



**Anjuman Islam Janjira's
Anjuman Islam Janjira Degree College of Science**

Murud-Janjira, District-Raigad,(MS) India, 402401.

Affiliated to University of Mumbai

Accredited by NAAC at 'B' Grade with CGPA Score 2.35

INTERNATIONAL-E-CONFERENCE

ON

RECENT TRENDS IN CHEMICAL SCIENCE,
PHYSICAL SCIENCE, LIFE SCIENCE AND
COMPUTER TECHNOLOGY (ICRTCPLCT-2023)

15th March 2023

SOUVENIR



Organized by

Anjuman Islam Janjira Degree College of Science

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**Proceeding of
International-E-Conference on Recent
Trends in Chemical Science, Physical
Science, Life Science and Computer
Technology (ICRTCPLCT-2023)
15th March 2023**

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15th March 2023

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Best College Award 2022 – 2023 by KAWM

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Anjuman Islam Janjira Degree College of Science

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Conference Schedule

Sr. No.	Event	Time	Programme
1	Inaugural Function	10:30 am(IST)	All Dignitaries & Participants
2	Welcome Address	10:40am(IST)	Dr. Sajid F. Shaikh
3	Keynote Address	10:50am(IST)	Prof. (Dr.) Shivram S. Garje
4	Invited Talk1	11:35am(IST)	Dr. D. R. Patil
5	Invited Talk2	12:15pm(IST)	Dr. Abduljalal Danbaba
6	Invited Talk3	12:20pm(IST)	Dr. Zuber Wasim Sayyad
7	Invited Talk4	01:15pm(IST)	Dr. Irshad Mohammad
8	Vote of Thanks	01:45pm(IST)	Organizers
9	Oral Paper Presentations	02:00pm(IST)	Participants

Advisory Committee

- Dr. Sharad S. Phulari, Principal, Thakur Shyamnarayan Degree College, Kandivali Mumbai, Maharashtra, India
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- Dr. Mohammad Rizwan, Hyderabad, India
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- Prof. (Dr) Abhay Salve, Government Institute of Science, Aurangabad, India
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- Dr. S. M. Rathod Abasaheb Garware College Pune.
- Dr. Sachin V Bangale G M Vedak College of Science Tala
- Prof (Dr) M M Gahatge, MBSK K Mahavidlyai Kadegaon Sangli
- Dr. S. D. Tupare, K.E.S Anandibai Pradhan College, Nagothane, Raigad, India
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- Dr. Rahul Salunkhe, Post-doctoral fellow KSAUT, Saudi Arabia
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About the Trust and College

Anjuman Islam Janjira is one of the prime and oldest education trust which was established in the year 1907. For the upliftment of Muslim Community Students and to provide them long lasting valuable education this trust was established localizing Urdu Medium. This trust not only provided school education but also started Technical education.

Then in year 2009, Anjuman Islam Janjira started this Degree College of science in Murud - Janjira.

With our enormous efforts and dedication for providing qualitative education for which we have been accredited by NAAC with B - Grade.

The college offers B.Sc., and B.Sc. in computer Science at UG level and M.Sc. Organic Chemistry & M.Sc. Botany Programs at PG level.

Every year this college organizes different developmental activities and interactive workshops which are very beneficial for students and society.

From last half decade the result of this college for final year is 100%.

The enthusiasm of this College not Stop here. This year this college got Best College Award along with The Chairman, teacher and nonteaching staff from KAWM (Konkan Alpasankhyank Wichar Manch), Maharashtra.

We are also looking for research centre in near future.

The students of this college not only they are academically strong but also we have proven their quality in extra-curricular activities.

Students of this college take part in cultural, sports, social work, different workshops, conferences and research activities.

This college also felicitated by Tahsildar Murud and Indian Navy for taking active part in various social based programs.

About Conference

International-E-Conference on recent trends in chemical science, physical, life sciences and Computer technology (ICRT CPLCT-2023) is a brain storming to furnish on opportunity to academics aspiring scientist and research scholars from various discipline of science to interact and present their research execution in their respective field. This conference will be platform to highlight research achievement in the field of chemical science, physical science, life science and Computer Technology. Recent research trends of stated topics will be discussed in ICRTCPLCT-2023.

• Subthemes for ICRTCPLCT-2023

1. Green Chemistry
2. Material for electronic devises
3. Synthetic Chemistry
4. Smart Computers
5. Cyber Security
6. Plant Diversity
7. Bioorganic Chemistry
8. Agro-tourism
9. Nanomaterial for future
10. Bio fertilizers & organic farming
11. Mixed Metal Oxides
12. Polymer Chemistry
13. Scope of Computer technology
14. Artificial intelligence
15. Ethical Hacking
16. Medicinal Plants
17. Sensor
18. Biodiversity
19. Semiconductors
20. Environmental Sustainability Electronic & Magnetic Property

**MESSAGE BY
EXECUTIVE COUNCIL COMMITTEE
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Secretary



**Mr. Hifzurrehman
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Mr. Altaf Malik

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Mr. Azim Khanzada

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JANJIRA**

JANJIRA MURUD, DIST. RAIGAD

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Regd. No. B 57(K)

انجمن اسلام جنجیرہ

جنجیرہ مروڈ، ضلع رائے گڈھ

انجمن اسلام جंजिरा
जंजिरा मुरुड, जि. रायगड

Ref. No. _____ مراسله نمبر _____

Date: _____ تاریخ _____

Message by Executive Committee

It is indeed pleasure to know that our institute Anjuman Islam Janjira Degree College of Science, Murud-Janjira, Raigad, Maharashtra India has pioneered to organize Second International E - Conference on 'Recent Trends in Chemical Science, Physical Science, Life Science and Computer Technology' (ICRTCPLCT-2023) on 15th March 2023 and brings out a souvenir to mark this occasion.

We immensely hope this conference will encourage the young scientist, aspirant & research scholars to archive their goal in near future.

We also congratulate The Chairman & The College Development Committee, Principal, and Organizing Committee of this International E-Conference.

We wish best of success for the Conference.

President

Anjuman Islam Janjira

MESSAGE BY COLLEGE DEVELOPMENT COMMITTEE

Anjuman Islam Janjira Degree College of Science

Chairman



Mr. S. Zainuddin Kadiri

Member



Mr. Imran Malik

Member



Mr. Ismail Shaikh

Member



Mr. Tausif Fattey

Member



Mr. A. Latif Pathan



Anjuman Islam Janjira
Established in 1907

ANJUMAN ISLAM JANJIRA DEGREE COLLEGE OF SCIENCE

(Affiliated to University of Mumbai)
Janjira Murud, Dist. Raigad, Pin.402401

E-mail: aijcollege@gmail.com Website: www.aijdegrecollege.com
Phone. 7038601376/ 9270083578

NAAC
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**Best College
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By Jolly Club- Raigad

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Murud Halqa
President

S. ZAINUDDIN KADIRI
CDC Chairman

DR. SAJID SHAIKH
I/C Principal

Ref. No. AIJDCM/

Date:

Message by College Development Committee

Anjuman Islam Janjira Degree College of Science, Murud-Janjira, Raigad was established in 2009, the first in Taluka. The entire team of Anjuman Islam Janjira successfully develop the campus infrastructure & college went through NAAC Accreditation first cycle in 2019 with 'B' grade. Earlier this college only cater undergraduate education in the chemistry, Botany & Computer Science. From A.Y. 2021-22, this college started M.Sc. Chemistry & M.Sc. Botany. In 2022 – 2023 we have also received addition of one batch in M.Sc. Chemistry.

Being a chairman and from holistic team of college development committee, we feel proud that this college is organizing International E - Conference on 'Recent Trends in Chemical Science, Physical Science, Life Science and Computer Technology' (ICRTCPLCT-2023) on 15th March 2023. Research scholars & Professors from various part will participate in this conference.

We feel that this conference will be useful to all budding researchers. There will be useful academic work will be shared and discussed in the conference.

The students and teaching staff of this college will also be benefited from this conference.

We all thankful to concern staff involved in organizing the conference & wish a best of success for the conference.

Chairman
College Development Committee

MESSAGE BY ORGANIZING COMMITTEE

It's our great pleasure and honour for us to welcome you all to the International Conference on "Recent Trends in Chemical Science Physical Science Life Science and Computer Technology (ICRTCPLCT – 2023)" on 15th March 2023.

We are very happy that this institute is bringing the distinguished scientists, researchers and budding research scholars together for this conference. We hope these efforts of this institute will explore the recent innovations and provide new directions for the research in this area.

On behalf of organizing committee, we thank and welcome to all the persons of eminent scientists from different areas of Chemical Science, Life Science, Physical Science and Computer Science from different international and national institutions, faculties from various colleges and research students.

We also extend our sincere thanks to College Development Committee and The Principal of this institute for their constant support.

Thanks to all.

MESSAGE BY HON'BLE

Dr. Sajid F. Shaikh

I/C Principal

Anjuman Islam Janjira Degree College



ANJUMAN ISLAM JANJIRA DEGREE COLLEGE OF SCIENCE

(Affiliated to University of Mumbai)
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Date:13/03/2023



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Murud Halqa
President

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CDC Chairman

DR. SAJID SHAIKH
I/C Principal

Message by Principal

It gives me immense pleasure to welcome all the honourable delegates & participants on the occasion of Second International E - Conference on Recent Trends in Chemical Science, Physical Science, Life Science and Computer Technology' (ICRTCPLCT-2023) organized by this college. The main motto of this college is to provide platform to the research scholars in the field of science & technologies to tackle the recent achievement through the present conference organized on 15th March 2023.

This college is one of the Minority Institute where we have a majority of near about 80% Muslim Girls student's intake since 2009. This college has widely focused on the honest development of students and also make socially responsible & well cultured citizens. This college always tries to inculcate value added education by organizing different activities, workshops, seminars & conferences.

I also believe that this conference will also help to developing researchers to give valuable knowledge and to provide quality research in nations development.

I again welcome all the delegates for this international e- conference & look forward to most successful discussions.

Dr. Sajid F. Shaikh

Dr. Sajid F. Shaikh
I/C Principal

Anjuman Islam Janjira Degree College of Science



MESSAGE BY HON'BLE Dr. B. A. Rajput

मुंबई विद्यापीठ संलग्नित (Code 425)



आदिवासी प्रगती मंडळ संचलित

नेक मानांकित ग्रेड 'बी' +
ISO 9001-2015

कॉम्रेड गोदावरी शामराव परुळेकर कला, वाणिज्य व विज्ञान महाविद्यालय, तलासरी

जि. पालघर - ४०१ ६०६, सहसंचालक कोठ - T ३२
(उत्कृष्ट महाविद्यालय पुरस्कार (ग्रामीण विभाग) २०१४-१५)

संस्थापक - कॉम्रेड एल. एस. कोम (माजी आमदार, माजी खासदार)

प्राचार्य - डॉ. बी. ए. राजपूत एम

(सेट)

To,
Dear Dr. Sajid Shaikh,
Anjuman Islam Janjira
degree college of science,
Murud Janjira




Dr. B.A. Rajput ,Principal of Com.Godavari Shamrao Parulaker college of Arts , commerce and Science,Talasari, I would like to extend my warmest congratulations and best wishes to you and your team for arranging the upcoming International E-conference on recent trends in chemical science, physical science, life science, and computer science on March 15, 2023.

It is truly inspiring to see the dedication and commitment of the faculty members towards organizing such events for the benefit of the students and the scientific community at large. We appreciate your efforts in providing a platform for researchers, academicians, and professionals to exchange their ideas, share their knowledge and experiences in these rapidly advancing fields. We have no doubt that this conference will be a great success and will provide a platform for participants to exchange ideas, learn from each other, and explore new areas of research.

We wish you and your team all the best for the e-conference and look forward to hearing about the outcomes and achievements of this exciting event.

Best wishes,
Dr. B.A. Rajput




Principal
Com. GSP College of Arts
Commerce and Science, Talasari.

वेबसाईट : www.cgspcollege.org

MESSAGE BY HON'BLE

Dr. Rajendra P. Patil

Dr. Rajendra P. Patil,
Assistant Professor,
M. H. Shinde Mahavidyalaya, Tisangi



MESSAGE

I am happy to know that an International E-Conference on Recent Trends in Chemical Science, Physical Science, Life Science and Computer Technology (ICRT CPLCT-2023) is being organized by Anjuman Islam Janjira Degree College of Science Murud-Janjira on 15th March 2023. ICRT CPLCT-2023 will be platform to gather and disseminate latest knowledge in recent advancements in emerging areas of diversified research fields.

I must congratulate the organizers for planning such a scientific conference, which will boost the spirit of multidisciplinary collaboration among various institutes within India and abroad. I am sure that the participants will have an enriching experience both scientifically and socially.

I wish all the delegates good luck and the conference a grand success.

March 12, 2023


(Dr. Rajendra P. Patil)

International Journal of Emerging Technologies and Innovative Research (IJETIR)



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Recent Developments in Nanoscience and Nanotechnology

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Abstract: *Nanoscience and nanotechnology is an emerging area of materials chemistry. Due to their various applications in diverse fields, these materials are being widely studied. These materials find large applications in biomedical field, cosmetics, photovoltaics, etc. The applications of nanomaterials are result of their tunable properties which are different compared to their bulk counterparts. The properties can be tuned by controlling size and shape of the nanomaterials which can be achieved by using appropriate synthetic method. At present there is a need to develop nanomaterials for environmental remediation, energy storage devices, sensor applications, etc. The present talk will deal with simple preparation methods of nanomaterials, their properties and applications in photocatalysis, energy storage devices, environmental remediation, etc.*

Keywords: Nanomaterials, environmental remediation, photocatalysis.

Highly Selective PPM Level LPG Sensors Based on SnO₂-ZnO Nanocomposites Operable at Low Temperature

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Abstract: *The nanoscaled SnO₂, ZnO and SnO₂-ZnO nanocomposite powders were prepared by microwave assisted ultrasonication technique by employing centrifuge for collection of dry powders of the materials. Fabrication of the thick films of the pure ZnO and SnO₂-ZnO nanocomposite powders were made by simple technique of screen printing, which involves high temperature firing (450°C) for 30 min duration. The morphologies and topographies of surfaces of various samples, the composition of elements in the synthesized materials as well as crystallographic structure of the pure and doped ZnO powders were studied by the FE-SEM, EDS and XRD techniques, respectively. It has been found that the SnO₂ doped ZnO (1 wt%) nanocomposite thick film exhibits crucial response to 100 ppm LPG at 50°C and 100°C. The electrical and gas monitoring characteristics of the pure and SnO₂ doped ZnO nanocomposites have been also studied in detail.*

Key Words: Nanomaterials, Senosr and Elements.

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A Glaucoma-Associated OPTN Polymorphism, M98K Sensitizes Retinal Cells to Endoplasmic Reticulum Stress and Tumour Necrosis Factor A

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Abstract: *Optineurin/OPTN polymorphism, M98K is associated with normal tension glaucoma in certain populations, and genetic evidence shows its interaction with tumour necrosis factor- α (TNF α) polymorphism in causing glaucoma. Endoplasmic reticulum (ER) stress is also associated with glaucoma. We hypothesized that M98K-OPTN may sensitize retinal ganglion cells to various types of stress. To test this hypothesis, stable clones of a retinal cell line, 661W, expressing either wild-type (WT)-OPTN or M98K-OPTN were generated and examined for their survival under various stress conditions. Compared with WT-OPTN expressing cells, M98K-OPTN expressing cells showed significantly lower cell survival and higher activation of caspase-3 and caspase-8 upon treatment with tunicamycin (an inducer of ER stress) or TNF α . Levels of ER stress sensors IRE1 α , PERK and ATF6 were significantly higher in M98K-OPTN expressing cells. Tunicamycin treatment resulted in significantly higher induction of ER stress marker CHOP and several other ER stress response genes regulated by IRE1 α -XBP1, PERK-ATF4 and ATF6 pathways, in M98K-OPTN expressing cells. Splicing of XBPI and ATF6 activation was higher in tunicamycin-treated M98K-OPTN expressing cells. Increased levels of PERK and IRE1 α proteins in M98K-OPTN expressing cells were dependent on autophagy. Overall, our results show that M98K-OPTN sensitizes retinal cells to TNF α and ER stress-induced cell death. We also show that M98K-OPTN alters ER stress response signalling, which possibly enhances the sensitivity of retinal cells to ER stress. Our results provide support to the hypothesis that M98K-OPTN may cooperate with other genetic or environmental factors to cause retinal ganglion cell death associated with glaucoma.*

Keywords: Glaucoma, reticulum stress and tumour necrosis factor..

