

**INDIAN JOURNAL OF NATURAL SCIENCES (IJONS)**  
BIMONTHLY INTERNATIONAL JOURNAL (PRINT)

**Editor-in-Chief**  
**Dr.S.Vijikumar**

**Published by**

**TAMILNADU SCIENTIFIC RESEARCH ORGANISATION**

Regd.Off. : NO 46-141, MEENAKSHIPURAM RD, NEAR POST OFFICE,ARIMALAM 622  
201,PUDUKKOTTAI, TAMIL NADU, INDIA



---

Admin. Off. : PLOT NO 39,MURA BHAVAN,KOODAL NAGAR,RAJAGOPALAPURAM POST,  
PUDUKKOTTAI, TAMIL NADU, INDIA.

[ijonstnsro@gmail.com](mailto:ijonstnsro@gmail.com), editorijons@gmail.com-www.tnsroindia.org.in

**Editor-in-Chief, Editorial Board and Publisher take no responsibility for inaccurate, misleading data, opinion and statements appeared in the articles and advertisements published in this journal. It is the sole responsibility of the contributors and advertisers. No part of this journal can be reproduced without the written permission of the Editor-in-Chief who also holds the copyright © of the "Indian Journal of Natural Sciences (IJONS)".**

## JOURNAL PARTICULARS

Journal Name	INDIAN JOURNAL OF NATURAL SCIENCES (IJONS)
Frequency	Bi-monthly ( Feb, Apr, Jun, Aug, Oct, Dec)
ISSN	0976 – 0997 ( Print)
Publisher	TamilNadu Scientific Research Organisation , Pudukkottai, Tamil Nadu, India
Chief Editor	Dr.S.Vijikumar
Copy right	TamilNadu Scientific Research Organisation (TNSRO) Pudukkottai, Tamil Nadu, India.
Starting Year	2010
Subject	Multi Disciplinary Science Subjects
Review Process	Double Blind Review Process
Language	English
Publication Format	Print
Access	 OPEN ACCESS
License	 Creative Commons Attribution License 4.0
Phone Nos:	04322- 458193, 04322 –261088 (10.00 A.M to 05.00 P.M)
Email	ijons@tnsroindia.org.in & ijonstnsro@gmail.com
Website	<a href="https://www.tnsroindia.org.in/">https://www.tnsroindia.org.in/</a>
Registered office Address	No 46-141, Meenakshipuram Rd, Near Post Office, Arimalam 622 201, Pudukkottai, Tamil Nadu, India.
Admin. Office Address	Plot No 39, Mura Bhavan, Koodal Nagar, Rajagopalapuram Post, Pudukkottai, Tamil Nadu, India.

## Indian Journal of Natural Sciences (IJONS)

### Editorial Committee Members (ECM)

<b>Editor-in-Chief</b>	<p><b>Dr.S.Vijikumar</b>  Director  TamilNadu Scientific Research Organisation  Pudukkottai-622003, Tamil Nadu. India.</p>
<b>Editorial Committee</b>	
Honorable Chief Advisor	<p><b>Dr.Neelesh Sharma</b>  Professor,  Sher-E-Kashmir University of Agricultural Sciences and  Technology of Jammu (SUKAST), Jammu, University in Wadoora,  Jammu &amp; Kashmir</p>
Honorable Chief Advisor	<p><b>Dr.C.Anandharamakrishnan</b>  Director,  CSIR – National Institute for Interdisciplinary Science and  Technology (NIIST) Council of Scientific and Industrial Research  (CSIR), Ministry of Science and Technology, Government of India,  Industrial Estate PO, Thiruvananthapuram, India</p>
Honorable Chief Advisor	<p><b>Dr.G.G.Hammad Ahmad Shadab</b>  Associate Professor, Department of Zoology,  Aligarh Muslim University, Aligarh-202002,Uttar Pradesh, India</p>
Honorable Chief Advisor	<p><b>Dr. B. Vaseeharan</b>  Professor and Head, Department of Animal Health and  Management, Alagappa University, Karaikudi – 630003  TamilNadu, India</p>
Honorable Member	<p><b>Dr. T.S. Saravanan</b>  Sr.Professor of Biotechnology,  Dr.M.G.R Educational and Research Institute University,  Periyar E.V.R High Road, Maduravoyal,Chennai-600095.</p>
Honorable Member	<p><b>Dr. K.Gurunathan</b>  Prof &amp; Head, Department of Nano science &amp; Technology,  Alagappa University, Karaikudi, TamilNadu, India.</p>
Honorable Member	<p><b>Dr.C.Balusami</b>  Assistant Professor, Department of Livestock Production and  Management, College of Veterinary and Animal Sciences  Pookode-673576.Kerala, India.</p>
Honorable Member	<p><b>Dr. Rajashekhar O, Patil</b>  Assistant Professor, Department of Environmental Management,  Sant Gadge Maharaj College of Commerce &amp; Economics, Mumbai  400004, India</p>
Honorable Member	<p><b>Professor.G.Ganesan</b>  Professor, Department of Mathematics, Adikavi Nannaya  University,Rajahmundry-533105, Andhra Pradesh, India</p>
Honorable Member	<p><b>Dr.M.Krishnan</b>  Vice Chancellor, Central University of Tamil Nadu,  Thiruvarur, Tamil Nadu. India</p>

