. Plants as Anti-HIV

[1]Shravani Majgaonkar, Dhanshree Rajput, Aaditya Chayani,Dr.Sandeep Patil, Shankar Joshi.

[1]Dr. Shivajirao Kadam College of Pharmacy, Kasbe Digraj, Sangli MS India.
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Abstract

Recent antiviral screening has demonstrated that some *Euphorbiaceae L.* species are effective against virus infections. With the aim of finding plants containing antiretroviral compounds, the Putative HIV Protease Inhibitory activity of extracts from *E. hirta L.* (Euphorbiaceae) and *E.tirucalli L*. against HIV-1 protease enzyme were studied. As Pepsin has a quite close resemblance in proteolytic activity with HIV1 protease, this enzyme was used as a substitute of HIV-1 Protease to check out anti-HIV activity of plant extracts. Aqueous extract of *E. hirta L.* extract showed a significant effect on the enzymatic activity of pepsin, up to 90% and *E.tirucalli L*. extract shown least effect on the enzymatic activity of pepsin as compared to standard drug activity of Pepstatin A. Molecular docking study of chemical constituents of *Euphorbia hirta L.* showed promising interactions with HIV-1 Protease enzyme.

Keywords: HIV-1 Protease, Euphorbiaceae L. plants, Antiretroviral compounds.

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Floods in the Krishna River in Sangli and Adjoining Areas

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Abstract

Ecological impact is the effect of human activities and natural events on living organisms and their non living environment. Ecological Impact Assessment is a process of identifying, evaluating and quantifying the potential ecological impacts specifically on ecosystem or their components. The main purpose of an ecological impact assessment is to provide reliable information regarding the ecological implications of an ecosystem. Pollution and environmental degradation of river ecosystem are not only lethal to aquatic life rather they also affect human health. Ecological assessment provides a baseline for understanding and identifying the potential positive and negative effects on the environment to avoid, reduce or offset those effects.

During some period of the last decade (2005-2019) floods caused by heavy monsoon rains have swamped large parts of western and central India. In Maharashtra floods caused the havoc on the people living in and around the banks of the river Krishna. As many as 31 districts in Maharashtra were affected by flood, which included thousands of villages and many lakh families. Besides that many people were died. The districts viz; Sangli, Kolhapur, Satara, Pune and Nashik in the western part of Maharashtra have been severely affected by flood due to the heavy rainfall during the monsoon.

In Sangli district, particularly Sangli city, Bhilvadi, Nandre, Vasgade, Audambar Malvadi, Amanapur, Julevadi, Nagav and many other villages were severely affected by flood. The people not only lost their lives but also many of the people lost their houses, crops and cattles. Floods carried out the top fertile soil which cause severe losses. The present study has been carried out to look into the severely affected villages. It also compare the severity of floods occurred in the consecutive years.

The present study also intends to plan for controlling the floods and to minimize the flood affect in the area under study. The present study has been carried out under the auspices of research scheme for the students of P.D.V.P. College, Tasgaon.

Keywords: Sangli district, Heavy rainfall, River flood, Magnitude, Frequency, Impact

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Synthesis Characterization and Biological Activity of B-Carbolineand Formation of Their Metal Complexes

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Abstract

A lots of metal ions like copper play very vital role in biological process in human beings these metals including their complexes inhibit antimicrobial activities apart from being found at active site of structural component of many enzymes 2,2 bipyridyl is strong bidentate ligand which formstable chelates with many transition metals. These ligands have starring roll in field of chemistry and molecular recognition due to their usefulness in medicine and industry In our present work wedesigned and synthesized copper and zinc complexes with β-carboline and 2,2-bipyridyl as a ligands since these complexes show excellent and promising antibacterial activity. thus, preparedcomplexes characterized by FTIR, ^{1}H-NMR, ^{13}C-NMR, UV-visible spectroscopy, and magnetic susceptibility, Further we have planned to screen our Complexes for XRD, FE-SEM-EDX, and antibacterial activity.

Keywords: beta-carboline, 2,2-bipyridyl, Cu-complex, Zn-complex, Antibacterial activity.

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Fabrication of Superhydrophobic Sio_2-Polymer Composite Coating on Polyurethane Sponge for Oil-Water Separation

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Abstract

The superhydrophobic coated sponges are used to separate oil from oil-water mixture. A SiO_2-polymer composite was employed on polyurethane sponges by dip coating method. Initially, hydrophobic silica nanoparticles were synthesised from methyltrimethoxysilane (MTMS) precursor using sol-gel method. The synthesised silica nanoparticles were mixed with the polymeric solution of polydimethylsiloxane (PDMS) and Polystyrene (PS) mixture at different combinations for the optimization to achieve superhydrophobic behaviour. The sponge was dipped at various period as 10, 20, 30 and, 40 for optimization. After 40 min the sponge was exhibited water contact angle (WCA) of 163˚ and sliding angle of 3˚. The oil-water separation performed for various oils such as petrol, diesel and kerosene and showed excellent oil-water separation performance. The different pH values of water droplet attained nearly spherical shape confirming that excellent superhydrophobic behaviour. Furthermore, the coating showed excellent mechanical stability against sandpaper abrasion test.