A Review of Mechanisms and Clinical Implications of Antipsychotics Drug-Herb Interactions

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Abstract: *The use of herbal medicines for the management of psychotic symptoms is gaining popularity due to its effectiveness, affordability, accessibility and the quest of patients to alleviate or avoid side effects due to conventional antipsychotic drugs. However, this has led to concurrent administration of drugs and herbal medicines, which leads to drug-herb interactions. This review seeks to identify the commonly prescribed antipsychotic drugs and herbal medicines, their mechanism of pharmacokinetic interaction and possible pharmacodynamic interactions resulting in plausible clinical implications. The possible mechanisms of interaction were identified at the absorption and metabolic levels and this leads to clinical implications of synergistic, additive or antagonistic effects of antipsychotic drugs, culminating in an increase or decrease in antipsychotic action, sedation and other side effects of the antipsychotic drugs.*

Keywords: Antipsychotic drugs, herbal medicines, drugs-herb interaction, synergism, additive effect, antagonism

Lithium-Ion and Beyond Lithium-ion Battery Technologies

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Abstract: *The rapid developments in portable electronic devices, electric vehicles and smart grids are driving the need for high-energy (>500 Whkg⁻¹) secondary (i.e. rechargeable) batteries. Although the performance of lithium-ion batteries (LIBs) continues to improve [1], they are approaching their theoretical specific energy (~387 Whkg⁻¹) using LiCoO₂. Further, some issues such as the high lithium cost and limited availability of Li, Co and Ni, led to search for alternative battery chemistries. Today, the research of alternative technologies, i.e. beyond-Li-ion batteries, is highly motivated by an increasing need for efficient energy storage systems for portable electronic equipment, electric vehicles, and large-scale smart grids, such as sodium ion batteries (NIBs) [2], magnesium ion batteries [3], fluoride ion batteries [4], lithium sulfur batteries (LSB) [5] and some others. Among all, NIBs and LSBs are very close to commercialization. NIBs have attracted attention as strong alternatives to LIBs mainly for large-scale energy storage due to the low cost and large abundance of sodium, and its uniform presence around the globe. Unlike LIBs, the usage of graphite as a negative electrode for NIBs is quite limited due to the large size of sodium ions. Therefore, it is necessary to find other negative electrodes with high capacity and excellent cycling for NIBs. Recently, nanostructured intermetallic InSb as a high-capacity and high-performance negative electrode for sodium-ion batteries. The InSb electrode delivers promising stable capacities of 450 mA h g⁻¹ for 50 cycles at C/5 and 365 mA h g⁻¹ for 100 cycles at 1C. LSB are of interest due to their high theoretical energy density (2600 Whkg⁻¹ or 2800 Whl⁻¹) [6]. S is a multivalent nonmetal, which can interact with Li by two electron reactions, offering a high theoretical specific capacity of ~1675 mAhg⁻¹ [6], significantly higher than the ~140–300 mAhg⁻¹ offered by intercalation-type cathode materials in LIBs. but their commercialization is restricted by intrinsic problems such as polysulfide shuttling and dendrite growth at the Li metal anode during cycling. A free-standing, polar β-phase polyvinylidene fluoride (PVDF) nanofiber separator membrane has been designed and fabricated via use of dimethylacetamide (DMAc) as solvent and electrospinning [8]. With polar separator, the electrochemical performances of the Li-S battery were significantly improved relative to a standard polyolefin film and exhibited high Coulombic efficiency with very stable cycling and a high retention of charge storage capacity (95%) over 100 cycles.*

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The Review Study on Health Issues Due to Chemically Adulterated Food

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Abstract: *This review paper mainly focuses on What actually mean by adulteration? How the different producers are using different chemicals for adulteration of foods. The health of peoples is dependent on the nature of the food and its wholesomeness in terms of their nutritive value. An adulterant is found in the samples of the various products. So, it is recommended to opt standard products which have FSSAI certified mark along with the license number, ingredients list, date of manufacture and expiry date on it for safe and hygienic food. All are suggested to avoid dark, junk, and other processed foods. Clean and store all grains, legumes, and other foods. Always Wash fruits and vegetables thoroughly with water before consuming. Before purchasing food items such as milk, oil, or other bags, check to see if the seal is valid. By keeping these points into consideration one can remain safe from eating adulterated food.*

Keywords: FSSAI, adulteration, nutritive value, safe, hygienic food.

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Isolation and Characterization of Phytoconstituents from Methanol Extract of *Soymida febrifuga* A Juss Leaves

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Abstract: *Plants are always considered as useful and economically important for all mankind. It may be due to their food values for mankind's and for animals also. They are also important by means of their active constituents or bio-active ingredients that are used in the treatment of many human diseases. The present work is aims to isolate and characterized the constituents from leaves of Soymida febrifuga . The methanol leaves extract of Soymida febrifuga is subjected for isolation and characterization of the phytochemicals. It is carried out by using TLC, column chromatography, GC-MS, ¹H-NMR, ¹³C-NMR etc. Research outcome results the isolation and identification of 'Catechin' from methanol leaves extract.*

Keywords: Mankinds, medicinal plant, Soymida febrifuga, therapeutic, solvent, Methanol, characterization, leaves etc.

Review of Extraction, Isolation and Characterization of Bioactive Compounds from Medicinal Plant

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Abstract: *The medicinal plant are pure compound or as standardized extract , provide idea to isolate new drug because medicinal plant consist of unlimited sources of chemical compound .It also consist of essentialoil being used for perfuminary purpose .the focus of this paper is method used for extraction , isolation , characterization of bioactive compound from medicinal plant. Method used for extraction , isolation and characterization of bioactive compound extraction by soxhlet apparatus , microwave assisted extraction, ultrasonic assisted extraction are used . the purification of bioactive compound by TLC . the structural determination of bioactive compound by UV –visible , Infra Red IR , Nuclearmagnetic Resonance NMR and mass spectroscopy is used. The biochemical characterization done by using the toxicity assay , in vivo evaluation , clinical study .*

Keywords: Isolation, Characterization, Bioactive Compound.

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Investigations on Preliminary Phytoconstituents Component and Medicinal Aspects of *Cassia tora* L

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Abstract: Cassia tora L. is an important medicinal plant are used since ancient medicinal practices. The current investigation on phytochemical and medicinal aspects of Cassia tora L. Plants parts like leaves, stem and leaves of plant are taken under investigation for physical character study and qualitative and quantitative phytochemical estimation study. Qualitative test of plant sample is taken with standardized sample to evaluate the medicinal important. The present research work was confined the presence of steroids, reducing sugar, alkaloids, phenolic compound, saponin, and tannins like phytochemical which act as the active ingredient for medicinal value of Cassia tora L.

Keywords: Phytoconstituents, Medicinal Plant, Phytochemical and Cassia tora L.

Synthesis, Characterization of Novel Aminopyrimidine Schiff Bases Metal Complexes and Their Biological Activity

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Abstract: The Novel Schiff base ligand derived from 2,5-dimethoxybenzaldehyde & 2-aminopyrimidine and its Mn(II) complexes was synthesized. The synthesized compounds have been characterized by FT-IR, ¹H-NMR and UV-Vis techniques for the ligands and FT-IR, UV-Vis, all reactions monitored by TLC, molar conductivity and magnetic susceptibility measurements for the corresponding complexes. The complex is paramagnetic. The results of the molar conductivity measurements indicated that all complexes are non-electrolytes in (DMSO). An octahedral geometry for all the complexes of. The ligands are bidentate, (L[□]) through phenolic (OH) and azomethine nitrogen. The ligand and its complexes were screened for their antifungal and antibacterial activity against *Aspergillus niger*, *Penicillium chrysogenum*, *Fusarium moneliforme* and *Aspergillus flavus* and *Escherichia coli*, *Salmonella typhi*, *Staphylococcus aureus*, *B. subtilis*. The result indicated that the complexes exhibited good antifungal and antibacterial activities.

Keywords: Aminopyrimidine Schiff bases, 2,5-dimethoxybenzaldehyde & 2-Aminopyrimidine, Biological Activity.

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Artificial Intelligence: Recent Technology Trends in Computer Technology

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Abstract: AI has received increased attention from the information systems (IS) research community in recent years. There is, however, a growing concern that research on AI could experience a lack of cumulative building of knowledge, which has overshadowed IS research previously. This study addresses this concern, by conducting a systematic literature review of AI research in IS between 2005 and 2020. The search strategy resulted in 1877 studies, of which 98 were identified as primary studies and a synthesise of key themes that are pertinent to this study is presented. In doing so, this study makes important contributions, namely (i) an identification of the current reported business value and contributions of AI, (ii) research and practical implications on the use of AI and (iii) opportunities for future AI research in the form of a research agenda.

Keywords: Artificial intelligence, AI Machine learning, Systematic literature.

Chemistry of Azo Dyes: Short Review

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Abstract: The process of conversion of primary amines into its Diazonium salt is called diazotization. Diazonium salts are important synthetic intermediates that can undergo coupling reactions to form azo dyes. Azo dyes are organic compounds bearing the functional group $R-N=N-R'$, in which R and R' are usually aryl. They are a commercially important family of azo compounds. Azo dyes are the largest group of dyes, having different classes, such as based on their application and based on the number of azo groups present in their structure. They are widely used to treat textiles, leather articles, and food items. Azo pigments are similar in chemical structure to azo dyes, but they lack solubilizing groups. Because they are insoluble in virtually all media, they are not readily purified and thus require highly purified precursors. In this review, we will be trying to give details of azo dyes along with their usage to substrates.

Keywords: Azo dyes, Functional group, Leather, Solubilizing groups, Textiles.

Arsenic in Drinking Water and its Hazardous Effects

Baby Mandal
S. K. M. U. Dumka

Abstract: *The presence of metal and metalloids like Arsenic and Selenium in potable water, domestic waste and industrial effluents is a serious problem due to their toxic properties. They affect public health to large extent waste water systems and the biological system of water bodies. The impact of traces of heavy metals in drinking water is dangerous for human health in long run. Acute Arsenic poisoning can arise from the ingestion of as little as 100 mg/l of As. Chronic effect can appear from its accumulation in the body at low intake levels for prolonged periods. The study is focused on Arsenic concentration of Pakur dist's Penum coal mines, Udalbani Stone chips mines and Dumkadanga Stone chips mines surface water Arsenic concentration and its impact on human health.*

Keywords: Drinking water

Impact of Social Media on Mental Health: An Analysis of Sentiment and Trends

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Abstract: *Social media has altered the way people communicate and interact with each other. However, the growing use of social media has also raised concerns about its impact on mental health. This study aims to analyze the sentiment and trends related to the impact of social media on mental health. To conduct this analysis, a systematic review of relevant literature was conducted using various databases. The study found that social media use is associated with a range of mental health issues, including depression, anxiety, and low self-esteem. Moreover, the study also found that cyberbullying, FOMO (fear of missing out), and social comparison are some of the key factors that contribute to the negative impact of social media on mental health. The sentiment analysis of social media posts related to mental health revealed that a significant proportion of the posts were negative in nature. This suggests that social media use may have a predominantly negative impact on mental health. The trends analysis revealed that there is an increasing interest in mental health and social media, and that mental health awareness campaigns on social media are gaining momentum. However, the study also found that there is a lack of regulation and awareness among social media users about the potential negative impact of social media on mental health. Overall, this study suggests that social media use may have a negative impact on mental health, and that there is a need for greater awareness and regulation to mitigate this impact.*

Keywords: Social Media, Mental Health, Sentiments, Trends.

Correlation of Aquatic Entomofauna, Order Hemiptera and Water Properties of Akkalpada Dam: Site Chinchkheda, in North Maharashtra, India

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Abstract: During the present study a total of 09 of aquatic Hemipteran insect's species were collected so far, they are belonging to 09 genera and 08 families. The correlation of distribution of these insect species with water parameter is analyzed. It is found that the correlation of different aquatic bugs found in said water is variable according to their abundance and size of insect. The study indicates that aquatic insect diversity varies across study sites and habitat. The result shows that at a large landscape level, there is high variation in diversity and abundance in accordance with local micro scale environmental conditions. These variations need to be considered while designing bio monitoring protocols for the region. The whole community scale analysis of aquatic insects is recommended for biodiversity and bio monitoring studies.

Keywords: Aquatic entomofauna, correlation coefficient, Akkalpada dam, water properties, Dhule.

Current Trends in SnO₂ Nanostructure Based for Gas Sensors

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Abstract: The discovery of highly low- concentration gases and odors in fields for healthcare, mobility, and home environment control is attracting tremendous attention. The development of high- perceptivity gas detectors able of detecting least concentration of gases and volatile molecules is in huge demand. This review article focuses on tin oxide as nanomaterials, which are substances that are being laboriously researched as semiconductor- type gas detectors for gas sensors. In particular, the development of innovation for tin oxide nanomaterials over the last few years and their gas seeing operations are studied. It's revealed that dimension and morphology primary constituent that affects the sensing performance. SnO₂ nanomaterials having 10⁻⁹ m size which is analogous to size of a reduction substrate, and controlled microstructure similar as a nanosheet structure shows high sensing performance. The dendron like structure in which 2 Dimensional nanosheets are connected each other by crystal growing points for the direction for unborn detector development of gas sensor. Likewise, the high gas adsorption performance of gas sensor and reactivity of the metastable crystal plane of nanomaterial will be a companion for novel gas detector development.

Keywords: Gas Sensor, Morphology, Nanomaterial.

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Effect of Soil Treatment with Chlorpyrifos and Cypermethrin on the Germination and Growth of *Triticum aestivum* and *Vigna radiata* Seedlings

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Abstract: The study was carried out in relation to effect of Hamla550 pesticide (chlorpyrifos and cypermethrin) on the germination and seedlings growth of *Triticum aestivum* and *Vigna radiata*. Various concentrations (10ppm, 30ppm, 50ppm, 70ppm, 90ppm) shows inhibitory or stimulatory effect on germination rate, growth of radicle and plumule of *Triticum aestivum* and *Vigna radiata* seedlings. On dicot (*V. radiata*) shows stimulatory or growth promoting effect and on monocot (*T. aestivum*) shows inhibitory effect at various concentrations of pesticide.

Keywords: Pesticide and Germination.

Studies On Some Migratory Ecto Parasitic Nematodes From Agricultural Soil of Gangapur, Aurangabad Maharashtra

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Abstract: The present work done from different area of village Gangapure, district Aurangabad, sampling done from agriculture farming area. Present work focus on morphology of the migratory ectoparasitic nematode. Number of nematodes recovered per culture varied greatly among *Tylenchulus*, *Pratylenches*, *scutelema* species. Morphological studies revealed that majority of *Tylenchid*, *Dorylemoid* are dominant over other order of nematode. About 80% of soil positive to *Tylenchid* where as 60% positive to the genus belong to *Longidoroid*. Prevalence of incidence to nematode to soil samples are 85% where as prevalence of incidence for parasitic nematode are 72.5% Present species is present in optimum range from November to February.

Keywords: Migratory ecto parasite, Nematode, *Tylenchus*, *Pratylenchus*, Gangapur

Utilization of Kitchen Scab for Home Gardening

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Abstract: *Despite of sufficient food grain product of public position, malnutrition is still a public health concern in our country. India is one of the commanding nations in vegetable product but the problem of malnutrition is especially the micronutrients scarcities are veritably common among the pastoral ménage. The underpinning cause may daily input of vegetables should be 300 gm/ person including roots and tubers, green leafy and other vegetables. Keeping into consideration the high frequency of malnutrition especially micronutrients insufficiency and shy vacuity of vegetables. The major ideal is to improves the vacuity of vegetables and nutrient input at a ménage position and to ameliorate the knowledge of pastoral women regarding colourful technology aspects of kitchen gardening and it's significance. The result of the study shows an enhancement in vacuity of vegetables for consumption at both ménage and individual position.*

Keywords: Malnutrition, vegetables, kitchen garden

Herbaceous Flora of Jalgaon District of Maharashtra with Special Reference to their Economic and Medicinal Utility

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Abstract: *The Jalgaon is one of the district in the Khandesh region of North Maharashtra India with great diversity of plants. The vegetation of Satpuda range of Jalgaon district is quite varied and interesting. Jalgaon district lies between 20⁰ and 21⁰ North latitude and 74⁰ 55' and 76⁰ 28' East longitudes. The Jalgaon district has a total area about 272 sq. km. The total forest area in the district is 72685.27 hectares. On its location in the upper Tapi basin, it forms a distinct topographical unit separated from neighboring Madhya pradesh state by Satpura ranges and form the south by Satmala hilly ranges. The physiographic of the district is made up of high hill ranges on the north, alluvium in the centre and low hill ranges to the south of Tapi. On the north, the hill ranges stretch east-west and form part of the Satpuras, the highest peak being about 1175 meters. The forest of the Jalgaon district is of dry deciduous type. The vegetation varies with the changes in altitude, aspect and rainfall. Plant exploration was conducted to determine herbaceous plant species in Jalgaon district. Herbaceous flora includes 115 angiospermic families are represented by 635 genera comprising 1143 species. Poaceae, Fabaceae and Asteraceae are dominant families of herbaceous flora in Jalgaon district. During exploration of Jalgaon district a large number of plants have been noted to their economic and medicinal utility.*

Keywords: Herbaceous flora, economical and medicinal utility, Jalgaon district.