Honorable Member	Mis D.Kalpana Asst.Professor, Department of Chemistry, Bon Secours College for Women,Vilar bypass road, Thanjavur TamilNadu, India.
Honorable Member	<b>Dr.H.Syed Jahangir</b> Associate Professor, P.G. and Research Department of Botany, Jamal Mohamed College (Autonomous) Trichirappalli-620020,TamilNadu,India.
Honorable Member	<b>Dr.Sujatha Ilangovan</b> Assistant Professor, PG & Research Department of Zoology, Holy Cross College, Tiruchirappalli-620002. TamilNadu, India.
Honorable Member	<b>Dr.Vasudevan Ayyappan,</b> Post Doctoral Research Associate, Department of Biotechnology, Delaware State University, Dover, Delaware – 19901
Honorable Member	<b>Prof.K.Kumarasamy</b> Emeritus Professor, ICSSR-Senior Fellow Department of Geography, School of Earth Sciences Bharathidasan University Tiruchirappalli - 620 024, TN, INDIA
Honorable Member	<b>Dr. S. Balasubramanian</b> Assistant Professor, Department of Mathematics, Government Arts College (A), Karur – 639 005,Tamilnadu,India.
Honorable Member	<b>Dr.R.Muthukrishnan</b> Associate Professor (SS&AC) & HOD (Crop Management) Department of Soil Science and Agricultural Chemistry, Vanavarayar Institute of Agricultural Manakkadavu, Pollachi-642- 103, TamilNadu, India
Honorable Member	<b>Dr.Subbiah poopathi</b> Scientist-G/ Director Grade ICMR-Vector control Research Centre, Medical complex, Indira Nagar,Pondicherry-605006,India
Honorable Member	<b>Dr.P.Govindaraj</b> Head & Associate Professor in Chemistry Department of Chemistry, SBK College, Aruppukottai - 626 101, TamilNadu, India
Honorable Member	<b>Dr.Sindhu. K</b> Assistant Professor, Department of Veterinary Pharmacology and Toxicology Veterinary College, Gadag – 582101, Karnataka, India.
Honorable Member	<b>Dr. S. Umamaheswari</b> Assistant Professor, Department of Environmental Biotechnology School of Environmental Sciences Bharathidasan University, Tiruchirappalli – 620 024, Tamil Nadu
Honorable Member	Dr. P. Santhanam Associate Professor, Department of Marine Science, School of Marine Sciences,Bharathidasan University, Tiruchirappalli. Tamil Nadu. India

Honorable Member	<b>Dr. S. Jayachandran</b> Professor & Head, Dept. of Oral Medicine and Radiology, Tamil Nadu Govt. Dental College and Hospital, Chennai - 600003, Tamil Nadu, India.
Honorable Member	<b>Dr. Komalavalli Narayanaswamy</b> Associate Professor and Head, PG and Research Department of Botany, Alagappa College of Arts & Science, Karaikudi, Tamil Nadu, India
Honorable Member	<b>Dr. V.M. Srinivasan</b> Assistant Professor (Plant Pathology) Department of Crop Protection Thanthai Roever Institute of Agriculture and Rural Development, Valikandapuram Post, Perambalur - 621115., Tamil Nadu.
Honorable Member	<b>Dr. Rina Poonia</b> Associate Professor, Department of Arts, Faculty of Arts & Law, Manipal University, Jaipur, India.
Honorable Member	<b>Dr. M. Shanthasheela</b> <b>Professor</b> Department of Agricultural Extension and Rural Sociology Tamil Nadu Agricultural University, Lawley Road Coimbatore, Tamil Nadu, India - 641003
Honorable Member	<b>Dr. M. Lekshmanaswamy</b> Principal, PG and Research Department of Zoology, Kongunadu Arts and Science College G.N. mills (PO), Coimbatore-641 029, TamilNadu, India.
Honorable Member	<b>Dr. N. Balakrishnan</b> Professor, Directorate of Research Tamil Nadu Agricultural University, Lawley Road, Coimbatore, Tamil Nadu, India - 641003.
Honorable Member	<b>Dr. Syed Mohamed</b> Asst. Prof. Dept. of Zoology, Jamal Mohamed College Tiruchirappalli, TamilNadu, India
Honorable Member	<b>Dr. N. Raman</b> Associate Professor, Department of Chemistry, VHNSN College, Virudhunagar-626 001, TamilNadu, India.
Honorable Member	<b>Dr. Komal Kumar Javarappa</b> Institute of Molecular Medicine Finland, University of Helsinki, Finland, Biomedicum Helsinki 2U, G315b, Finland- 00014.
Honorable Member	<b>Dr. A. Dinakara Rao</b> Professor, Center for Bioinformatics, School of Life Sciences, Pondicherry University, Puducherry, India