Keywords: Superhydrophobic SiO_2, Polydimethylsiloxane, Polystyrene, Dip-coating, Oil-water separation.

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Preparation of Two Different Proportions of Triphala Churna& its Anti-Oxidant Activity

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Abstract

Triphala (tri = three, phala = fruits) is an ayurvedic concoction made up of three herbs endemic to the Indian subcontinent in equal proportions: Terminalia chebula, Phyllanthus emblica, and Terminalia belerica. We're comparing two different ratios here- one is Haritki Bhibhitaki, Amalki (1:1:1) while the other is Haritki, Bhibhitaki, Amalki (1:2:4) and their effect as antioxident action. Triphala is a tridoshic rasayana that helps to balance and rejuvenate the three constitutional elements that regulate human life. The goal of this study is to find an antioxidant effect in the crude extracts of dried powdered Triphala. Phytochemical analysis revealed the presence of ten compounds, including carbohydrates, tannins, steroids, terpenoids, alkaloids, flavanoids, cardiac glycosides, saponins, coumarins, and other phenolic compounds that could be responsible for antioxidant activation.

Keywords: Triphala churna, Antioxident activity

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Synthesis, Characterization and Biological Activity of Thiazolyl Schiff Bases and Their Transition Metal Complexes

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Abstract

Thiazolyl derivatives have played a crucial role in medicinal chemistry. Thiazoles flaunt a wide range of biological activities like antimicrobial, analogistic, anti-convolution, antioxidant, osteoporosis inhibitors and schiff bases have been appointed as promising antibacterial agents. Schiff base has been shown to be interesting for the design of various bioactive agents. The present research has a systematic approach to synthesized series of cobalt, nickel and copper ion complexes with schiff bases of 2-amino 4-phenyl with furfural. Structure of all the synthesis complexes were confirmed by using FT-IR,^{1}H- NMR, UV-visible spectroscopy. Further biological activity of complexes will be screened.

Keywords: Thiazolyl schiff bases, Co- complex, Ni-complex, Cu-complex,

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Systematic Review on Repurposed Drugs for Covid-19 Treatment

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Abstract

The outbreak & rapid spread of novel Coronavirus -19 has resulted in a global pandemic. The records from the World Health Organization (WHO), Centers for Disease Control &Prevention (CDC) & food & Drug Administration (FDA) back up the fact that no medications have proven to be completely effective for the prevention or treatment of covid-19. The question that arrived all over the world is how to discover the treatment for covid-19 in a such short period of time. The one option that was available at that time is the reuse of available drug therapy which was used earlier for RNA virus infections in viruses like MERS-CoV and SARS-CoV. Drug repurposing or repositioning is a promising field in drug discovery that identifies new therapy opportunities for existing drugs. The existing drugs are lopinavir

/Ritonavir, Ivermectin, Chloroquine/Hydroxy Chloroquine, Favipiravir, and Remedisivir. The Molecular Docking of these drugs with one of the anti-viral target enzymes Protease helps to explain the drug's mechanism of action in COVID-19. The outcome of this review is repurposing drugs for Covid-19 is an excellent option adapted for Covid-19 treatment.

Keywords: Covid-19, Drug repurposing, Ritonavir, Ivermectin, Remedisivir, Molecular Docking

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Foliar Pigment Analysis in Genus *Habenaria* Willd (Orchidaceae)

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Abstract

The genus Habenaria is distributed throughout the Western Ghats of peninsular India and Sri Lanka. This beautiful terrestrial orchid genus escapes the attention of researchers due to its short life span, because of which many aspects such as cytology, anatomy, pollination biology, and physiology remain unrevealed. Hence, in the present investigation, an attempt was made to evaluate the foliar pigments in this terrestrial orchid genus. Foliar pigment analysis was done by following the standard spectroscopic method. In the present study, eighteen species were analysed for the foliar content of their leaves. Chlorophyll-a content (mg 100-^{1}g of fresh tissue) has been significantly less in four species having dorsiventrally flat leaves. A negative correlation between leaf thickness and pigment concentrations was observed, while a positive correlation between leaf size and foliar pigment content was observed during the present study. Leaf thickness plays an important role in determining chlorophyll content; thin leaves have a significantly higher content of chlorophyll as compared to thick leaves. This may be due to the habitat of the species. All the thick-leaved species studied have basal leaves just touching the ground and grow along grasses, which affect direct sunlight to the leaves as compared to aerial leaves in other species, due to which there is a significant difference in their pigment content.

Keywords: *Habenaria,* Chlorophyll, Pigments, Orchidaceae, Western Ghats.

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Study of Fish Diversity in Tipphallireservoir of Jathtaluka of Sanglidistrict (M.S.) India

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Abstract

The present research work was carried out to study the fish diversity & water analysis of Tipphalli reservoir. On the name of development, the anthropogenic activities such as industries, Vehicles pollution, plastic dumping, agricultural pollution, the dumping affects- the water quality of reservoir. The survey was conducted in the fish market and among fishermen community. During study period only five species of fish was identified. The fish fauna depleting day by day, for better fish fauna diversity the restoration of water bodies and revival of fish diversity will improve the fish fauna of Tipphalli reservoir as well as it will increase to improve live hood of the rural region fisherman community of Jath.

Keywords: Fauna, Anthropogenic, community, diversity