Current Prospective of Medicinal Plants and Herbal Remedies: A Review

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Abstract: Medicinal Plant is of the great of the health of individual and communities. The medicinal value of plants lies in some chemical active substances that produce define physiological action on the human body. Plants are considered as a rich source of bioactive chemicals and they may be an alternative source of mosquito control agents. Such important aspects of herbal medicine and their importance have been discussed with trends, use and research scoping area of herbal remedies for betterment of human kind.

Keywords: Herbal Remedies, Medicinal Plant, Ethno botany and traditional knowledge

The Impact of Technology Trends on Healthcare Systems: A Study on Opportunities and Threats

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Abstract: The importance of health in human lifestyles is considerable. The technologies advanced and the research on this area has brought about differences within the discipline of health as in all regions. The purpose of this have a look at is to observe the needs inside the area of health and to set the criteria for figuring out the most suitable technology. Inside the have a look at, three new technology tendencies in literature are examined. The principles of area computing, fog computing, and cloud computing have been evaluated inside the scope of the examination. The literature on those three concepts has been tested and the areas in which they can be desired inside the area of fitness offerings are presented. Further, at the cease of the examination, the need for Futurist Healthcare structures, on the way to cover all health services, is said.

Keywords: Healthcare, ICT, Cloud computing, Fog computing, Edge computing.

Socio-Economic, Educational and Health Status of Fishermen in Paithan Region Dist. Aurangabad (M.S.)

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Abstract: *The present study deals with various socio-economic educational and health status of the fishermen in Paithan region district Aurangabad. Better health is very essential to lead a happy life for every person, and also necessary for all creative activities in the society. The health of workers on a large measure will also be influenced by environment existing at their work place. Fishing is one of the example such occupation in which the environment plays a major role. Fishing is one such hazardous occupation, which involves irregular diet, stress, alcoholism, tobacco and pernicious habits. Fishermen have lower socio-economic status and their illiteracy adds to their poor hygiene, which may affect general health. Fishermen have prolonged hours of continuous work, which are found to be correlated with high cigarette and alcohol consumption. Diet without fresh fruits and vegetables and meals lack of nutrients are eaten at irregular intervals. Fishermen are prone to excess ultraviolet radiation due to open atmosphere with constant exposure to sun light. They are economically backward. They have no permanent and regular sources income. Jayekwadi project at Paithan region district Aurangabad is one of the prominent fishing centres for local fishermen. The fishermen are confronted with a lot of socio-economic, educational and health problems and they faced a great challenge to maintain their good health status. Nevertheless dangerous life of fisherman and hazardous nature of fishing occupation very little research have been conducted reported on socio-economic, educational and health status of fishermen. The research on this group of population is limited. Therefore the present study was executed to assess and compare the socio-economic, educational status and health care treatment needs of fishermen population.*

Keywords: Socio-economic, educational, health status, irregular diet, stress, fishermen.

Histopathological Changes in the Intestine of *Aetomylaeus nichoffii* (Bloch & Schnaider, 1801) with Special Reference to Cestode *Gymnorhynchus*

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Abstract: *Studies of histopathological changes on gastrointestinal tract of infected cestode parasite of *Gymnorhynchus* in the intestines of fish *Aetomylaeus nichoffii* (Bloch & Schnaider, 1801) from Alibag Coast, Dist. Raigad (M.S.) India. This parasite caused significant histological changes in the fish intestine, such as weakened villi, villi shortening, inflammation, hyperplasia, normal structural degradation, intestinal lumen widening, and an increase in the number of mucous cells. Damage occurs to both the mucosal and submucosal layers in case of severe infection. There was also obvious compression and absence of intestinal villi. The present paper deals with the histopathological changes showed the intestine of marine water fish *Aetomylaeus nichoffii* infected with cestode Parasite *Gymnorhynchus**

Keywords: Marine Fish, Infected Intestine, Cestode Parasite

Cyber Crime: Prevention & Detection

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Abstract: *Cybercrime is a complex and ever changing phenomenon. Cyber criminals are becoming more sophisticated and are targeting consumers as well as public and private organizations. Therefore, additional layers of defense are needed. Cyber crime has been increasing in complexity and financial costs since corporations started to utilize computers in the course of doing business. Some of the case studies of cyber crime include Parliament attack case. In this paper we have discussed about Cyber crime and cyber security and different cyber crimes that we come across and prevention techniques and detection techniques such as Tripwires, configuration checking tools, Honey Pots, anomaly detection system and operating system commands. In this we also discuss about regulation acts imposed against Cybercrime and also online safety tips.*

Keywords: Cyber Crime and Security, Honey pots, Trip wires, Anomaly detection, Online safety tips

Effect of BGA and VAM on Seed Germination of Fenugreek

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Abstract: *Fenugreek (Trigonella foenum-graecum L.) is one of the oldest medicinal plants from the Fabaceae family and commercially grown in India, Pakistan, Afghanistan etc. Seed contain substantial amount of fiber, phospholipids, glycolipids, oleic acid, linolenic acid etc. Present work was aimed to examine the comparative effects of four different Blue Green Algae (BGA) samples viz. Anabaena Sp., Nostoc Sp., Scytonema Sp. and Aulosira Sp. and also a Vesicular Arbuscular Mycorrhiza (VAM) of which three sets of different concentrations that are 10%, 20%, 40% were used against control (untreated). Marked variation in the root length was observed in 10% & 20% treatment against the control treated plants. 100% seed germination was observed in 10% concentration at 24 hours / Day. Interesting to mention that VAM treatment show germination up to 72 hrs, but drastic increase in the germination percentage was observed after 72 hrs and it was maximum on 7th day as compared to treatments as well as control. Maximum root length was 100% in 10% concentration.*

Key words: BGA, VAM, Fenugreek

In-vitro Anthelmintic Activity of Leaves of Medicinally Important herb *Tephrosia purpurea* (L.) Pers

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Abstract: *Objective: To evaluate the anthelmintic activity of Tephrosia purpurea. Methods: In the present investigation, the in-vitro anthelmintic activity of aqueous, acetone, petroleum ether, and methanol extracts of Tephrosia purpurea was carried out against Indian adult earthworm Pheritima posthuma and roundworm Haemonchus contortus. Albendazole was used as the standard reference drug were normal saline water as a control. Five different concentrations (5, 15, 25, 50, 75 mg/mL) of aqueous, acetone, petroleum ether, and methanol extracts were used to evaluate their effect in inducing paralysis and death in the earthworm. The time taken to induce paralysis (vermifuge) and time to induce death (vermicidal effect) of the worms after extracts treatment was documented. Results: This investigation revealed that all the four extracts showed significant action in paralyzing and also killing the worms in a dose dependant manner. The effect of extracts on the paralysis and death of the Pheritima posthuma, according to the results indicated as petroleum ether>methanol>acetone> aqueous. Similarly, among all the extracts obtained from Tephrosia purpurea, methanol extract required least time to cause paralysis and death of the Haemonchus contortus. Among the various concentrations of methanol and petroleum ether extracts, 75 mg/mL showed efficient anthelmintic activity. This investigation revealed that the methanol extract at concentration of 50 mg/mL was found to be most significant when compared to the standard drug Albendazole. Conclusion: On the basis of these observations, we conclude that all the extracts of leaves of Tephrosia purpurea possess potent anthelmintic property and also suggest that further investigations on identification of bioactive principles for the activity, standardization of dose and toxicity studies on this plant for anthelmintic drug development need to be carried out.*

Keywords: Pheritima posthuman; Haemonchus contortus; Albendazole; Tephrosia purpurea; aqueous extract; acetone extract; petroleum ether extract; methanol extract.

Smart Computers: Recent Technology Trends in Computer Technology

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Abstract: Current user interfaces are not very "smart" in that computers dumbly do what the user explicitly commands it to do via buttons or menus. As computers become more capable and applications become complicated, more "smart" user interfaces are desired. We are exploring possible "smart" user interfaces in the domain of pen-based computing and interactive 3D graphics. The idea is to allow the user to intuitively express his/her intention by combining sketching and direct manipulation and have the computer take appropriate actions without explicit commands. This talk consists of many live demonstrations to illustrate the idea of interactive "smart" interfaces. I plan to show 2D geometric drawing programs, electronic whiteboard systems, sketch-based 3D modeling, automatic zooming, clothing manipulation interfaces, and other interesting systems.

Keywords: 3D modeling, automatic zooming, 2D geometric drawing

Seasonal Variation of Insects Associated with Milkweed, Calotropis Species in Chalisgaon Region, Maharashtra, India

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Abstract: The seasonal variation of insect fauna associated with native milkweed plant, *Calotropis procera* (Ait.) in the Chalisgaon region was studied from October 2020 to September 2022. Sixty five insect species belonging to nine orders, 40 families and 55 genera were observed with specific association with the milkweed plant during the sampling period. Depending on the different behavioral pattern, the insect fauna was categorized into five ecological groups i.e. Phytophagous, floral visitors, predators, parasitoid and scavengers. It was noted that insect association and their numbers varied in winter (72%), summer (59%), and rainy season (43%). 30 species of insects species was noted as defoliators and plant suckers and included in the phytophagous group. The floral visitors includes pollinators, nectar and pollen collectors was recorded 12 species. 11 species was documented which feeds on dead and decaying materials of plant and animal origin grouped into scavenger. 9 predators and 2 parasitoids insect species also observed on milkweed plants.

Keywords: Calotropis procera

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Taxonomical and Phytochemical Study of *Commelina benghalensis L.*

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Abstract: *The plant kingdom plays an important and valuable role in the life of humans and animals. All plants are directly or indirectly related and beneficial for mankind and help to maintain ecological equilibrium. Many of new medicinal plants have been found and are discovered to cure various types of diseases and act as a crude medicine in folk medicinal practices also. In our day to day life grandparents advice for the aid of symptomatic treatment of medicinal plant product at home for certain health issues. The importance of medicinal plants is due to the daily life practices of human being which having disease in direct relations, that's effect too in all ways to human. Commelina benghalensis L. showed the presence of alkaloids, saponins, tannins, steroid and flavonoids. Kharade Amit S et al., 2013, had reported preliminary phytochemical investigation of Aqueous and Alcoholic extracts of Commelina benghalensis L. It showed the presence of alkaloids, carbohydrates, phytosterol, flavonoids, terpenoids, quinon and tannins. Udaya Prakash NK et al, 2013, had studied phytochemical analysis of aqueous extract of Commelina benghalensis L. showed the presence of phlobatannins and saponins. Chichioco Hernandez et al., 2014, had studied phytochemical analysis of methanolic extract of Commelina benghalensis L. showed the presence of terpenoids and flavonoids.*

Keywords: Medicinal plant, *Commelina benghalensis*, Phytochemical and Taxonomy.

Smart Home Technology

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Abstract: *Smart house is rising technology growing unendingly currently. It integrates of the many new technologies through home networking for rising human's quality of living, thus there have several comes researching in various technologies to use to the good home system. consequently, this paper reviews varied topics on good home technologies from measuring for good home analysis comes. The topics is predicated on the definition of good home and therefore the details of good home components together with good home networks which will be classified into 2 main sorts, that square measure wiring system and wireless system, good home controllers that use for managing system, the appliances or the good devices and therefore the challenges of good home. This paper conjointly offers several attention-grabbing comes summarily, thus it are often concepts for whoever wish to be told this technology.*

Keywords: Smart Home, Smart Home Network, Smart Home Appliances

Ethno-Veterinary Plants used among Tribes of Nandurbar District (MS) India

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Abstract: *An ethno veterinary study was carried out in the tribal's of Nandurbar district (Budnamel, Keran, Karnah, and Jungand) during 2018-2021. The study was aimed to document the traditional folk knowledge of local people about the use of the medicinal plants as ethno veterinary. Field survey was conducted during the different seasons of the year to collect data about the knowledge and practice of using wild plant species by local people as ethno veterinary. The data collected reveals that about 59 plant species belonging to different families and genera are used as ethno veterinary. Plant parts are used to increase milk content and cure different diseases.*

Keywords: Ethno veterinary, tribal's, the medicinal plants and Nandurbar district.

The Performance of Congress grass (*Parthenium hysterophorus*) in Response to Air Pollution Tolerance Index (APTI)

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Abstract: *With the tremendous scientific and technological advancement, man has to a large extent succeeded in controlling and dominating nature. Plant species contain a tremendous amount of genetic variation, both within and between populations. This genetic variation shows up in the morphological and physiological traits of plants adapted to survive in different climates. Turreson (1922) defined an ecotype as a population of plants that is genetically differentiated in response to the conditions of a particular habitat. An ecotype reflects the elevation, precipitation, temperature, growing season, soil and site characteristics where the population is found. Sessile modular organisms, such as plants, which cannot migrate when environmental conditions change and whose modules may experience different environments, benefit from mechanisms to cope with environmental heterogeneity. Because most organisms, and certainly plants, change their phenotype in response to environmental change, it is often assumed that phenotypic plasticity has frequently evolved as an adaptation to environmental heterogeneity. Many phenotypic responses to environmental stress, however, may be the consequence of passive reductions in growth due to resource limitation (Dorn et al., 2000; van Kleunen et al., 2000a). Moreover, phenotypic plasticity does not necessarily evolve as an adaptation but alternatively can evolve due to genetic correlations with other traits that are under selection or due to genetic drift. Therefore, plasticity of a trait does not necessarily imply that it is adaptive (Sultan, 1987; Schmid, 1992). We found strong phenotypic plasticity in *Parthenium hysterophorus* regarding life span, height of plant, flowering time, under pollutant stress, particularly air pollution tolerance. Environment might be more important in determining genetic and phenotypic changes. The very existence of phenotypic plasticity means that the same genotype can express different phenotypes in diverse environments. There is also increasing evidence that the amount and pattern of expressing genetic variation itself is environment dependence. *Parthenium hysterophorus* shows adaptive phenotypic evolution within range of environments.*

Key words : Phenotypic plasticity, *Parthenium*, Ecotype, Environmental variation ,APTI.

Studies on Monthly Variations in Phytoplankton Diversity of Padalse (Lower Tapi) Dam from Amalner Taluka of Jalgaon District

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Abstract: *The present work is based on such important aspects of phytoplankton's diversity and availability in monthly variation pattern of different groups of algae in a year 2016-2017 of Padalse dam water bodies of Amalner taluka in Jalgaon District. Four different sites of dam were selected for sample collections in each month intervals from Nov-2016 to Oct-2017. Each month 30ml final sedimentation sample from 1000 ml collected water was analyzed into laboratory with suitable technique and number of algal and phytoplankton count has been recorded. In water body of Padalse dam it was found that a different member of algal group found majorly Chlorophyceae, Cyanophyceae, Bacillariophyceae and Euglenophyceae. Chlorophyceae are dominant in entire year in each sites and become more abundance in month of July, August, September and October. The results were represented well in the forms of table and graphs with average of phytoplankton's availability in different months and groups.*

Keywords: Algae, Phytoplankton, Chlorophyceae, Cyanophyceae, Bacillariophyceae, Euglenophyceae Aquatic Ecosystems and Padalse Dam.

SENSORS: Recent Technology Trends in Computer Technology

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Abstract: *The availability and wide range of applications lowcost sensors have encouraged a demand for improved sensor performance. Integrated sensors are being developed to meet the designer's need for simpler systems. Smart sensors are becoming integral parts of systems performing functions that previously could not be performed or were not economically viable.*

Keywords: Privacy, Security, Behavior and influence analytics in social computing.