Honorable Member	<b>Dr.K.Sivakumar</b> Professor, Department of Botany, Annamalai University, Annamalai Nagar, TamilNadu, India
Honorable Member	<b>Dr.A.Kalyana Sundaram</b> Associate Professor(Entomology), Tamil Nadu Agricultural University, Lawley Road Coimbatore, Tamil Nadu, - 641003.
Honorable Member	<b>Dr.P.Ramachandran</b> Director & Head, Trichy Institute of Regenerative Medicine, Thillai Nagar West,Trichy,TamilNadu, India.
Honorable Member	<b>Dr.S.Senthil Murugan</b> Assistant Professor, Department of Animal Nutrition, College of Veterinary and Animal Sciences, Pookode, Wayanad, Kerala, India
Honorable Member	<b>Dr.V.Violet Dhayabaran</b> Associate Professor ,Department of Chemistry, Bishop Heber College (Autonomous), Puthur, Tiruchirappalli, Tamil Nadu, India.
Honorable Member	<b>Dr.Ananthnag B</b> Lecturer, Department of Environmental Science, Kuvempu University,Shivamogga, Karnataka, India.
Honorable Member	<b>Dr.G. Rubalakshmi</b> Scientist & Director, GRD Bio Research Centre #3/41, Nanbargal Nagar, Muthukalipatty, Rasipuram TK, Namakkal DT- 37401. T.N. ,India.
Honorable Member	<b>Dr.M.Ramesh</b> Professor, Department of Biotechnology, Alagappa University, Karaikudi-630003,Sivagangai Dt, TamilNadu,India.
Honorable Member	<b>Dr.S.Ezhil Vendan,</b> <b>Scientist,</b> Food Protect ants & Infestation Control Department, CSIR-Central Food Technological Research Institute, Mysore-570 020,Karnataka,India.
Honorable Member	<b>Dr.S.Yamini Sudha Lakshmi</b> Assistant Professor, Department of Medical Biochemistry, University of Madras,Taramani Campus, Chennai-600113,TamilNadu,India.

Honorable Member	<b>Dr.V.L.Madhu Prasad</b> Directorate of Extension, University of Agricultural Science, Hebbal,Bangaluru-560024. Karnataka,India.
Honorable Member	<b>Dr.T.Shanmugasundaram</b> Department of Vegetable Crops, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore-641 003, Tamil Nadu,India.
Honorable Member	<b>Dr.C.Thamaraiselvi</b> Assistant Professor, Dept. of Biotechnology Mother Teresa Women's University Kodaikanal-624101,TamilNadu,India.
Honorable Member	<b>Dr.R.Selvaraj</b> Department of Veterinary Physiology, Centre for Laboratory Animal Technology & Research (CPCSEA approved), Sathyabama University, Chennai – 600 119.
Honorable Member	<b>Dr. Hasan S.A. Jawad</b> Animal Production Department, Agricultural Faculty, University of Baghdad, Baghdad, Iraq.
Honorable Member	<b>Dr.C.Kathirvelan</b> Assistant Professor, Department of Animal Nutrition Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Namakkal -637002. TamilNadu, India.
Honorable Member	<b>Dr. John Abraham</b> Assistant Professor, Department of L.P.M., College of Veterinary and Animal Sciences, Pookode, Wayanad. 673576, Kerala, India
Honorable Member	<b>Dr.P.Kavitha</b> Assistant Professor, Department of Zoology and Biotechnology AVVM Sri Pushpam College (Autonomous) Poondi, Thanjavur, TamilNadu, India.
Honorable Member	<b>Dr. Gopal Muthu</b> Scientist -'C', DHR-Model Rural Health Research Unit ICMR-National Institute of Epidemiology Government of India, Primary Health Centre Campus Kallur-627 010, Tirunelveli District, Tamil Nadu, India

Honorable Member	<b>Dr.Ranjith.D</b> Assistant Professor, Department of Veterinary Pharmacology and Toxicology, College of Veterinary and Animal Sciences, Pookode, Wayanad – 673576. Kerala, India
Honorable Member	<b>Dr.Prantosh K. Paul</b> Assistant Professor, Department of Computer & Information Science, Raiganj University, Raiganj, West Bengal-733 134, India.
Honorable Member	<b>Dr. Ajay Anil Gurjar</b> Professor & Dean Academics, Sipna College of Engineering & Technology, Amravati(M.S)- 444606,India.
Honorable Member	<b>Dr.V.E.Nethaji Mariappan</b> Scientist"F" Centre for Remote Sensing and Geoinformatics Sathyabama University,Rajiv Gandhi Road, Sholinganallur, Chennai – 600119,Tamil Nadu
Honorable Member	<b>Dr.N.Mahesh</b> Assistant Professor – III Department of Chemistry & Biosciences SASTRA University Srinivasa Ramanujan Centre, Kumbakonam,Thanjavur Dist, Tamilnadu, INDIA
Honorable Member	<b>Dr.Somit Kumar Gupta</b> Dean of Science, Department of Physics, Parishkar College of Global Excellence , Jaipur, Rajasthan, India
Honorable Member	<b>Mr.S.M.Prasad</b> Assistant Professor, Department of Nutrition and Dietetics, Sadakathullah Appa College, Rahmath Nagar,Tirunelveli-627011. T.N.India
Honorable Member	<b>Dr.Prakash.M</b> Professor, Department of Genetics and Plant Breeding, Faculty of Agriculture,Annamalai University, Annamalai nagar- 608002.Cuddalore District
Honorable Member	<b>Dr.M.N.Harisha</b> Guest Lecturer, Department of Wildlife and Management, Kuvempu University, Jnanasahyadri, Shankaraghatta - 577451. Shimoga, Karnataka, India
Honorable Member	<b>Mr.Sridhar Ramachandran</b> Assistant Professor, Department of Biological Science, Gojan College of Teacher Education , Chennai-600 052, TamilNadu, India