A Review of Mechanisms and Clinical Implications of Antipsychotics Drug-Herb Interactions

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Abstract: *The use of herbal medicines for the management of psychotic symptoms is gaining popularity due to its effectiveness, affordability, accessibility and the quest of patients to alleviate or avoid side effects due to conventional antipsychotic drugs. However, this has led to concurrent administration of drugs and herbal medicines, which leads to drug-herb interactions. This review seeks to identify the commonly prescribed antipsychotic drugs and herbal medicines, their mechanism of pharmacokinetic interaction and possible pharmacodynamic interactions resulting in plausible clinical implications. The possible mechanisms of interaction were identified at the absorption and metabolic levels and this leads to clinical implications of synergistic, additive or antagonistic effects of antipsychotic drugs, culminating in an increase or decrease in antipsychotic action, sedation and other side effects of the antipsychotic drugs.*

Keywords: Antipsychotic drugs, herbal medicines, drugs-herb interaction, synergism, additive effect, antagonism

Relationships Between Earthworm Abundance and Soil Composition.

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Abstract: Earthworms have long been associated with healthy, productive soils and participated in the conservation of natural fertility. The great biologist Charles Darwin in his 1881 book entitled, "The formation of Vegetable Mould through the Action of Worms", stated, "It may be doubted whether there are many other animals which have played so important role in the history of the world, as these lowly organized creatures." Although earthworms are the best friends of farmers' their consideration is based on their high density as well as their severe contribution to ecological and agronomical important aspects. Terrestrial Oligochaetes notably earthworms have often been reported to affect soil structure, due to their comparatively large body size which able them to rearrange the soil matrix, and to their way of feeding, by which they often intimately mix large amounts of organic and inorganic soil components. A collection of earthworms was made fortnightly using a quadrat of 50 x 50 cm. The soil was sampled from 0-10 cm and 10-20 cm soil layers by hand sorting. Handling time was 5-6 hours per collection. Five samples were taken on each sampling occasion in each site. The collected earthworms were washed instantaneously with fresh water for 5 minutes and then carried to the laboratory in glass jars with field soil in which they inhabited. The growth and reproduction of the vermicomposting earthworm species, *Eisenia fetida* was studied in three substrates viz. urine-free, air-dried cow manure, litter, and field soil under laboratory conditions. The relationship between density and biomass with soil properties indicated positive correlation ships with soil moisture and potassium content of various levels.

Keywords: Relationship, Oligochaete, Population, Soil Composition.

Implementation of RSA Algorithm for Encryption and Decryption Recent Technology Trends in Computer Technology

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Abstract: Cryptographic technique is one of the principles means to protect information security. Not only has it to ensure the information confidential, but also provides digital signature, authentication, secret sub-storage, system security and other functions. Therefore, the encryption and decryption solution can ensure the confidentiality of the information, as well as the integrity of information and certainty, to prevent information from tampering, forgery and counterfeiting. Encryption and decryption algorithm's security depends on the algorithm while the internal structure of the rigor of mathematics, it also depends on the key confidentiality. Key in the encryption algorithm has a pivotal position, once the key was leaked, it means that anyone can be in the encryption system to encrypt and decrypt information, it means the encryption algorithm is useless. Therefore, what kind of data you choose to be a key, how to distribute the private key, and how to save both data transmission keys are very important issues in the encryption and decryption algorithm. This paper proposed an implementation of a complete and practical RSA encrypt/decrypt solution based on the study of RSA public key algorithm. In addition, the encrypt procedure and code implementation is provided in details

Keywords: Cryptographic technique, Encryption and decryption.

High-Pressure Phase Transitions and Thermodynamic Behaviors of CaX [X= S, Se, Te]

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Abstract: Pressure-induced structural aspects of NaCl-type (*B1*) to CsCl-type (*B2*) structure in CaX [X = S, Se, Te] semiconductors are presented. An effective interionic interaction potential (EIOP) with long range Coulomb, van der Waals (vdW) interaction and the short-range repulsive interaction upto second-neighbor ions within the Hafemeister and Flygare approach is developed. Particular attention is devoted to evaluate the vdW coefficients following the variational method, as both the cation and the anion are polarizable. Our result on vast volume discontinuity in pressure volume phase diagram identifies the structural phase transition from *B1* to *B2* structure. The estimated value of the phase transition pressure (*P_t*) is consistent with results previously published. The variations of elastic constants with pressure follow a systematic trend identical to that observed in others compounds of NaCl type structure family.

PACS: 61.50Ah; 61.50Ks; 64.30.+t; 62.20Dc; 62.20.x

Keywords: Phase transition; Equation of state; Elastic constants

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Synthesis and Structural Analysis of Bi_2S_3 Crystals by Gel Method

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Physics (Electronics) Department

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Abstract: Bi_2S_3 crystals were grown in silica gel medium at room temperature by single diffusion method. The optimum growth conditions were established by varying various parameters such as pH of gel solution, gel concentration, gel-setting time, concentration of reactant etc. Gel was prepared by mixing sodium metasilicate ($\text{Na}_2\text{SiO}_3 \cdot 5\text{H}_2\text{O}$), Acetic acid (CH_3COOH), inner reactant Na_2S water solution and Supernant Bismuth chloride (BiCl_3) at pH value 4.3. The effects of parameters such as gel aging, gel pH, the density of gel on growth of crystals were studied. The grown crystals characterized by Surface morphology of materials were studied by SEM. It shows grown crystals are nano wires in shape, flat and the plates with the sharp edges were observed. And nanoscale rod like structure of the grown crystals and not affected significantly by the doping. XRD analysis the crystal structure was confirmed as Orthorhombic having lattice parameters $a = 10.86\text{\AA}$, $b = 4.06\text{\AA}$, and $c = 10.22\text{\AA}$ both elements Bi and S elements can be seen in grown crystal confirmed by EDAX. The confirmation of the crystal formation was done by carrying out XRD study. FTIR study gives the information of functional groups in a crystal.

Keywords: Bi_2S_3 Crystal, growth, XRD, EDAX SEM and FTIR

Plastics in the Environment: Understanding Impacts and Identifying Solutions

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Abstract: Plastics are one of the most used materials in the world. They are broadly integrated into today's lifestyle and are present in almost all product areas. Unfortunately, one of the characteristics of plastics that make them so useful – durability – also enables them to persist in the environment for very long periods of time. Additionally, because of their low cost, many plastic objects have long been perceived as disposable. The result is the ubiquitous presence of plastic debris all over the planet. Close attention has been paid over the years to the increasing amount of plastics in the oceans and to their adverse effects on marine fauna. The earliest discoveries of plastic debris inside dead marine birds as well as the first attempts to quantify floating plastic debris in the western North Atlantic Ocean date back more than 40 years. Since then, a large number of studies has documented their increasing prevalence and undesired effects, with a recent exponential increase in attention to microplastics.

Keywords: Plastics, Environment and Solutions.

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Smart Computer Artificial Intelligence

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Abstract: *This study investigated the extent to which developing and integrating artificial intelligence into national militaries and institutions is unethical and undermines international security. To critically explore the effects of AI computer systems in the military and autonomous (or semi) weapons system. surpass certain expectations and tasks for artificial intelligence to be used on a wide scale. the reliance on artificial intelligence (AI) increased due to the impact of AI on transportation, the criminal justice system and advertisements.*

Keywords: Artificial Intelligence

Faunistic and Taxonomic Study of Freshwater Snails (Mollusca: Gastropoda) From Indrayani River, Pune

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Abstract: *Mollusca is a highly diverse phyla and usually found in various kinds of aquatic habitats. The non-marine, terrestrial and freshwater species are mainly represented by Gastropoda which is a diverse class of Mollusca. In this study, a faunistic assessment of freshwater snails inhabiting in Indrayani River, Pune, Maharashtra, India was carried out following a Six-month sampling. Eight different sites of Indrayani river were selected. A total of thirteen species belonging to two orders Hygrophila and Mesogastropoda and seven families were recorded in the collections. Representatives of Thiaridae was the most abundant. A maximum of Nine species were found in the Begdewadi (Site-4) of Indrayani River. The invasive species Physa acuta (Draparnaud, 1805) was the most commonly occurring species followed by Radix luteola (Lamarck, 1882) observed. Radix luteola (Lamarck, 1882) and Physa acuta (Draparnaud, 1805) were recorded in highly polluted water suggesting a tolerance to high organic enrichment. During this study other invasive species like Pomacea diffusa. (Perry, 1810) was also observed. From our ongoing study we have been able to document three invasive species from Indrayani river till date which is a threat to the local freshwater mollusca fauna and there is a need to conserve our native fauna.*

Keywords: Indrayani, Radix, Pomacea, Invasive species, Hygrophila

A Comprehensive Review on Microalgae: A Potential Low-Cost Green Option for Manufacturing of Nanoparticles

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Abstract: *An environmentally friendly substitute for the conventional chemical methods of synthesis is the recent development of nanoparticle production from biological sources. Microalgae stand out among the many green sources investigated for their prominent advantages in terms of their ease of growth and capacity to endure harsh pH and temperature conditions, making these organisms as potential low-cost, environmentally friendly machinery for the mass synthesis of nanoparticles. Algae are attracting a lot of attention as potential renewable alternatives to the conventional chemical synthesis because of their capacity to treat wastewater, production of a wide range of commercially significant nanomaterials, economically viable growth-associated products, and inherent carbon reduction potentials. The commercial large-scale use of these biological agents is still a loose concept, despite the fact that numerous reviews have emphasized the significance of algal bio factories. It is important that individual research findings on the prospects of algae for nanoparticle production be updated and comprehended together in a way to facilitate scale-up and commercialization of the technology. This is because there is an urgent need to develop efficient alternatives to the currently used sources for nanoparticle synthesis and environmental sustainability. The current mini review gives a brief overview of the development and benefits of microalgae, as well as the most recent developments in the use of microalgae in the biogenesis of nanoparticles and quantum dots. It also makes note of the biosensing and environmental pollution detection capabilities of the nanomaterials derived from microalgae.*

Keywords: Biosynthesis, Nanoparticles, Microalgae, Cost-effective, Green factory.

Diversity of Predatory Ladybird Beetles (Coleoptera: Coccinellidae) in Maval and Haveli tehsil of Pune District (Maharashtra), India

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Abstract: *Coccinellidae* is a widely spread and highly diversified family of the order *Coleoptera* with a variety of colors. The name *coccinellids*, is derived from the Latin word *coccineus* meaning "scarlet" which means the beetle has bright red color. Ladybird beetles are mainly characterized by their oval-shaped body, bright color, and the number of dots. Ladybird beetles are an important aspect of Insect Pest Management. The present study was conducted from September 2022 to February 2023 in selected sites of Maval and Haveli tehsil. Total 12 species of ladybird beetle belonging to 9 genera and to the family *Coccinellidae* were recorded in the current study. Out of which *Cheilomenes sexmaculata*, *Harmonia octomaculata*, *Coccinella transversalis*, and *Micraspis discolor* are the most common and abundant species in selected sites. All species are observed on different crops showing various predatory natures. They preferred aphids, small bugs and plant leaves as food. The coccinellid beetles are economically important as they are predatory and mainly feed on pests which destructive to the crop. This work emphasizes the need of planning conservation strategies for the diversified ladybird beetles found in the agricultural ecosystem.

Keywords: Coccinellidae, Diversity, Ladybird beetle, Pune district.

Study of Freshwater Mollusca with Respect to Physico-chemical Parameters from Mula and Mutha River, Pune (Maharashtra)

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Abstract: Mollusca is the second largest phylum belonging to kingdom Animalia and has high diversity usually found in various kinds of water bodies. The present study was carried out on mainly two classes Gastropoda and Bivalvia which has a huge diversity of snails and bivalves and the physico-chemical parameters of the rivers Mula and Mutha. The study was carried out from July 2022 to December 2022. Total six sites from Mula river and eight sites from Mutha river were selected. A total of sixteen species belonging to Five orders Architaenioglossa, Caenogastropoda, Unionida, Venerida, and Hygrophila and seven families were recorded through sampling. Physidae and Lymnaeidae were more dominant in Mutha river while Cyrenidae and Unionidae were only recorded from Mula River. A maximum of eleven species were recorded from Khadakwasla (site 1) from Mutha river. Physa acuta (Draparnaud, 1805) and Lymnaea (Lamarck, 1799) were most commonly occurring species followed by Racesina luteana, Radix rufescens and Indoplanorbis exustus were recorded in very highly polluted water with domestic, sewage and industrial discard and Eutrophication. Several parameters were recorded such as temperature, Salinity, TDS, Conductivity, pH and dissolved oxygen. From our current study we have been able to convey that there is a need to convey that there is a need to clean the water bodies and conserve the fauna.

Keywords: Mula, Mutha river, Unionida, invasive species, water parameters.

Applications of DNA Sequencing in Various Fields Applied Research: A Review

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Abstract: Tools and techniques of DNA sequencing are continuous in development and new inventions. While developing these techniques this also increase its canopy in the applications in various spreading fields life agriculture, medicines, industries, clinical activities and many more. These DNA sequencing application are the result of good, valid, authentic DNA sequencing technique but its due to application sequencing are getting more attentions. DNA sequencing covers coding regions and non coding regions that reveals the particular phenotype of pathogen as reported by Michael in 2011. The advanced application now become in all organism for genome of a species such as yeast, fly, mouse, humans etc. as mention by Jay 2012. The next generation sequencing gives more application and helpful for detection of mutation by using liquid biopsy in cancer as workout by Elaine 2016.

Keywords: Application, DNA sequencing and Advance techniques.

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Diversity and Water Quality Parameters of Freshwater Aquatic Bugs (Hemiptera) from Maval and Haveli tehsil of Pune, Maharashtra

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Abstract: Aquatic bugs are abundant in most freshwater habitats and often exhibit high diversity they play a significant role in the freshwater ecosystem. This study focuses on the diversity of aquatic bugs from the water reservoir of selected sites in the Pune region. The study was done from October 2022 to February 2023. Total 11 species were found belonging to the order Hemiptera and 7 families which are Belostomatidae, Gerridae, Nepidae, Notonectidae, Pleidae, Mesovelidae, Veliidae. Out of this seven families, the two families Belostomatidae and Gerridae were abundant. The aquatic ecosystem is mainly gets affected by industrial pollution as well as anthropogenic activities. Water quality parameters like Water temperature, Water pH, Dissolved oxygen and Turbidity were checked in the present study. This study reveals that all anthropogenic activities are effecting the water quality and ultimately disturbing the aquatic ecosystem. Thus, there is need for proper study of aquatic insects in freshwater bodies. The present study is an attempt to summarize the data on the diversity and abundance of Aquatic bugs with water quality parameters in PCMC, Pune.

Keywords: Hemiptera, Aquatic bugs, Pune, Water parameters.

A Simple Multicomponent Synthesis of Heterocyclic Compound by using Glycine and its Derivative as an Efficient Green Catalyst

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Abstract: Glycine is simplest, stable, most abundantly available amino acid available in zwitterionic form. It is the single achiral proteinogenic amino acid. It can fit into hydrophobic or hydrophilic environments, due to its shortest side chain of only single hydrogen atom. This review summarizes all the important reported procedure for multicomponent one pot synthesis of biologically important structurally diverse heterocyclic derivatives by applying catalytic quantity of glycine and its derivative as important catalyst for different reaction condition.

Keywords: Multicomponent synthesis, sustainable development, amino acid, glycine.

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Current Review on Next Generation Sequencing and It's Application

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Abstract: In this developing genomic era, many tools, techniques, application and software's are in continuous developing phase. These going to produce impermeable result in the field of DNA Sequencing. Similarly, this developing process of genomic and sequencing result can lead to the main pathway of Next Generation Sequencing (NGS). NGS provides more remarkable application such as, to trace a leukemia cancer, treatment of tumors, identification of mutation and hereditary types of cancer as reported by D.Quin,2019. NGS gives application toward digital gene expression large scale massive sequencing, gene fusion and rearrangement of genes worked out by George, 2019. The applications of NGS are also helpful in human genome and various hereditary diseases of mankind. The current review covers all such advance articles and scientific reports.

Key words:Next Generation Sequencing, DNA Sequencing, Genomics

A Preliminary Study on Diversity of Stink Bug from Pimpri-Chinchwad, Pune, Maharashtra

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Abstract: Pentatomidae is one of the largest family of orderheteropteran commonly called as Stink bugs' or 'shield bug'. The name Pentatomidae is from Greek 'pente' meaning five and 'tomos' meaning section which refers to the five segmented antennae. The members of Pentatomidae have a shield shaped body and eject a foulsmelling substance when agitated. They constitute an economically important group of hemipterous pests as most of the species are phytophagous. In the present study the bugs were collected from various places from in and around Pune from September 2022 to February 2023. The Specimens were, collected pinned, dried and identified on the basis of morphological characters with help of recent and updated literature. The present study comprises 16 species of 14 genera from 8 tribes under 2 subfamilies of family Pentatomidae. Two subfamilies namely Asopinae and Pentatominae of have been recorded of which Pentatominae is a species rich family and only two members from Asopinae have been noted. The members of Pentatomidae are represented in all zoogeographical regions although the tropical and sub-tropical faunas are more diverse.