Honorable Member	<b>Dr.P.Jeyaseelan</b> Department of Agricultural Extension, Faculty of Agriculture, Annamalai University, Annamalai Nagar – 608 002, Cuddalore
Honorable Member	<b>Dr.Suja George</b> Principal Scientist, Department of Biotechnology, M.S. Swaminathan Research Foundation, Taramani, Chennai 600113.
Honorable Member	<b>Dr.Muthuraman A.,</b> Senior Lecturerm , Pharmacological unit, AIMST University, 08100 Bedong, Kedah, Malaysia
Honorable Member	<b>Dr.G.Rama Rao</b> Principal Scientist &Head, Dept.of Crop Physiology, RARS Lam, Guntur-522034, ANGR Agricultural University, Andhra Pradesh, India
Honorable Member	<b>Dr.Y.V. Krishna Reddy</b> Department of Agricultural Engineering, Aditya Engineering College, Surampalem- 533437, East –Godavari, A.P., India
Honorable Member	<b>Dr.Pushpa S Murthy</b> Senior Scientist, Department of Spice and Flavor Science, AcSIR Associate Professor (Biological Sciences), CSIR - Central Food Technological Research Inst. MYSURU, Karnataka, INDIA
Honorable Member	<b>Dr.Mathews Plamoottil</b> Asst. Professor in Zoology, Govt. College Chavara, Kollam, Kerala, India
Honorable Member	<b>Dr.N.Vijayakumar</b> Assistant Professor Dept.of Biochemistry & Biotechnology Annamalai University, Annamalainagar-608 002, Tamilnadu, India.
Honorable Member	<b>Dr. E.Emimal Victoria</b> Assistant Professor, Department of Zoology Sri Meenakshi Govt. Arts College for Women, Madurai, TamilNadu, India
Honorable Member	<b>Dr.C.Kandeepan</b> Asst.Professor and Head, PG Department of Zoology, A.P.A College of Arts and Culture, Palani-624601, Dindigul Dt. Tamil Nadu,India.

Honorable Member	<p><b>Dr.A.Radha</b> Assistant Professor, Dept. of Zoology Kunthavai Naacchiyar Govt Arts College for Women, Thanjavur-7,TamilNadu, India.</p>
Honorable Member	<p><b>Dr.P.Ramachandran</b> Director &amp; Head, Trichy Institute of Regenerative Medicine, Thillai Nagar West,Trichy,Tamil Nadu,India.</p>
Honorable Member	<p><b>Dr.B.Kaleeswaran</b> Assistant Professor, Dept. of Zoology &amp; Biotechnology, A.V.V.M.Sri Pushpam College, Poondi, Thanjavur, TamilNadu, India.</p>
Honorable Member	<p><b>Dr.S.Yamini Sudha Lakshmi</b> Assistant Professor, Department of Medical Biochemistry, University of Madras,Taramani Campus, Chennai-600113,TamilNadu,India.</p>
Honorable Member	<p><b>Dr.K.Nagarajan</b> Associate Professor &amp; Head Department of Zoology VHN Senthikumara Nadar College, Virudhunagar,TamilNadu,India.</p>
Honorable Member	<p><b>Dr.S.Lingathurai</b> Assistant Professor, Department of Zoology and Research Centre, at Aditanar College of Arts &amp; Science, Virapandianpattinam, Tiruchendur - 628 216 Thoothukudi District.</p>
Honorable Member	<p><b>Dr.D.Sivaraman</b> Scientist-C Department of Pharmacology, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi road, Chennai- 600 119. TamilNadu, India.</p>
Honorable Member	<p><b>Dr.Suja George</b> Principal Scientist, Department of Biotechnology, M.S. Swaminathan Research Foundation, Taramani, Chennai 600113.</p>
Honorable Member	<p><b>Dr.S.V.Sai Prasad</b> Principal Scientist &amp; Head ICAR-IARI, Regional Station, Near Agriculture College, Indore – 452 001, Madhya Pradesh, India</p>

Honorable Member	<p><b>Subburaj. M</b>  Authorised Officer,  Kolkata Seaport, Kolkata International Airport and Haldia port  Food Safety and Standards Authority of India  Ministry of Health and Family welfare, Govt. of India Benfish  Tower, 31 GN Block, Sector V, Salt lake city  Kolkata -700091, India</p>
Honorable Member	<p><b>Dr.Ga.Bakavathiappan</b>  Associate Professor in Zoology  SBK College, Aruppukottai - 626 101,  TamilNadu, India  E.Mail: ga.bakavathiappan@gmail.com</p>
Honorable Member	<p>Dr.Omkar Prasad Baidya  Assistant Professor,  ESI-PGIMSR and ESIC Medical College,  Joka, Kolkata,West Bengal, India</p>
Honorable Member	<p><b>Dr. Preethi Balasundaram</b>  Post-Doctoral Fellow, Wieden Group  Alberta RNA Research &amp; Training Institute  Department of Chemistry and Biochemistry  University of Lethbridge, 4401 University Drive  Lethbridge, Alberta, Canada T1K 3M4</p>
Honorable Member	<p><b>Dr. Horne Iona Averal</b>  IQAC Coordinator, Associate Professor  PG Research Department of Zoology, Holy cross college  (Autonomous), Trichy. TamilNadu, India.</p>
Honorable Member	<p><b>Dr. S. Thenmozhi</b>  Assistant Professor (SS &amp; AC)  Soil Fertility and Irrigation Water Management  TNAU, Coimbatore, Tamil Nadu, India</p>
Honorable Member	<p><b>Dr. S. Suganya Kanna</b>  Associate Professor, (Agricultural Entomology),  Agricultural College and Research Institute,  Tamil Nadu Agricultural University.  Coimbatore, Tamil Nadu, India</p>
Honorable Member	<p><b>Dr.K.Saravanan</b>  Assistant Professor ,PG &amp; Research Dept. of Zoology,  Nehru Memorial College (Autonomous),  Puthanampatti, Tiruchirappalli,  TamilNadu,India</p>
Honorable Member	<p><b>Dr.C.Ravinder Singh</b>  Chief Scientist - Tissue Culture &amp; Hydroponics  AAKASH GREEN RESEARCH PRIVATE LIMITED  14B/1, Bryant Nagar, 9th Street East Thoothukudi, Tamil Nadu -  628008, India.</p>

Honorable Member	<b>Dr.M.Biruntha</b> Assistant Professor, Department of Animal Health and Management, Alagappa University,Karaikudi, TamilNadu,India
Honorable Member	<b>Dr.S.Sasikala</b> Head&Associate Professor, Department of Computer Applications, Hindusthan College of Arts and Science, Coimbatore - 641 028, Tamilnadu, India.
Honorable Member	<b>Dr.Y.V. Krishna Reddy</b> Department of Agricultural Engineering, Aditya Engineering College, Surampalem- 533437, East –Godavari, A.P., India
Honorable Member	<b>Dr.Manigopa Chakraborty</b> Chief Scientist cum University Professor Department of Genetics & Plant Breeding, Birsa Agricultural University, Kanke, Ranchi, Jharkhand – 834006., India.
Honorable Member	<b>Dr.Huda Falah Hasan Radi Alqaraghuli</b> Assistant Professor, College of Veterinary Medicine, University of Baghdad,Baghdad, Iraq.
Honorable Member	<b>Dr.Arvind Prasad Dwivedi</b> Lecturer, Department of Biochemistry, Govt. Sanjay Gandhi Smriti College, Sidhi, Madhya Pradesh, India.
Honorable Member	<b>Dr.A.Suganya</b> Associate Professor, Department of Agricultural Science, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India.
Honorable Member	<b>Dr.M.Karthikeyan</b> Assistant Professor (Plant Pathology) Department of Vegetable Crops ,HC&RI Tamil Nadu Agricultural University ,Coimbatore TamilNadu,India
Honorable Member	<b>Vijaya Bhaskara Reddy.MUTHA</b> Asst. Prof.Faculty of Public Health, St Theresa International College, 1 Moo 6 Rangsit-Nakhon Nayok Road (Klong 14), Bungsan,Ongkharak – 26120 Nakhon Nayok, Thailand

Honorable Member	<p><b>Dr.Thirumal Kumar D</b>  Assistant Professor(Jr)  Department of Integrative Biology,  School of Bio Sciences and Technology  Vellore Institute of Technology  Vellore – 632014, Tamilnadu, India.</p>
Honorable Member	<p><b>Dr. Saikat Sen</b>  Dean of Faculty,  Faculty of Pharmaceutical Sciences  Assam down town University,  Panikhaiti, Guwahati, Assam - 781026, India</p>
Honorable Member	<p><b>Dr. P. Chandramani</b>  Professor, (Agricultural Entomology),  Agricultural College and Research Institute,  Tamil Nadu Agricultural University  Kudumiyamalai – 622 104.  Pudukkottai Dist., Tamil Nadu, India</p>
Honorable Member	<p><b>Dr.S.Prema</b>  Associate Professor of Computer Science,  Arulmigu arthanareeswarar arts and science college,  Tiruchengode, Tamilnadu</p>

## Indian Journal of Natural Sciences (IJONS)

<b>Volume XV (15)</b>		<b>June 2024</b>
<b>CODEN: IJONS (84) (2024)</b>	<b>ISSUE 84</b>	<b>ISSN: 0976 - 0997</b>

S. No	CONTENTS	Page No.
103	Medical Image Diagnostics using Computer Vision and Artificial Intelligence Uma Shankari .S, Pavithra V and Renuga Devi R	74562-74569
104	Gastroretentive Drug Delivery of BCS Class II Drugs - A Comprehensive Review V.L. Vinod Kumar, P. Nagaraju and A. Lakshmana Rao	74570-74577
105	Green Synthesis and Characterization of Nanoparticles by using <i>Nelumbo nucifera</i> Rhizomes and its Antibacterial Activity Archana Shantaram Gadakh and Abhijeet Dattatray. Kulkarni	74578-74588
106	Effect of Reaction Time on Hydrothermal Synthesis of MoS <sub>2</sub> Nanoparticle for the Application of Super capacitor S.Pravin Bavithra, P.N.Selvakumar, R.Cibil, J.Jebasign Korese and K.Gnanaprakasam Dhinakar	74589-74596
107	Assessment of Edaphic Factors and its Influence on Distribution of Earthworm Species in Agricultural and Residential Habitats in Pandavapura Taluk of Mandya District, Karnataka, India Shashank .K. R, H. R. Abhilash, M. N. Anil Kumar and M. Mahadevaswamy,	74597-74607
108	U-Net Architecture for Segmentation of Nucleus from Cell Image Sangeeta Sharma, Neeraj Shrivastava, Prateek Gupta and Megha Shrivastava	74608-74616
109	A Review on Phytosome as Therapeutic Agents Ikram Hussain, Surender Prasad, Abdul Hadi Umam, Pooja Sharma Luite13 and Tahid Alam	74617-74633
110	Performance Analysis of Different Feature Selection Methodologies in Classification of COVID-19 with Detail Feature Analysis Annweshha Banerjee, Somsubhra Gupta and Dharmpal Singh	74634-74641
111	A Review on Microencapsulation Ch. Bhavani, Nagulapally Sanjana, Varshitha Peddi, Pothullapalli Shruthi, T. Rama Rao.	74642-74647
112	Investigating the Antifungal Properties of Rosemary Oil: Phytochemical Analysis and Minimum Inhibitory Concentration Study against <i>Candida</i> Species Balasubramanian.G, Devika.N, Madhavan.S, Sivamani.P and Baskaran.C	74648-74657
113	Risk and Measures of Self-Medication Practices: A Study With Respect to College Students In Chengelpet District N.V.Ramachandran and Aruna R	74658-74663
114	Adenovirus as Potential Viral Indicator to Identify Faecal Contamination of Water D Jayakar Santhosh, P Everest Helen Rani, S Raju and A Valli	74664-74671