Keywords: Pentatomidae, Stink bugs, Asopinae, Pentatominae, Pimpri-Chinchwad

Avian Diversity in and Around Pimpri-Chinchwad, Pune, Maharashtra

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Abstract: *Birds are sensitive indicators of biological richness. Birds and their diversity constitute a main part of the natural environment and play important role as agents of flower pollination and seed dispersal. The present study deals with the avifaunal diversity in and around Pimpri-Chinchwad. In the present study point count method was used. The study was conducted at seven selected sites of Pimpri-Chinchwad. Each of the sites was surveyed from September-2022 to February-2023. The study revealed a total of 54 species representing 14 orders, 34 families were recorded. Passeriformes is a species rich order with about 27 species belonging to 18 families. The Order Passeriformes and Pelecaniformes were found dominant having 50% and 13% bird species respectively. The order Anseriformes, Caprimulgiformes, Gruiformes, Piciformes, Psittaciformes only single species were recorded. The attempt of this paper is to provide the information about biodiversity of birds in and around Pimpri-Chinchwad.*

Keywords : Biodiversity, Passeriformes, Pelecaniformes, Pimpri-Chinchwad

Diversity of Water Beetles (Coleoptera: Dytiscidae, Hydrophilidae, Gyrinidae) of Indrayani River, Pune, Maharashtra, India

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Abstract: *Coleoptera is the largest order of the class insect a consisting of 330,000 species. All insects of this order are collectively called as beetles which are variable in their habits. Representing 30– 40% of all known insects. Study focuses on the diversity, distribution of aquatic beetles and physico-chemical parameters of Indrayani river, Pune. The present study was carried out from September 2022-February 2023 around 8 sites of Indrayani River to identify the diversified species of aquatic beetles with the data of physico-chemical parameters. A total of 15 species belonging to 3 families of beetles viz. Dytiscidae, Hydrophilidae and Gyrinidae, were collected. Dytiscidae was found abundantly followed by Hydrophilidae and Gyrinidae. The physico-chemical parameters monitored on different sites were pH (6.7-7.2), Salinity (36-390ppm), DO (2-10mg/L), TDS (100-600ppm), Conductivity (80-100) and Temp(22-25°C) with in the different sites of Indrayani River. So the overall quality of water found within average ranges.*

Keywords: -Coleoptera, Diversity, Hydrophilidae, Dytiscidae, Gyrinidae, Indrayani river, WHO, Conductivity, DO

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Extraction and Quantification of Pigments from Indian Traditional Medicinal Plants

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Abstract: *The pigments which are involved in the process of photosynthesis are called photosynthetic pigments. The pigments are coloured organic compounds. They have capacity to absorb certain wavelength of light and reflect others. According to Maclachlan and Zalic (1953) the chloroplast of higher plants contain four different pigments chlorophyll a ($C_{55}H_{77}O_5N_4$ Mg) and chlorophyll b ($C_{55}H_{70}O_6N_4$ Mg) are the green pigments and carotens ($C_{40}H_{56}$). Chlorophyll benefits the body in a unique and distinctive ways. It helps to cleanse harmful toxins from the body and it is also used to fight infection. A recommended and regular intake of chlorophyll can keep the circulatory and digestive systems much healthier. In the present study, the chlorophyll was extracted from the leaves from five medicinal plants and characterized by UV-Visible spectroscopy. Concentration of chlorophyll a and b was calculated using Arnon method. Chlorophyll content was higher in Tecoma stance than other medicinal plants which are used in this study.*

Keywords: Chlorophylls, Carotenoides, *Canthium coromendelicum*, *Dalbergiasisoo*, *Vitexnugundo*.

Phytochemical Analysis of *Rungia repens* Nees using UV- VIS, FTIR and GC-MS Studies

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Abstract: The present study was performed to characterize the bioactive components present in different leaf extracts of *Rungia repens* Nees using UV-VIS, FTIR and GC-MS. The crude extracts were scanned at a wavelength varying from 200-1100 nm using a Perkin Elmer spectrophotometer and the characteristic peaks were detected. For GC-MS analysis, 10 g sample is extracted with 30 ml ethanol, filtered in ash less filter paper with 2 g sodium sulphate and the extract is concentrated to 1 ml by bubbling nitrogen into the solution. The compound detection employed the NIST Ver.2.0 Year 2005 library. The biological activities are based on Dr. Duke's phytochemical and ethnobotanical Databases by Dr. Jim Duke of the Agricultural Research Service/USDA. The UV-VIS profile showed different peaks ranging from 200-450 nm with different absorption respectively. The FTIR spectrum confirmed the presence of secondary alcohols, phenols, alkanes, alkenes, aldehydes, aromatics, ethers and amines in different extracts. The results of the GC-MS analysis provide different peaks determining the presence of six best peaks determining probable phytochemical compounds with different therapeutic activities. GC MS library search of *Rungia repens* Leaves extract for best six peaks are recorded. It shows RT for 4.91 shows Tributylamine, Tetra-N-butylammonium chloride, Tetrabutylammonium cyanide, Tri-n-Butylmethylammonium chloride and 1,2 Ethanedi-amine, N,N'dibutyl compounds. RT for 7.54 shows Tetradecane, Pentadecane, Hexadecane, Pentadecane, 7-methyl, Dodecane and 2,5-dimethyl compounds. RT for 9.99 shows Hexadecane, Eicosane, Pentadecane, 7-methyl, Pentadecane, 2,6,10-trimethyl and Heptadecane compounds. RT for 12.23 shows Eicosane, Octadecane, Hexadecane, Pentadecane, 2,6,10-trimethyl and Heneicosane compounds. RT for 15.64 shows Phytol, Isophytol, acetate, 3,7,11,15-Tetramethyl-2-hexadecen-1-ol, Phytol, acetate and Isophytol compounds. RT for 22.04 shows Ethanol, 2(9-octadecenyloxy), (Z)-Octadecanal, 1,30-Triacontanediol, (Z)14-Tricosenyl formate and Z-14-Octadecen-1-ol-acetate compounds. Hence, this study offers base of using as plant as a alternative for the synthesis of agents with biological significance.

Keywords: *Rungia repens*

Insecticidal Potential of Essential Oils against *Tribolium castaneum* (Herbst.)

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Abstract: The red flour beetle, *T. castaneum* is an important secondary pest of that feeds on a wide variety of stored products worldwide. This study was carried out to investigate the adulticidal and larvicidal toxicity of *A. indica* and *B. juncea* oils. Larvicidal bioassay tests evaluated that 13.47% and 17.67% concentration of *A. indica* and *B. juncea* oils resulted 50% mortality (LC 50) of fourth instar larval stage of *T. castaneum* respectively. LC 50 concentration 22.91% and 25.16% of *A. indica* and *B. juncea* oils shows adulticidal activity of *T. castaneum*. Result revealed that both the plant oils are more effective against larvae and adult of *T. castaneum*.

Keywords: Tribolium, Larvicidal, adulticidal, *Azadiracta indica*, *Brassica juncea*

Protease Inhibitor Activity of Selected *Calotropis* Species

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Abstract: Protease inhibitors are widely distributed in all plants groups viz. Algae bryophytes, Pteridophytes, and fungi. There are several reports on application of protease inhibitors in medicines as well as in agriculture fields. The present study aimed to screen the plants for the protease inhibitor activities (PIs) by using the dot blot assay. The selected plants were screened for protease (Trypsin) inhibitor activities viz. *Calotropis procera* (Aiton) W.T. Aiton and *Calotropis gigantea* (L.) W.T. Aiton. The plant samples shows potent protease inhibitor activity. Trypsin and inhibitors (Plant sample) are loaded on gelatin coated X-ray films with respective concentration [3:1], [1:1], and [1:3]. Appearance of faint spot (gelatin) indicates total inhibition of enzymes, while dark blue spot (gelatin hydrolysis) indicates no inhibition. In present experiment *C. procera* (Aiton) W.T. Aiton leaf extract and *C. gigantea* (L.) W. T. Aiton leaf as well as stem extract shows the Protease inhibitor activity.

Keywords: *Calotropis*, Dot Blot assay, Protease inhibitor activity.

Growth and Spectral Analysis of Pure and Potassium Doped L-Proline Trichloro Acetic Acid Crystal

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Abstract: In current study comparative growth and analysis of pure and potassium doped L-proline trichloro acetic acid single crystals have been performed by alike characterization technique. The single crystal has been harvested by slow solvent evaporation technique. The functional groups of grown crystals have been identified by Fourier transform infrared technique. The constituent elements of pure and doped crystal have been performed by means of EDAX analysis. The transmittance window of grown crystal has been evaluated within 200-1100 nm by UV-Visible spectral analysis. The tolerance to thermal exposure was confirmed by using the TG/DTA technique.

Keywords: Acid crystal

A Bioactive Imidazole Synthesis with an Eco-Friendly Approach

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Abstract: A special and expanding area of chemistry is green chemistry. Chemical synthesis occurs more frequently every day in our environment. Toxins are bad for our health and the environment, yet chemistry has advanced as medicines have been created to solve our concerns. If you want to lower the risk associated with a system, change the cause rather than the consequence. Green chemistry is a strategy for reducing the production and usage of dangerous compounds by improving chemical industrial processes. A sustainable method for manufacturing benzimidazole derivatives is by green synthesis of benzimidazole. By avoiding the use of risky chemicals, harmful solvents, and excessive energy inputs, this artificial approach lessens the impact of the process on the environment. The process makes use of natural or renewable resources, such as plant extracts or biological waste, as catalysts or reagents to manufacture high-yield and high-purity benzimidazole derivatives. By the use of green chemistry, benzimidazole derivatives are finding new and unheard-of applications in a range of fields, such as medicine, materials science, and agriculture. Moreover, it provides a viable and environmentally responsible substitute for traditional synthesis techniques.

Keywords: Benzimidazole, green synthesis, eco-friendly

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Diversity and Abundance of Dung beetles (COLEOPTERA:SCARABAEIDAE) from Ambegaon Taluka, Maharashtra

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Abstract: *Dung beetles are major group of beetles in order Coleoptera belonging to Family Scarabaeidae. It contains more than 30,000 species in the world. These beetles are characterized by the presence of fore wings modified into more or less hardened, non-folding rigid elytra, which partly or wholly cover the hind wings and abdomen. These beetles are noticeable due to their relatively large size, bright colors and elaborate ornamentation. The present study is majorly aimed the diversity and abundance of dung beetles from Ambegaon Taluka Maharashtra. The study was carried out from the month of September 2022 to February 2023. The specimens were hand-picked, brought to the laboratory and pinned for preservation. Identification was done using literature and keys. The survey revealed the presence 11 genus of 6 subfamily belonging to family Scarabaeidae of which subfamily Scarabaeinae was the most species rich family.*

Keywords: Coleoptera, Dung beetles, Scarabaeidae, Ambegaon

New Addition on the Flora of Nagpur District An Review Article

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Abstract: *During the literature study for the different flora around the state of Maharashtra. We found the many new plant varieties, some few species are newly recorded by various another in individual basis. The same were not incorporated in the regional flora. Similarly 4 plants species from different families were traced from Nagpur district flora that included Muntingia calabura from Muntingiaceae, Minkania micrantha, Centrathrum punctatum from asteraceae and Clerodendron splendens G. don from verbenaceae are the addition to these flora. The discretion of distribution and morphological investigation has been reported with the help of available literatures.*

Keywords: New addition, flora, Nagpur.

Utilization of Mangrove Plant by Local Coastal Community in Maharashtra

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Abstract: *The present paper deals with the study of utilization of mangroves diversity along different sites of Maharashtra coastal region, India. Mangroves along the coast of Maharashtra have well developed ecological and economical potentials, therefore an attempt have been made to survey on utilization of mangrove plant by local coastal community. It was observed that the Sonneratia alba, and Avicennia marina species are commonly utilized. The increasing population in the areas of coastal Maharashtra with increased demands of resources especially natural resources has forcefully reducing the area of mangroves. The piece of work is significant in gathering information of mangrove plants and aware about degradation of mangroves.*

KEY WORDS: Mangroves, Degradation of mangroves, utilization.

Brassica oleracea var. Capitata Leaves: A Waste to Resource for Silver Nanoparticle Synthesis

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Abstract: *Metal nanoparticles are used in various fields like food, medicine, cosmetics, aeronautics, pollution control, etc. due to their unique properties. The development of green chemistry procedures for the synthesis of metal nanoparticles has attracted the attention of many researchers in recent years. Plant extracted constituents can act as reducing and stabilizing agents for the synthesis of metal nanoparticles. Brassica oleracea leaves are commonly discarded in huge quantities from vegetable markets which contributes to municipal solid waste. Hence, it was used for the synthesis of silver nanoparticles. The characterization of nanoparticles was carried out by using UV- Vis Spectrophotometer, AFM, FT-IR, SEM, TEM and SAED. The average size of nanoparticles was found to be within 100 nm and they were crystalline and spherical in shape. The study of antibacterial activity of Silver nanoparticles was carried out by using E. coli and S. aureus organisms. The synthesized nanoparticles were found to have good antibacterial activity against selected micro-organisms. Hence, it can be used in cosmetics, textiles, wound dressings, treatment of wastewater, etc. Thus, the present work can lead to sustainable approach of silver nanoparticle synthesis by using an agricultural waste which can further give commercial significance to Brassica oleracea var. capitata leaves.*

Keywords: Silver nanoparticles, Brassica oleracea var. capitata leaves, characterization, antibacterial activity.

Combustion Route of Synthesis of Nanoparticles of CdFe_2O_4 and XRD, TEM and VSM Study

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Abstract: CdFe_2O_4 powder was synthesized by combustion method, having metal nitrates as precursors and Glycine as fuels, followed by a heat treatment 600°C for 4 hr. The powders obtained have been characterized by thermal gravimetry differential analysis, X-ray diffraction; morphological of the powder was identified by high resolution-transmission electron microscopy. X-ray diffraction results indicate that the resultant CdFe_2O_4 crystallites consist of spinal phase and average particle size of the nanomaterial CdFe_2O_4 calculated from XRD was found in the range ~ 55 nm. The M-H loop of CdFe_2O_4 has been traced using the Vibrating Sample Magnetometer (VSM) and magnetic parameters such as saturation magnetization (MS), coercivity (HC) and retentivity (MR) are obtained from VSM data.

Keywords: TG/DTA, XRD, TEM, Combustion Method

Synthesis of Co-Ordination Compounds by using new Amprone Derivatives with Some Divalent Metal Ions for their Biological Applications

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Abstract: Ampyrone is the non steroidal anti-inflammatory drug. The free amino group of it can be used to form new Schiff bases. The present work deals with the synthesis of new Schiff bases by condensation of Ampyrone, benzaldehyde, halogen substituted benzaldehyde along with substituted hydrazide. These newly synthesized Schiff bases were allowed to form complexes with divalent metal ions. The new Schiff bases and their metal complexes were characterized by physico-chemical techniques such as m.p., TLC, IR, NMR, Mass spectroscopy, UV visible spectroscopy, molar conductance, magnetic susceptibility etc. The synthesized Schiff bases and their metal complexes are tested for biological activity including antifungal, antibacterial activity.

Keywords: Ampyrone, Benzaldehyde, Hydrazide.

Study of Electric Property of *Spirulina platensis*

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Abstract: *Spirulina platensis* is microscopic blue-green algae which grows in both fresh and sea water and it is known for its high nutritive value like high vitamin, protein, lipids, pigments etc. *S. platensis* shows high photosynthetic efficiency and its decomposition releases minerals into the water. In the present investigation at 15 V aqueous solution of *S. platensis* conduct electricity through it and current of about 50 mA flows through it. The present study is to understand electric property of *S. platensis* which can be further used for different application.

Keywords: *S. platensis*, Electric conductivity, Conductance, Bio solar cell

Synthesis, Characterization and Biological Activities of 4- Aminoantipyrene Substituted Ligands and their Transition Metal Complexes

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Abstract: 4-aminoantipyrene is a well known heterocycle for its primary amino group to form Schiff bases by condensation reaction with carbonyl compounds such as aldehydes and ketones. These modified 4- aminoantipyrenes are used as the ligands to form complex with various metal ions. The newly formed ligands and metal complexes are characterised by using some physicochemical techniques. The new multidentate ligands and their metal complexes are then tested for their biological activities such as antibacterial and antifungal activity along with plant growth activity.