115	Morpho-Anatomical Studies of Stem Barks of Selected <i>Terminalia</i> spp. Available in Chittoor District K. Manipal, K. Madhava Chetty, M. Ramakrishna, B. Swapna and S. Kameswaran	74672-74682
116	Exploring the Evolution of Mobile Health Across Diverse Healthcare Domains: A Comprehensive Narrative Analysis Kunika Jaiswal and AmalKumar Bhattacharya	74683-74695
117	Natural Polymers: use as Superdisintegrants in Mouth Dissolving Tablets Kiran Aphale, Sneha Patil, Shashikant Dhole, Nilesh Kulkarni , Priyanka Soni and Shivani Ghuge, Aditi Momale	74696-74706
118	Water Serves as Primary Target for High Dilution of an Anti-Burn Homeopathic Drug on Heat- Exposed Bovine Serum Albumin <i>In-vitro</i> Raj Kumar Singh, Nirmal Chandra Sukul, Nivedita Pande and Anirban Sukul	74707-74712
119	Harnessing the Potential of Niosomal Therapy for Depression Pratik Katare and Pallavi M. Chaudhari	74713-74719
120	Multiple Attribute Decision Making and its Application to Neutrosophic Vague Tangent Similarity Measure S.Ancy Vershinia and K. Mohana	74720-74728
121	God's Own Country at Risk: Unraveling the Impact of Climate Change on Kerala Dinu Mathew	74729-74735
122	Shadowness in the Name of Enrichment: the Darker Side of MOOCs Sachin Kumar, Poonam Pandita and Kiran	74736-74742
123	Tritopological Groups Via Semi Opensets M. Kumar and A.Arivu Chelvam	74743-74748
124	On Edge Pebbling Number and Cover Edge Pebbling Number of the Wheel Graph ( $W_n$ ) A.Priscilla Paul and C.P.Catherine Glada	74749-74761
125	Magic Spectrum of Graphs T. Rajasulochana and M. Kamaraj	74762-74767
126	An Approximate Analytical Solution of a Predator-Prey Model with Fear Effect K.D. Priyadharshini and S. Narmatha	74768-74773
127	Solving Deterministic Model of Smoking Dynamics with Perturbation Technique K.Vaishnavi and R.Malinidevi	74774-74780
128	Rainbow Connection Number and Rainbow Vertex Connection Number of Some Chess Graphs S. P. Jeyakokila and R. Ruby	74781-74787
129	Fuzzy Approximation Method in Artificial Intelligence & Neural Network for Wound Detection and Remedy using MATLAB M.Geethalakshmi and Sriram V	74788-74795
130	Contra Harmonic Index of Oxide Networks Ragavi and R.Sridevi	74796-74801
131	Analysis of Water Distribution Networks using Heatmap Centrality Measure R. Sumathi, R. Sundareswaran and M. Shanmugapriya	74802-74814

132	Analysis of Wiener Index of Cycloalkanes for C <sub>n</sub> H <sub>2n</sub> Structural Molecules B. Menaka, S. Britto Jacob and Keerthi Vijayan	74815-74822
133	Recent Physiotherapy Advances in Spinal Cord Injury Paraplegics: A Systematic Review Aastha Chhabra, Manu Goyal and Kanika Thakur	74823-74834
134	Effect of Seed Pelleting on Seed Quality Parameters in Okra ( <i>Abelmoschus esculentus</i> (L.) Moench cv. Arka Anamika T.M. Abishek and S. Padmavathi	74835-74839
135	Electrochemical Analysis of Ni-TiO <sub>2</sub> Nanoparticles V. Annapushpam Sangeetha, S. Kanagaprabha and P. N. Selvakumar	74840-74844
136	An Overview on Improving of HPLC by Artificial Intelligence Karthick S, Abdelmalik Mohamed Abakar Khamis, Alsadig Omer Osman Idris, Nawaz Mohammed and T Reshma	74845-74854
137	Caring in Crisis - A Qualitative Perspective on Compassion and its Trials in Indian Nursing During the Covid-19 Surge Jismon Mathew George, Jisa Shaji and Alex Joseph and Vijesh P.V	74855-74867
138	Bioprospecting and Eco –Biogeographically Genetic Diversity of <i>Excoecaria agallocha</i> L., from East Coast Mangrove Forest of Tamil Nadu S.Tamilarasu, P.Thamizhiniyan and P.V.Sivakumar	74868-74876
139	HPTLC Method Development and Validation of Hydrochlorothiazide by Simplex Lattice Mixture Design R.A. Bhalerao and Vijaya Uday Barge	74877-74883
140	Awareness of E-Resources use by Faculty Members in the Management Institution's: A Case Study of Western District's, Tamilnadu P.Charles, M.Jaculine Mary and M.Sathya	74884-74891
141	Thermal Diffusion, Diffusion-Thermo Effect on a MHD Flow through a Porous Stretching Plate Ankur Kumar Sarma, Dipak Sarma and Sunmoni Mudoj	74892-74899
142	On Micro Semi –Preoperators in Micro Topological Spaces P. Sathishmohan, G. Poongothai, K. Rajalakshmi and M. Thiruchelvi	74900-74907
143	Securing Cloud Data using Hill Cipher Encoded Quick Response Code and Visual Cryptography R.Hemalatha, S.Selvi and R.Sathya	74908-74919
144	Deep Learning based Congestion - Aware Traffic Routing Management System in a Road Network Md Ashifuddin Mondal and Shubhendu Banerjee	74920-74932
145	Analytical Method Development and Validation for Estimation of Tranexamic Acid and Ethamsylate in Tablet Dosage Forms M. Jhansi Lakshmi, K. Rajinikanth, N.Rama Rao and A.Manoj Babu	74933-74940
146	A Study on "Urban Working Women Investor's Perception towards in Various Investment Avenues Sunitha C and Rekhashree N	74941-74951
147	Assessing the Effectiveness of Green Marketing Initiatives: A Systematic Review Sharada Shiva Prasad and Sindu Akilesh	74952-74964
148	Talent of Teachers: Does it Influence the Employability of Graduates in India – An Analysis Sindhu. N, B R Divya Shree and Mahendra Krishna Hegde	74965-74971



149	The Relation between Brand Awareness and Repeat Purchases to Develop Marketing Strategy Sharada Shiva Prasad and Aruna R.Shet	74972-74982
150	A Study on Impact of Advanced Agri Technology on Agricultural Productivity with Reference to Crop in Technology Solutions in Karnataka – The Next Gen Farming Nishchitha B P and Ashwini N K	74983-74990
151	Factors Influencing Socially Responsible Investment Intention: An Empirical Investigation Ruchi Vohra and T. Shenbagavalli	74991-75004
152	Innovation Management in Technology companies: Exploring the Strategies and Practices that Technology Companies use to Foster Innovation and Maintain A Competitive Edge Deepika GR and Prasanna Prakash	75005-75011
153	Strategic Management in Times of Crisis: Analyzing Adaptation Strategies during the Covid-19 Pandemic Aruna R.Shet and Sharanya R. S	75012-75018
154	Consumer Behaviour towards Ready to Eat Products With Reference to Rayalaseema Region of Andhra Pradesh B Sivasankar Prasad and K. Venu Gopal Rao	75019-75029
155	Aspirations, Efforts and Challenges of Unemployed Graduates of Jammu District: An Empirical Study Akansha Sharma, Ravi Vanguri and Rajni Kumari	75030-75042
156	Shaping the Future of Libraries: Innovations in Materials and Services Srikanth H G	75043-75048
157	Discussing the Trauma Theory, and the Concept of the Viewer Trap of Suspicion in the Film Texts - Shutter Island and the Machinist N Prabhanjan and Premalatha S	75049-75054
158	Inhibition of Anti-Oxidant and Anti-Ulcer Activity of " <i>Pleurotus ostreatus</i> (Jacq.) P.Kumm Aravindhan T, Rangeetha K, Sneha.K Thirunavukarasu .T and Baskaran A	75055-75061
159	Ocean Acidification on the Corals and their Impact on Aquatic Terrain – A Review Pavithra.R, Prannesh .U .R, Sanjey .K, Sankaranarayanan.K and Vinoth Kanna .A	75062-75071
160	Role of Technology in Enhancing the Work Life Balance of Lecturers in Management Institutions Jagadeesh Babu. M .K, Gopi G and Gnaneshwar Koorella	75072-75079
161	Optimistic People are More Contented, Responsible, and More Conscientious: An Analysis of the Novel A Matter of Time by Shahi Deshpande M. Saraswathy	75080-75085
162	Harnessing Nature's Remedy: <i>Glycyrrhiza glabra</i> L. Root Extract for Tooth Decay Ilakkia Sivaji, Sujatha Raghu, Divya G,Kavitha Duraisamy, Jonnalagadda Lakshmi Lalitha Annapurna	75086-75097
163	The Early Prediction of the 3D-Model Magnetic Resonance Imaging Gliomas on the Brain Tumour with Different Machine Learning Algorithms S.Sindhu and N.Vijayalakshmi	75098-75102