Keywords: 4-aminoantipyrene , antibacterial ,antifungal activity

The Study of Role of Different Chemical Preservatives and their Adverse Effects on the Health

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Abstract: Food preservation is a critical process that involves various techniques used to prevent spoilage and extend the shelf life of food. The primary purpose of food preservation is to ensure that food remains safe for human consumption for an extended period. Some of the common techniques used in food preservation include refrigeration, canning, drying, smoking, and fermentation. Chemical food preservatives are commonly used in the food industry to increase the shelf life of products and prevent spoilage caused by microorganisms, oxidation, or other chemical reactions. While some of these preservatives have been shown to be safe for consumption in the amounts typically found in food, others have been linked to potential health risks. Therefore, it is essential to understand the importance of proper food preservation techniques and their potential consequences. This review paper focuses on different chemical preservatives and its adverse effects on health. Consumers should follow food safety guidelines and properly store and handle their food to prevent spoilage and contamination. Producers and manufacturers should also prioritize sustainable and eco-friendly food preservation methods to reduce their environmental impact.

Keywords: Preservatives, microorganisms, contamination, spoilage, eco-friendly.

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Synthesis and Characterization of Mixed Ligand Complexes of Cerium Metal and its Antimicrobial Study

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Abstract: Using 2-hydroxybenzaldehyde oxime and L-Valine, L-Glycine, L-Hydroxyproline, L-Threonine mixed ligand complexes of cerium metal is synthesized. Obtained compound were characterized on the basis of various techniques like conductometry which shows complexes are non-electrolytic in nature and also found paramagnetic in nature. Infra-red spectra clearly indicates the complexes involves metal-ligand bonding through O,N-donor atoms. The TG & DTA study confirms the presence of coordinated water molecule in the synthesized complexes. The high decomposition temperature of the complexes shows the strong metal ligand bonding within the complexes. UV-Visible spectroscopy clears the intra ligand and LCMT transitions in the complexes. Elemental analysis shows that complexes are in 1:2:1 ratio. Antimicrobial activity shows promising activity by the synthesized compounds against standard bacterial strains.

Keywords: Mixed ligand complexes, LCMT, DTA, Antimicrobial activity

Review on Genus *Acacia*: Special Reference to *Vachellia eburnea* – an Unexplored Traditional Medicinal Plant of Indian Subcontinent

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Abstract: The medicinal plants are widely used by the traditional medical practitioners for curing various diseases in their day to day practice. *Vachellia eburnea* (Mimosaceae) is one of traditional medicinal plant in India which is used for treatment of various diseases. Different parts of plants (i.e., leaves, bark, stem, and fruits even whole plant) have shown to have various pharmacological activities like antimicrobial activity, antioxidant activity, hepatoprotective activity, antimalarial activity, anti-diabetic activity, anti asthmatic and antibacterial Activity. Phytochemicals reported in the plants have been listed based on their pharmacological activity. Although Phytopharmacological reports are very less, still it is considered as a valuable source of treatment against various diseases.

Keywords: *Vachellia eburnea*, Antimalarial activity, Anti-diabetic activity, Asthmatic

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Advance Type in DNA Sequencing an a Review

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Abstract: *The DNA sequencing is used to determine the sequence of entire genome of any organisms. In this review we analyse advance techniques currently worked by various researchers Haylan2016 give a DNA sequence develop method advance techniques in third generation sequencing that can be further technically classified as Helicos genetic analysis system, Pacific biosciences single molecule real time sequencing, Nanopore sequencing . The dynamic DNA sequencing is used by EmtiousMd.2016. The pairwise sequencing with comprehensive and deep RL model is explain by Aryan Lall2023 similarly sequencing based on 16s r-RNA and partial rDNA sequencing has been worked out since 1994 by Bertil Pettersson.*

Keywords: DNA sequencing, techniques, third generation sequencing and transgenomic.

Review on Current Aspects of Technique in DNA Sequencing

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Abstract: *Science and technology are in contentious developing phase. It also develops advanced tools and techniques for DNA sequencing. The recent advance well known Sanger sequencing is based on microfluidic separation platforms as a reported by Michael 2005. Similarly DNA sequencing is developed with best standards protocol with optimization of dideoxy sequencing and worked out by Jay A. 2008. Further DNA sequencing becomes advanced with the introduction of plus and minus technique given by Sanger and reported by Clyde A. Hutchinson2007. There were also introductions of DNA sequencing method for methylated DNA, DNA Protein and RNA Protein interactions from earlier days as reported by George M. Church 1988. Here with this review will try to summarise all advanced techniques in DNA Sequencing.*

Keywords: DNA sequencing, Techniques and Sanger.

Growth and Investigation of Alanine Doped Sulphamic Acid Single Crystal

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Abstract: In current exploration crystal of pure Sulphamic acid(SA) and alanine doped Sulphamic acid has been grown by slow solvent evaporation technique to study the impact of alanine on surface habitat of SA crystal. The effect of L-alanine on modified surface habitat of Sulphamic acid crystal has been investigated by surface etching analysis. Phase identification of alanine doped Sulphamic acid single crystal and information about unit cell dimension is identified by rapid analytical technique that is powder x ray diffraction (XRD).

Keywords: Sulphamic acid, x ray diffraction (XRD), L-alanine

A Black Fungus Infection Reported after Covid -19

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Abstract: The black fungus (mucormycosis) is a life threatening fungal infection, can used after the Covid-19 Sarc cov 2 crises precariously from 2019 novel coronavirus is a major source of disaster in the 21st century and has not yet ended in the country. Human inhale 1, 70,000 fungal spores per day and entering through lungs are sporangiospores about 3-11 μ m. The people have low virulence capabilities with low immunity level. The highly predisposing factors for mucormycosis are diabetes mellitus, drugs like corticosteroids. Any immunodeficiency state, blood cancers, organ transplantation, history of multiple blood transfusion and industrial oxygen is used are seen in prevalence case of studies. The molecular assay, plasma therapy, adjunctive therapy, surgery and antifungal treatment are performed or treated in severe and chronic situations of patient. The black fungus, white fungus, yellow fungus, etc. are commonly cause by different fungal species as we discussed in paper. Despite the efforts for better understanding of the pathogenesis, early antifungal treatments of mucormycosis, the mortality rate of the disease remain high.

Keywords: Covid-19 , mucormycosis, antifungal treatment, cytokine storm.

Design And Development of Herbal Face Pack (HFP) From Medicinal Plant

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Abstract: *The objective this work is to formulate and evaluate a polyherbal face pack (HFP) for cosmetic purpose from herbal ingredients. Use of synthetic surfaceactive agents like sodium lauryl sulphate (SLS) has been found to show adverse actions on the skin like irritation and inflammation. Soapnut extracts is traditionally used in household remedies and is documented to have beneficial effects on skin. Hence the objective of the work was to formulate a HFP replacing SLS by Sapindus mukorossi.*

Keywords: Herbal pack, *Sapindus mukorossi*, medicinal plant.

Review on Increasing Trend of Use of Nanomaterials in Various Electronic Devices

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Abstract: Nanotechnology refers to technologies that are working at the nanometer scale which have applicability in the field of ultramodern electronics. Nanoparticles can theoretically be produced instinctively from nearly any chemical. Similar finagled nanomaterials are generally defined as accoutrements designed and produced to have structural features with at least one dimension of 100 nanometers or lower. Nanoparticles are now being used in the manufacture of scratch proof eyeglasses, crack-resistant paints, anti-graffiti coatings for walls, transparent sunscreens, stain-repellent fabrics, self-cleaning windows and ceramic coatings for solar cells etc. The review says that there are uses of nanotechnology in electronics and electrical goods that do give rise directly to environmental and human health concerns. This is the use of synthetically produced nanoparticles in 'nanomaterials' to make electronic components or surface coatings for electrical goods.

Keywords: Nanotechnology, ultramodern electronics, nanometers, environmental, solar cells.

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Bio-Waste to Efficient Biocatalyst for Organic Synthesis

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Abstract: Organic synthetic reaction contains many factors which leads to the reaction for successful in terms of yield, time consumption, atom efficiency and economics behind it. Last few decades green chemistry is the fascinating technology and concept applied worldwide. Green chemistry approach is to minimize the pollution, reduce the global warming and its harmful effects. In connection to this we here report in synthesis of organic dihydropyrimidinone (DHPM) using naturally obtaining compound which is acting as catalyst for reaction. *Peucedanum grande* is the naturally occurring plant which most of the time underrated by the society, but we are utilizing this plant powder as a catalyst. DHPM synthesized using biocatalyst were established on the basis of spectral techniques and physical constant were also checked for reaction success. Here we are able to apply green chemistry concept for organic synthesis without any harmful content in reaction.

Keywords: Bio-waste, DHPM, *Peucedanum grande*, Green chemistry

Novel Design, Synthesis, and Evaluation of Bis-Benzothiazole Derivatives as Antibacterial Agents

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Abstract: A new Compound has been Synthesized from the coupling reaction of the benzothiazole starting from the 2 chloro aniline which can be converted to the 4-Chloro- 1,3-benzothiazole-2-amine and the synthesized compound characterized by the various analytical techniques. 4-Chloro- 1,3-benzothiazole-2-amine was coupled in presence of the catalyst like Copper under the Sonication Condition. Series of novel bis-benzothiazole derivatives with head-to-head orientation were designed, synthesized, and evaluated for their anti-bacterial activity was studied by the Zone of Inhibition method.

Keywords : Design, Synthesis, Bis-Benzothiazole Derivatives

Synthesis and Biological Profile of Benzimidazoles

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Abstract: *Benzimidazoles are a class of heterocyclic, aromatic compounds which share a fundamental structural characteristic of six-membered benzene fused to five-membered imidazole moiety. Molecules having benzimidazole motifs showed promising application in biological and clinical studies. Nowadays it is a moiety of choice which possesses many pharmacological properties extensively explored with a potent inhibitor of various enzymes involved in a wide range of therapeutic uses which are antidiabetic, anticancer, antimicrobial, antiparasitic, analgesics, antiviral, and antihistamine, as well as used in cardiovascular disease, neurology, endocrinology, ophthalmology, and more. The increased interest for benzimidazole compounds has been due to their excellent properties, like increased stability, bioavailability, and significant biological activity. This book chapter mainly discussed recent synthetic methods developed for the benzimidazole derivatives and their pharmacological properties exemplified on several derivatives.*

Keywords : Biological compounds, orthophenyl diamine, Benzimidazole

Review Article on Addition to the Flora by two Species (*Amorphophallus longiconnectivus* and *Phyllodium longipes*)

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Abstract: *Flora is the main source of botanical authentic information for every region. As time-passes there are many additions and sometime delicious can be happen in local flora's. That made you to natural or anthropological activities. The current review article is based on addition of 2 such large species in the flora of Nagpur district. The morphological distribution, geographical locations and uses are reported here by secondary sources and other flora's. These two plants named as *Amorphophallus longiconnectivus* and *Phyllodium longipes* belongs to family Araceae and Fabaceae, respectively.*

Keywords: *Amorphophallus longiconnectivus* and *Phyllodium longipes* , new addition- Maharashtra, Nagpur.

To Study Mutagenic Treatment on *Coriandrum sativum L.*

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Abstract: Coriander (*Coriandrum sativum L.*) is a annual herb mainly cultivated for its fruits and tender green leaves. It is a most widely used herb through out the world. mutation breeding is one of the traditional methods of crop improvement. *Coriandrum sativum* belongs to the family Apiceace . it is common green species used in every part of India. In Maharashtra it is known kothembiri. Mutation breeding is one of good breeding methods in plant breeding which can brings genetic variation. Mutations provide beneficial variation for practical plant breeding purpose. Induced mutation is highly instrumental in plant biology to induce genetic variability in a great number of crops. The technology is simple, relatively cheap to perform and equally usable on a small and large scale. In present study we used one type of chemical mutagen i.e. DMS (Di methyl sulphate) with the different concentration (10% , 20%, 30%, 40%, 50%, up to the 100%) with the different hours of treatment (6 hrs, 12 hrs, 18 hrs, 24 hrs) to treat seed and seedling and compare mutagen effect to the control. Observe the different growth pattern in seedling, Root , shoot of plant.

Keywords : *Coriandrum sativum*, mutagen (Di methyl sulphate).

Development of Extractive Spectrophotometric Method for the Determination of Copper(ii) with Schiff Base 2- $\{(E)-[(2,4\text{-dichlorophenyl})\text{imino}]\text{methyl}\}$ -6-methoxyphenol

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Abstract: A simple spectrophotometric method has been developed for the determination of copper (II) by using 2- $\{(E)-[(2,4\text{-dichlorophenyl})\text{imino}]\text{methyl}\}$ -6-methoxyphenol [DCPIMMP]. DCPIMMP extracts Cu(II) quantitatively into chloroform from an aqueous solution of Ph range from 3.9 - 5.9. The chloroform extracts show maximum absorption at 590 nm (λ_{max}). Beer's Law is obeyed over the Cu (II) concentration range of 0.5 to 20.0 $\mu\text{g/ml}$. The Molar absorptivity and Sandell's sensitivity for Cu-DCPIMMP system is 5000 $\text{L mol}^{-1} \text{cm}^{-1}$ and 0.011 $\mu\text{g cm}^{-2}$ respectively. The composition of extracted species is found to be 1: 2 [Cu-DCPIMMP] by Job's continuous variation and Mole-ratio method. Interference by various ions has been studied

The proposed method is rapid, sensitive, reproducible and accurate and it has been satisfactory applied for the determination of Copper in Pharmaceutical Samples.

Keywords: Solvent Extraction, Extractive Spectrophotometry, Copper (II), Schiff base, 2- $\{(E)-[(2,4\text{-dichlorophenyl})\text{imino}]\text{methyl}\}$ -6-methoxyphenol [DCPIMMP], Pharmaceutical sample.

Chemical Review: Ionic Liquids as Catalyst and Solvent in Heterocyclic Synthesis

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Abstract: Ionic liquids are natural salt which contains organic cations (pyridinium, imidazolium, sulfonium, phosphonium etc.) and inorganic anions having melting point below the boiling point of water. Ionic liquid is a very important class of solvent because their greater stability, low liquifying point, high conductivity, ability to break natural and inorganic compounds and low toxicity. As a solvent ILs found applications in number of organic reactions. Along with environment friendly solvent ILs are emerged as good catalyst. The purpose of this research study is to show the applications of ionic liquids in heterocyclic synthesis.

Keywords: Ionic liquid, Environment friendly, Heterocyclic synthesis, Natural salt.

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Effect of Pb Doping on the Magnetic and Electrical Properties of Cobalt Ferrite Nano Particles Prepared via Sol-Gel Route

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Abstract: $Co_{1-x}Pb_xFe_2O_4$ (where $x=0.1, 0.2, 0.3, 0.4, 0.5$) is a cobalt (Co) nanoferrite that has been substituted with lead (Pb^{2+}) using the sol-gel auto combustion process. At a temperature of 6000C, sintered samples were created. By using X-ray diffraction, the particles that resulted from this synthesis were identified (XRD). The grain size was determined to be between 34.5 and 54.5 nm. It was discovered that for increased Pb^{2+} substitution, grain size first increases up to $x = 0.3$ and then drops. With the use of a 10 kOe hysteresis loop tracer field, the magnetic characteristics are investigated. The produced nano particles magnetization was examined, and the hysteresis loops were used to calculate the saturation magnetization (M_s), remanence (M_r), and coercivity (H_c). The findings showed that (Pb^{2+}) Lead was substituted for (Co) Cobalt nano ferrite increases the magnetic properties remanence (M_r), and coercivity (H_c) goes on decreasing, the saturation magnetization (M_s), first it is increases upto $x = 0.3$ and then decreases for higher Pb^{2+} substitution such changes in magnetic properties may be due to the exchange interaction between the tetrahedral and the octahedral sites. From the study of magnetic property it is clear that the synthesized materials shifted from hard to soft ferrite. From DC electrical resistivity study of the samples it is found that with increase in concentration of Pb^{2+} from $x = 0.1$ to $x = 0.5$, the conductivity decreases and conductivity increases with increasing potential difference across it.

Keywords: Pb^{2+} , Co nanoferrite, sol-gel, X-Ray Diffraction, VSM, DC Conductivity.

Ultrasound-Assisted-One-Pot Synthesis of β -Acetamido ketones Derivation Catalysed by Nano Particles from Metal

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Abstract: Nanoparticles From the Metal is a heterogeneous catalyst for the synthesis of one-pot by a different aromatic β -acetamido ketones aromatic aldehydes, acetophenone and acetyl chloride in acetonitrile under ultrasound-irradiation. This method several advantages such as good yield, short time reaction, non toxic, environmental benign, mild reaction conditions and recyclable catalyst.

Keywords: One pot-synthesis, Biginelli reaction Ultrasound -irradiation, Reusable.

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Green Synthesis of Heterocyclic Compounds via Multicomponent Reactions

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Abstract: Efficiency of reactions is crucial to green chemistry. Multicomponent reactions (MCRs) offer an intrinsic advantage over pot, atom, and step economies (PASE) in the synthesis of heterocyclic compounds. They are also easy to operate, use less energy, and produce less waste. PASE synthesis development is a hot topic that is motivated by both environmental responsibility and economic viability. This chapter discusses many MCRbased green synthetic techniques for the synthesis of heterocycles with structural variety and complexity, including highorder MCRs, consecutive MCRs, MCRs followed by cyclization, and cycloaddition processes.

Keywords: MCRs, pot, atom, and step economies (PASE), green synthetic.

Plant Assisted Nanoparticle Synthesis and Their Characterization

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Abstract: There are numerous scientific and technological applications for the rapidly increasing, multidisciplinary subject of nanotechnology. In order to develop new techniques for managing and producing nanoparticles, this topic integrates key ideas from a number of fields, including chemistry, engineering, physics, and biology (NPs). These NPs are particles with a minimum of one dimension and a size between 1 and 100 nm. The synthesis, characterization, and uses of many NPs are topics in nanotechnology. Noble metals like gold, silver, or platinum are frequently employed to create NPs by a range of chemical and physical approaches; however, these methods are not environmentally friendly. A non-toxic, environmentally acceptable NPs production technology must be developed immediately. In recent years, several safety-by-design-inspired green synthesis methods for NPs have been created that are simple, inexpensive, repeatable, and scalable. For the creation of NPs, numerous biological systems, including yeast, fungi, bacteria, and plant extracts, are currently widely used in green synthesis techniques. Due to its simplicity of application and the wide variety of plants, plant-based NP green synthesis is now regarded as the gold standard among these green biological approaches. This article provides a brief summary of current advances in the green synthesis, characterisation, and uses of a variety of plant-derived NPs in addition to serving as the editorial for the current Special Issue, which is made up of two reviews and sixteen research articles.

Keywords : Plant Assisted Nanoparticles, Size, Coating

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Smart Computing

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Abstract: *Following the well-known concepts of computerization and informatization, a rising technology of cyberization, which is considered a reformation of the existing bodily, social and intellectual worlds, has become a hotly mentioned fashion within the new cyber global. Cyberization refers to using conversation and pc technology to interconnect computers and various electronic terminal devices allotted in extraordinary locations. It permits customers to share software, hardware, and statistics resources consistent with positive network protocols. Cyberization has substantially advanced the sensible application of computers and has been broadly applied in transportation, finance, commercial enterprise management, schooling, telecommunications, commerce, and so on in our day-by-day life.*

Keywords: cyberization,telecommunications,cyber global.

The Impact of Cloud Computing on Small and Medium-Sized Businesses

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Abstract: *Cloud computing has had a significant impact on small and medium-sized businesses (SMBs). The benefits of cloud computing adoption, including cost savings, scalability, flexibility, and improved data security, have made this technology increasingly popular among SMBs. However, several challenges prevent SMBs from adopting cloud computing, including a lack of technical knowledge and expertise, security concerns, and concerns around the reliability and availability of cloud computing services. Despite these challenges, many SMBs have successfully implemented cloud computing and have seen significant improvements in their operations. Case studies have shown that SMBs that migrated to cloud-based services experienced a reduction in IT costs and an increase in revenue. Additionally, SMBs that adopted cloud computing services saw a reduction in downtime and improved disaster recovery capabilities. The impact of cloud computing on SMBs extends beyond operational improvements. Cloud computing has also improved the competitiveness and profitability of SMBs, enabling them to access enterprise-grade technology at an affordable cost and allowing them to scale their operations quickly and efficiently. Cloud computing has also enabled SMBs to compete with larger businesses by providing them with the same technological capabilities. Cloud computing has had a significant impact on SMBs by providing them with cost-effective access to enterprise-grade technology, improving operational efficiency, and enhancing competitiveness and profitability. While several challenges prevent SMBs from adopting cloud computing, successful implementation can bring significant benefits to their operations.*

Keywords: Cloud computing, SMBs.

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Post-Harvest Management of Agricultural Produce

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Abstract: *The minimization of wastage of agricultural produce is the ultimate goal of post-harvest management. The post-harvest management has increasing population and shrinking agricultural land and other resources. Present situation is the main global challenge to ensure food security in a sustainable manner safe to mankind and environment. The production of agricultural crops have increased during the recent years, but the development and adoption of post harvest technology is lacking and resulting in huge post harvest losses. The factors which affect on post harvest during harvesting, storing, transporting, and marketing is microbial activity. The highly perishable crop like horticultural produce need much more attention and to ensure promotion of processing and value addition. The value chain for processing has become a important to improve the food safety and strengthen national food security. The value chain in post-harvest management of horticultural crops mainly comprise of pre-harvest factors, harvesting, market preparation (common storage, sorting, grading, packaging and on-farm storage), transportation, storage by-product waste management.*

Keywords: Agricultural produce, economics, harvest, Post-harvest management, quality, Post-harvest techniques in vegetables. Post-harvest management, processing of vegetables.

Screening, Isolation of Plant Growth Promoting Rhizobacteria (PGPR) Bacteria from Rhizosphere Soil

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Abstract: *Plant growth promoting Rhizobacteria (PGPR) are a group of bacteria that can be found in the rhizosphere, in association with roots which can enhance the growth of plant directly or indirectly. Rhizospheres of crop plants have been well studied with the objective of screening PGPR, play an important role in maintaining ecological balance. Plant growth promoting Rhizobacteria (PGPR) are an attractive eco-friendly alternative to chemical fertilizers in agriculture. The present work explores the characterization of Rhizobium and azotobacter isolated from root nodules of corn (Zea mays). Each isolates were morphologically and biochemically characterized. Each samples were tested for plant growth promotion assays including indole acetic acid (IAA), ammonia, NaCl variation assay, to select for ones possessing multi-trait plant growth promoting (PGP) properties. The present study shows the antifungal activity of Rhizobacteria and azotobacter against some fungal spp. The Rhizobacteria were gram negative rod shaped and mucous producing. It utilizes glucose and starch as a carbon source.*

Keywords: PGP bacteria, Indole Acetic acid, NaCl assay, Rhizosphere soil, Azotobacter.

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Floral Dye as Alternative to Synthetic Dyes

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Abstract: India has a rich plant biodiversity which is biggest biodiversity in the world. It has approximately 490,000 plant species which is the plant kingdom is a treasure-house of diverse. Floral dyes from floral sources have been given much more interest in recent years due to the harmful effects and problems raised by synthetic dyes. In India a large amount of flowers are cultivated. These flowers are used as decoration purposes or for offering to God and wasted everyday which are thrown in water or dumped which also creates environmental pollution. These wasted flowers can be used in preparation of dye so we can get wealth from waste materials.

Keywords: Biodiversity, dye, floral dye, environmental pollution.

Green Chemistry: A Framework for a Sustainable Future

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Abstract: Green Chemistry has provided a framework for chemists to do their part in contribution to the large scope of global sustainability. Green chemistry has been a major part of sustainable development and also had an important trend in recent years. In order to extrapolate the state of the work in this field, a systematic laboratory work has been performed, also it's is used to identify possible developments for future research. Now specially, the main aim of this research is to investigate how Green Chemistry, Sustainability and Circular Economy concepts are related to each other and how researchers are addressing and analyzing this relation. Since the main purpose of this chemistry is to produce intermediate substances that are generally used by other industries, this focus is mainly placed on industrial sector. Or we can say, chemistry involves most of production systems. Green chemistry for chemical synthesis defines our future challenges and scopes in working with chemical procedures and products by inventing new reactions that can give maximum desired products and less or no by-products, designing new synthetic procedures and apparatus that can simplify operating in chemical productions, and to seek greener solvents that are environmentally and ecologically benign.

Keywords: sustainability, Green Chemistry, Circular Economy.

Impact of Floriculture and Landscaping on Sustainable Environmental Management

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Abstract: *Natural environment is of crucial importance for social and economic life. Environmental management is a purposeful activity with the goal to maintain and improve the state of an environmental resource affected by human activities. Floriculture or flower farming is a discipline of horticulture concerned with the cultivation of flowering and ornamental plants for gardens and for floristry comprising the floral industry. It involves both the growing of trees, shrubs, vines, ground covers and herbaceous perennials and their uses in designed aesthetic environments. Landscaping is the art and science of developing the outdoor environment using soft landscaping. This paper highlights the functionality of floriculture and landscaping as moderating temperature, abating noise, reducing glare and increasing privacy and security. It discusses their importance in improving the aesthetic or beautification of environment, re-integration of structures in to the natural environment. They also solve ecological problems such as flooding, control of erosion and absorb chemicals from the soil (oil spillage). They act as environmental control in prevention of hazards such as windbreaks, shade trees for guide against sun glares. The paper further reviewed the environmental impact of the floriculture activities from the use of fertilizers, pesticides, and waste water disposal. These chemicals are said to have adverse effects on biodiversity, soil, atmosphere and water. Conclusion is drawn on the importance of sustainable floriculture and landscaping for an ideal and holistic environmental management.*

Keywords: oil spillage, horticulture, ornamental plants.

Review Article on Rare Earth Doped in Nanoferrite Materials for Gas Sensing Application

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Abstract: Nanotechnology is the study of manipulating matter on an atomic and molecular scale. Nanotechnology may be able to develop a variety of new products and gadgets with a wide range of uses, including in the fields of medical, electronics, biomaterials, and energy production. Ferrites are ferrimagnetic ceramic compounds that are electrically non-conductive and made up of different combinations of iron oxides like magnetite (Fe_3O_4) and hematite (Fe_2O_3). Ferrites have a fairly stable crystal structure and are predominantly ionic. The chemical synthesis techniques, type and concentration of dopants, particle size, annealing temperature, and other factors greatly influence the electrical, magnetic, and gas-sensing capabilities of metal oxides. Among the available metal oxides, spinel ferrites demonstrate high magnetic permeability, electrical resistance, catalytic properties, and chemical stability. Properties of nanomaterials are very sensitive to method of preparation and sintering condition. Proper size with narrow size distribution well dispersed particles, equiaxial shape of particles, high purity, and homogeneous composition. Different Ferrites have been used in gas sensing application, because of their very large surface-to-volume ratio, which provides a significant improvement in sensor sensitivity. This review article provided an overview of the effects of various doped rare Earths in Nano ferrite produced using various synthesis techniques for use in gas sensing applications.

Keywords: - Nanotechnology, Ferrites, Rare Earth metal

Review on Natural Dyes Preparation Method

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Abstract: Synthetic dyes and all the processing used in general dyeing is harmful to our health. Dye from natural sources can reduce the risk of synthetic dyes. As indigo has been used for thousands of years for the coloration of textiles as a natural source. This review is aimed at a discussion of different raw materials used for the extraction of natural dyes, the extraction process for different natural dyes, and the properties of fabric dyed by those dyestuffs. Most of the natural dyes showed a very good fastness property in researches. The dyes can be extracted from trees, bark, leaves, flowers, and many more sources. Most of the natural dyes exhibit special properties like anti-microbial, less toxicity, less allergenic, UV protection.

Keywords: Synthetic Dyes, Extraction process, Dyes.

Effect of Fertilizers and Pesticides on Environment: Review

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Abstract: Fertilizers and pesticides are two major substances used in agriculture to improve crop yields and protect crops from pests and diseases. Fertilizers are compounds that give plants vital nutrients like potassium, phosphorus, and nitrogen. They can be applied to the soil or straight to the plant, and they can be organic or inorganic. Fertilizers can enhance crop quality and yield, but overuse can cause environmental issues like soil and water pollution. Chemicals known as pesticides are used to prevent pests and illnesses from harming crops. They can be used before, during, or after sowing and can be insecticides, herbicides, or fungicides. In addition to harming useful organisms and contributing to environmental issues like water pollution and the emergence of pests that are resistant to pesticides, pesticides can be successful in protecting crops. Agriculture's use of fertilizers and pesticides is a complex problem that requires balancing the advantages of greater crop protection and yield with any possible environmental and health risks. While still benefiting farmers and consumers, the proper use and management of these substances can help to reduce their adverse impacts on the ecosystem.

Keywords: Fertilizer, pesticides, Environment, water pollution, insecticides, herbicides

Impact of Green Solvents on Living Organisms: Review

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Abstract: Dragged exposure to Solvents has a dangerous impact on all living organisms, damaging most organs. Reducing the use of solvent or the most important intentions of green chemistry. Water, supercritical fluids, ionic liquids, non-toxic liquid polymers and their combinations are part of the class of green solvent. Solvents are important in most industrial and domestic applications. The impact of solvent losses and emissions drives efforts to minimize them or to avoid them completely. Since the 1990s, this has become a major focus of green chemistry, giving rise to the idea of the 'green' solvent. This concept has generated a substantial chemical literature and has led to the development of so-called neoteric solvents. A critical overview of published material establishes that few new materials have yet found widespread use as solvents. The search for less-impacting solvents is inefficient if carried out without due regard, even at the research stage, to the particular circumstances under which solvents are to be used on the industrial scale. Wider sustainability questions, particularly the use of non-fossil sources of organic carbon in solvent manufacture, are more important than intrinsic 'greenness'. While solvency is universal, a universal solvent, an alkahest, is an unattainable ideal.

Keywords: Solvents, Research & Development, Waste minimization, Sustainable development, ionic liquid, less impacting solvent

Environmentally Friendly Chemical Transformation Methods Using Fruit Juices

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Abstract: This paper reports the recently published work on using the extract of fruits as natural catalysts in the formation of heterocycles. Twelve green principles are described in this review through the recent synthesis of heterocyclic compounds. These catalysts have many benefits, such as nonhazardous, clean reaction profile, easy handle, low cost, easily available, etc. The Fruit extract catalyst is one of the best options for the recyclization of organic heterocycles in the future. The role of naturally occurring fruit juice as a catalyst or solvent in organic synthesis has gained focused interest across the globe. Lemon juice-mediated synthesis has been widely explored recently as a highly significant, selective solvent and biocatalyst in organic synthesis. We believe this review article will be of interest to researchers both in academic and industrial settings focused on developing novel pharmacophores from a green chemistry principles perspective. From synthesis, we observed that in multicomponent reactions metal free catalysts used it has proved themselves better alternatives because of better ecological, economical, and toxicological profiles.

Keywords: Lemon juice, Ecological, toxicological.

Eucalyptol as a Sustainable Solvent for Synthesis of Heterocycles

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Abstract: Eucalyptus is a species of plant that has affected researchers and preservationists' observations across the globe since it is a rapidly expanding source of tree wood and a source of oil used for a variety of applications. Eucalyptol is the primary and most important oil component. This viewpoint summarises the literature that indicated the need for eucalyptol therapy for disorder. The recycling of eucalyptus oil as a catalyst for the synthesis of O, S, and N-heterocycles was another effort we described. A crucial component of the ecological performance of processes in commercial and theoretical laboratories is the catalyst employed in chemical synthesis. It is impossible to ignore their impact on prices, protection, and health. Green chemicals, like biogenic systems, have a significant advantage in that they can lessen the negative effects of organic synthesis on the environment. The first section lays out the steps that eventually led to the discovery of an unrivalled catalyst and its acquisition in the initial reactions. This section continues with a discussion of its characteristics and reuse, as described in the many managed studies. The employment of eucalyptol in a series of reactions that produce O,S,N-heterocycles is another high point of the segment. As we outline the development procedure used to create the ideal circumstance. We also demonstrate that eucalyptol can function admirably as a replacement to produce heterocycles containing O, S, and N. These studies enabled us to assess the viability and potential of the bio catalyst.

Keywords: eucalyptol, 1,8-cineole, green synthesis, heterocyclic chemistry, bio-based solvent. O,S,N-heterocycles

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Synthesis and Study of the Surface Morphology of Cobalt Doped Barium Tartarate Crystals.

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Abstract: Cobalt doped Barium Tartarate crystals have been prepared by single gel method. Surface morphology of materials was studied by scanning electron microscopy [SEM) and dispersive analysis of X-ray [EDAX). SEM shows grown crystals are triangular in shape & broad at the border like structure of the grown crystals and not affected significantly by the doping. The incorporation of Cobalt in the Barium Tartarate crystals well confirmed by EDAX.

Keywords: gel technique, SEM, EDAX.

Nanomaterials for Future

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Abstract: Nanotechnology is described as an emerging technology—one that not only holds promise for society, but is also Capable of revolutionizing our approaches to common problems. Naturally occurring Nanomaterials like volcanic ash, ocean spray, magneto tactic bacteria, mineral composites et al. exist in our surroundings. Incidental Nanoparticles, also referred to as waste particles, are produced as a result of some industrial processes. The third category of Nanoparticles is engineered nanoparticles—these are the particles related to nanotechnology. Nanotechnology has direct beneficial applications for medicine and the environment, but like all Technologies it may have unintended effects that can adversely impact the environment, both within the physical body and within the Natural ecosystem. Advantage of this new technology for health, environmental, and sustainability benefits, science must Examine the environmental and health implications.

Keywords: Nano materials, Technology

Organic and Biological Farming for Sustainable Environment

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Abstract: *To meet with ever increasing demand of food for increasing population, excessive and uncontrolled use and increasing reliance on synthetic fertilizers, chemical based herbicides, fungicides and weedicides, has degraded the environment and made it unfit for future generations. This has left farmers with no other option but to seek alternatives to their traditional management practices. In this scenario, Biological Farming seems to be a viable and eco-friendly practice. Organic Farming commonly known as Biological Farming or Ecological Farming and is defined as agricultural process that pertains to the use of organic fertilizers & acquires pest control through naturally occurring pesticides (such as pyrethrin), mixed cropping, crop rotation, biological pest control, the fostering of insect predators etc. It completely prohibits or strictly limits the use of synthetic substances. Biological Farming on the other hand is a broad term which includes Organic Farming, Biodynamic Farming, Sustainable Agriculture, Natural sequence Farming and some others. In fact Biological farming is the use of conventional and organic farming techniques collaboratively to cultivate the healthy and nutrient rich soil; thus gives us a viable way of providing nutritious and high quality produce, without the use of gene modification or excessive chemical/conventional fertilisers and pesticides. Broadly it aims to restore natural micro-organisms and beneficial macro-organisms such as bacteria, algae, fungi, protozoa, and earthworms etc. in the soil; therefore helps to create a sustainable soil management system. The micro-organisms in a natural ecosystem facilitate nutrient availability to crops and hence soil viability. It works with natural systems and processes such as the use of aerobic manure and compost, bio fertilisers and good management techniques which help to sustain the health of soil, flora & fauna, humans and planet as one, at the same time incorporates the best conventional and sustainable farming/agricultural practices to maintain quality and production yield. Manure add organic matter and nutrients to soil, beneficial microbes in compost properly utilize these nutrients, help to suppress disease causing micro-organisms i.e. pathogens in the soil and hence significantly reduce soil borne diseases. Biofertilizers stimulate plant growth; provide protection against drought and some soil borne diseases. In this Paper, we have discussed that how Biological Farming lowers the risk of environmental pollution, reduces greenhouse gases and soil erosion, helps to conserve ecosystem and adheres to the principle of sustainable development goals.*

Keywords: Organic farming, Biological Farming, biofertilizer, sustainable agriculture.

Green Synthesis of 2,3-dihydroquinazolinone Derivatives

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Abstract: *An efficient green synthesis for 2,3-dihydroquinazolinone prepared from 2-aminobenzamide and aromatic aldehydes under metal-free condition using 5-sulfosalicylic acid (5-SSA) as an organocatalyst in ethanol - water (1:1,v/v) is described. 2, 3-dihydroquinazolinone derivatives are having broad range of potential biological and pharmacological activities, as well as their importance in the preparation of drug molecules and natural product, therefore they becomes an important class of fused heterocycles. The development of organocatalyzed reactions in which the reactions are catalyzed by organic molecules is an important area for green synthesis. One pot reaction, metal-free synthesis, operational simplicity, atom economy, no waste generation, use of safe, cheap and environmentally benign solvent are key aspects of the present protocol. The main advantages of this procedure include use of organocatalyst, practical simplicity, high yields, eco-friendly solvent, atom economy and ease of isolation of product.*

Keywords : organocatalyst, metal-free synthesis, high atom economy, 2,3-dihydroquinazolinones, green chemistry.

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Variation of Herbaceous Plant Diversity During Monsoon Season at Surgana and Kalwan Tehsils of Nasik District (MS) , India

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Abstract: *The study concerns the first-hand information on herbaceous plant diversity during the monsoon season at Surgana and Kalwan tehsil of the Nasik district. Data on herbaceous plant was collected by applying various biostatistical formulas for species richness (no. of species), diversity (Shannon-Wiener's 'H') and species dominance (1-D). The data were collected by laying 150 plots of 1*1 m for 10 sites at each tehsil. About 255 plants belonging to 149 genus and 49 families has been recorded during study. The study concluded that the tehsil surgana shows more diversity as compare to tehsil Kalwan.*

Keywords : Herbaceous Diversity, Surgana, Kalwan , Species richness, evenness.

A New Pyrrolopyrimidinehydrazide Derived Ligand and its Transition Metal Complexes: Synthesis, Characterization, Electrochemical Properties, and Biological Activity

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Abstract: 4-[2-(2-fluorobenzylidene)hydrazinyl] -7H-pyrrolo[2,3-d]pyrimidine was produced by mixing pyrrolopyrimidinhydrazide and o-fluorobenzaldehyde. In methanol, chloride/sulphate salts of Mn(II), Fe(II), Cu (II), Ni(II), Zn(II), Cd(II), Hg(II), and Pd(II) were employed to produce bis-chelate complexes of the ligand. Microanalyses, FT(IR), NMR, UV-Vis spectroscopy, magnetic susceptibility, conductance measurements, and x-ray powder analyses were used to characterize the ligand and its metal complexes. Except for Pd(II), Zn(II), Cd(II), and Hg(II) complexes, which have square planar metal centres, all complexes have been proposed to have an octahedral geometry. Each ligand binds with the help of a nitrogen atom. All complexes' x-ray powder diffraction analyses are also discussed. Using the microdilution procedure, the newly synthesized compounds were tested for antimicrobial activity against gram-positive, gram-negative, and fungi. At 40-80 mgmL⁻¹, the Cu(II) complex demonstrated selective and effective antibacterial activity against one Gram-positive spore-forming bacterium (*Bacillus cereus* ATCC 7064), two Gram-positive bacteria (*Staphylococcus aureus* ATCC 6538 and *S. aureus* ATCC 25923), but not against *Candida* species. The Cu(II) complex may represent a novel antibacterial agent against gram-positive bacteria.

Keywords: 4-[2-(2-fluorobenzylidene)hydrazinyl], pyrrolopyrimidinhydrazide, antimicrobial activity.

Garlic as an Anti-Cancer Reagent

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Abstract: *Garlic provides strength and increase work capacity. In history, Egyptian and Indian cultures referred to garlic and there is clear historical evidence for its use. Garlic (*Allium Sativum*) has been widely studied due to its pharmacological benefits which include antimicrobial, antiarrhythmic, antithrombotic, antitumoral, hypoglycemic and hypolipidemic properties. In this research paper we have to learn the molecules present in garlic and how they prevent the cancer by reducing its cell growth. An allyl group with structural formula $-CH_2-CH=CH_2$ which consists of a methylene bridge ($-CH_2-$) attached to a vinyl group ($-CH=CH_2$) and this name is derived from the scientific name of garlic *Allium Sativum*. This allyl compound such as garlic, onions and other compounds of allium family, consist more amount of water and organosulfur compounds which have been describe as anticancer properties. Garlic contain Sulphur, arginine, flavonoids and selenium, Garlic is antibacterial agent which stops cancer cells to born. We have to learn that what chemical properties and how the molecules of garlic help to reduce the cell growth of cancer and how we can easily prevent cancer disease by ayurveda without an expensive treatment.*

Keywords- Garlic, Cancer, Allicin, Allyl, organosulfur compound, chemotherapy, treatment.

Noteworthy Novel Distributional Records to Khandesh Region of Maharashtra.

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Abstract: *Short field explorations to forest localities of Jalgaon district in 2022-23 resulted into some noteworthy additions to the floristic wealth of the district as well to Khandesh region. Authors have collected two novel plant specimens from Family Acanthaceae and Asteraceae each. These specimens are reported for the first time from this region. Plant specimens were collected, identified with the help of literatures and floras.*

Keywords: New addition, *Lepidagathis*, *Blumea*, flora Jalgaon, Khandesh.

Efficient Synthesis of One- Pot Knoevengel Condensation with Potassium Carbonate in PEG

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Abstract: *The Knoevengel condensation of aldehydes with active methylene compound proceeded efficiently at room temperature with potassium carbonate as a catalyst and PEG as a green solvent. C-C bonds formation reactions are important derivation in perfume, pharmaceutical, polymer applications.*

Keywords: Knoevengel condensation, Potassium Carbonate, Green Chemistry, PEG, Room Temperature.

Comparative Study of Convolution, Superposition, and Fast Superposition Algorithms for Intensity Modulated Radiotherapy Techniques of Prostate Cancer Patients, using CMS XIO Planning System

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Abstract: *Aim:* The aim of this study is to compare the various dosimetry results that are obtained by using Convolution(CON), Superposition(SUP) and Fast Superposition(FSUP) algorithms in Intensity Modulated Radiotherapy (IMRT) of cancer prostate patients and to study the suitability of algorithms for prostate patients.

Material and Method: A total of 20 ca prostate patients were treated with 70Gy in 28 fraction using IMRT technique. For cancer prostate patients various normal organs at risk (OAR) were delineated viz. rectum, bladder, bowel, right femur head, left femur head and spinal cord and were analyzed. Treatment plans were created using 6MV Photon beam quality using the CMS XiO (Computerized Medical System, St.Louis, MO) treatment planning system.

Results: The maximum percentage of variation (MPV) recorded between algorithms was: for mean dose of OAR rectum 1.14%, mean dose of OAR bladder 1.40%, mean dose of bowel 1.69%, D25% of right femur head 1.61%, D25% of left femur head 1.9% and D_{max} of cord 0.94% using IMRT Technique. Statistical analysis was performed by comparing the Conformity Index, and Homogeneity Index for target structures. For the ca prostate patients, the superposition algorithm showed better results while using IMRT Technique.

Conclusion: The comparison of the CON, SUP, and FSUP algorithms showed that the SUP had better agreement with measurements than the CON and SUP algorithms, and that the FSUP method also required less time to calculate dose. OARs got more doses with the fast superposition algorithm; this progressively decreased for superposition and convolution algorithms, respectively. According to this study the dosimetric results using different algorithms led to significant variation and therefore care had to be taken while evaluating treatment plans. The choice of a dose calculation algorithm may in certain cases even influence clinical results.

Keywords: -Convolution, Superposition, Fast Superposition, algorithms, prostate cancer, Dose Radiotherapy

Characterization of Coconut Shell Pallets through TGA, SEM, XRD, and FTIR Analysis

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Abstract: *The use of renewable energy sources has become an important aspect in today's world. Coconut shell pallets are one such biofuel, which has gained attention for its potential as a source of renewable energy due to its high calorific value. In this study, we characterized coconut shell pallets through The Elemental analysis, thermal gravimetric analysis (TGA), scanning electron microscopy (SEM), X-ray diffraction (XRD), and Fourier transform infrared (FTIR) spectroscopy. The Elemental analysis can determine the concentration of elements such as carbon, hydrogen, nitrogen, and sulphur in the coconut shell pallets. This information can be used to calculate the theoretical calorific value of the biofuel. TGA analysis showed that the coconut shell pallets have a high percentage of volatile matter and low ash content, which makes it an ideal fuel source. SEM analysis revealed that the coconut shell pallets have a porous structure, which facilitates its combustion process. XRD analysis indicated the presence of crystalline phases such as cellulose and lignin, which are known to have high calorific values. FTIR analysis revealed the functional groups present in the coconut shell pallets such as hydroxyl, carbonyl, and ether groups, which are responsible for its combustion properties. Overall, the results obtained from TGA, SEM, XRD, and FTIR analyses provide valuable information about the characteristics of coconut shell pallets, which can be used to optimize its usage as a biofuel. The characterization of coconut shell pallets through these analytical techniques can aid in the development of efficient and sustainable energy sources*

Keywords: Elemental analysis, Thermogravimetric analysis (TGA), Fourier-transform infrared spectroscopy (FTIR), and porosity measurement

Diversity of Plankton in Relation of fisheries in Bhosga tank from Lohara Taluka of Dharashiv District (M.S) India

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Abstract: *Bhosga harbors a diverse planktonic population phytoplankton population has peaks of abundance in may and June in present investigation of diversity of plankton in relation to fisheries of the Bhosga tank dist Dharashiv study period for a year june 2020 to may 2021. In occurrence tank of chlorophyceae, bacilariophyceae and cynophycer major phytoplankton crop Bhosga tank also support the zooplankton population like copepods. Rotifers and cladocerans with peak population developed after maximum activity of phytoplankton in the month of September. Fish products of the tank on the basis of commercial landing was recorded which included major on manner crops. Planktons has acquired important place in fisheries research.*

Keywords: Planktons, Fish fauna, Bhosga water tank.

Green Synthesis of Silver Nano Particles & Its Application: An Overview

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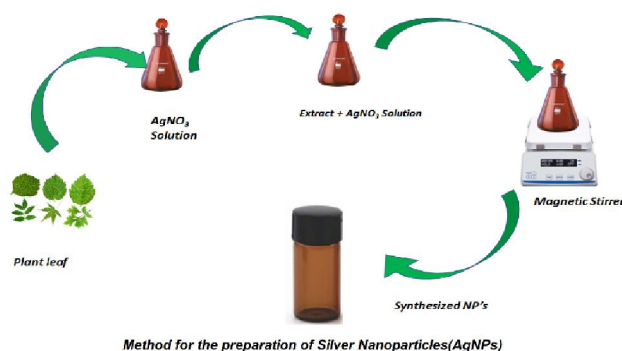
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Abstract: In present-day research opens another path for the green synthesis of Nano-materials and Silver nanoparticles (AgNPs) have the capability to carry out as an alternative to antibiotics and to control microbial diseases. Microorganism helped biosynthesis of nanoparticles is a quickly advancing region of nanobiotechnology. The utilization of microorganisms like microscopic organisms in the synthesis of nanoparticles make an appearance as an environment-friendly methodology and replacement to the chemical method. Silver nanoparticles (AgNPs) are alternative since they are non-toxic to the human body at small concentrations and have wide spectrum antibacterial activities. Silver nanoparticles have an extraordinary number of applications e.g., in nonlinear optics, spectrally ap coating for solar energy absorption, bio-labelling, electrical batteries, high-sensitivity, antimicrobials and therapeutics, catalysis and microelectronics, in bimolecular detection, DNA sequencing, surface-enhanced Raman spectroscopy and pharmaceuticals. The most extreme antibacterial action of silver nanoparticles was noticed, the silver nanoparticles biosynthesized can be utilized for the improvement of medications after comprehensive trial preliminaries. In this review, green synthesis of silver nanoparticles (AgNPs), their characterization and various applications were discussed

Keywords: Silver nanoparticle (Ag NPs), physical methods, chemical methods, green nanotechnology

Graphical Abstract:



Physico-Chemical and Microbiological Analysis of Curd-Whey Beverage

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Abstract: *Whey is a rich source of several nutrients and needs utilization rather than disposal. The present research work was undertaken for the utilization of curd-whey in the manufacture of beverage by using lactic acid bacteria. Produced beverage can be distributed in general public for consumption. It is prepared by different dilutions and found that there was not much difference in microbiological quality of curd-whey beverage prepared from both the dilution of whey which was 75% and 50% and with the addition and without addition of artificial essence. The prepared beverage was microbiologically analyzed and noticed that there was no other microorganisms than inoculated when microscopically examination was carried out. It was further observed that absence of spores and haemolytic count. Therefore it is concluded that whey beverage were found safe for human consumption.*

Keywords: Whey, beverage, lactic acid bacteria, dilution, dilution, safe

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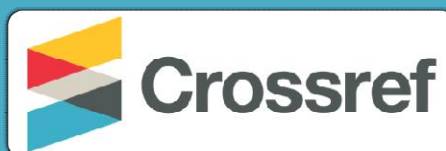
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