164	Colostrum – Nature’s Gift for Health and Wellness Ankit Bihola, Shivani Padhiyar, Shaikh Adil and Vijay J. Upadhye	75103-75110
165	Maximizing HR Analytics in the Telecommunication Sector: Enhancing Performance and Efficiency with Data-Driven Insights Venkatesh Prasanna .B .R, Dhanalakshmi .R .V and Jaichitra .D	75111-75116
166	Comparison of Social Adjustment Level between Male and Female Secondary School Students Varender Singh Patial and Manisha Patial	75117-75120
167	Tissue Engineering in Dentistry Suneeth Shetty	75121-75130
168	The Role of Social Entrepreneurship in Sustainable Community Development Aradhana.N.M and E.Vanajakshi	75131-75137
169	A Study on Green Human Resource Management, A New Development in Human Resource Practices Bhagyashree S and H.R. Padmanabha	75138-75147
170	Offensive and Defensive Style of Playing Chess: A Study on Impulsivity and Decision-Making Styles in Every-Day Life Chethana R Acharya and Ravi K Agrahara	75148-75155
171	A Conceptual Study on Advantages of Playing Billiards on Concentration Levels of Individuals Chikka Rangaswamy R and Ponnappa S S	75156-75159
172	The White Man’s Green Burden: A Postcolonial Ecocritical Study of Richard Leakey’s Wildlife Wars: My Battle to Save Kenya’s Elephants Jhansi S	75160-75164
173	Food, Identity and Other Genders Roopashree U	75165-75168
174	Web-Based Resources, Services and Facilities of Environmental Information System (ENVIS) in India: A Modular Approach Suresha, G.P and Gururaj F Duragannavar	75169-75178
175	Impact of E- Commerce Platform on Customers Perception Archana and Karthik N L	75179-75185
176	A study on Utility of Plastic Waste towards Tarring of Roads using Plastic Bitumen in Bangalore City Pradeep G and Vidya U Jambagi	75186-75192
177	A Study on Digital HRM on Organisational Effectiveness – Information Technology Bengaluru Pushpa S and Vijayakumar N C	75193-75201
178	A Research of Internet of things (IoT) on E-Commerce Business Transparency to Supply Chain Management Rajasekaran S and Sateeshkumar G	75202-75208
179	Evaluating the Library Services of the University of Agricultural Science, Dharwad: A LibQUAL+ Study Shobha Dyamanagoudr and Mamatha Pramod Kumar	75209-75219
180	Applications of Artificial Intelligence and their Impact on Academic Libraries Sudhir Baburav Halvegar and Srikanth H G	75220-75225

181	A Study on “Cryptocurrency in Addition to its Impact on Indian Economy” Veena V Savekar and Bhavana A	75226-75229
182	Evaluating Students’ Changing Perspectives on Gender Roles and Stereotypes through Mahesh Dattani’s Play 'Dance Like a Man' A Student Survey-Based Study Bhuvaneshwari. R S	75230-75236
183	A Study on the Agricultural Financing Options Chosen by Farmers in the Tamakuru District of Karnataka Mohan Kumar D and Hemanth Kumar S	75237-75246
184	A Study on the Effect of Electronic Marketing on the growth of E-Commerce Punitha.G and Vandana N Revankar	75247-75250
185	A Study on “Navigating the Future: Digitization and Mindful Machines Role in Reshaping Jobs in the Banking Industry” Sharada S and Suma B R	75251-75255
186	A Study on E-Commerce transactions with special reference to Goods and Service Tax Suresh R B and Ravishankar B S	75256-75258
187	A Study on E-Commerce Resilience: Examining the Dynamics of Security Threats and Protective Strategies Manasa H	75259-75264
188	A Study on Integration of Technology in CRM With Special Reference to Ujjivan Small Finance Bank Mohan Kumar BM	75265-75276
189	An Exploratory Study on Aligning Business Practices with SDGs Reporting and Environmental Accounting Sangeetha.G and Harshitha.M	75277-75288
190	Emotional Intelligence (EI) and Psychological Capacities (PsyCap) of Information Technology Employees Vaibhav Patil and M Ganesh Babu	75289-75296
191	Crowdfunding and Entrepreneurial Finance: A Inclusive Analysis of Accomplishment Factors Nagalakshmi G S and Ramesha V	75297-75305
192	The Role of Energy Detection Method in Spectrum Sensing of Cognitive Radio Network Apoorva A and Nagaraju Kilari	75306-75311
193	MSME’s Contribution in Employment Generation – A Study with Special Reference to Mysore Ashwini N K and Nishchitha B P	75312-75317
194	Identify the Risk Factors Associated with Infertility among Women with Primary Infertility in Selected Hospitals in Puducherry Pon Princess Mano and Sujatha.T	75318-75324
195	Cannabis-A Bespoke for Multi Medicinal Values Simran Malik, Rekha Kaushik , Preeti Shukla and Manisha Bhatia	75325-75333
196	A Comprehensive Analysis of Nissim Ezekiel’s Poetry, Focusing on Its Natural Aspects and the Cultural Foundation of Indian Ethos R. Sathees Kumar	75334-75337

197	Expanding the Heston Model: Incorporating Jump and Sentiment Factors into Asset Price Dynamics Itankan W. A, Khursheed Alam, Sangeeta Gupta, Odekunle M. R and Alkali A. M	75338-75349
198	Optimizing Financial Market Volatility Forecasting: Integrating Modified Heston Model with Jump and Sentiment Factor, using Long Short-Term Memory (LSTM) Networks Itankan, W. A, Khursheed Alam, Sangeeta Gupta, Odekunle, M. R. and Alkali, A. M	75350-75363
199	Linear Programming Approach: Optimization of Profit and Land Resource Prachi, Sangeeta Gupta and Sweta Srivastav	75364-75369
200	Predicting Flight Fares with Machine Learning: A Comprehensive Study Sweta Srivastav and Sangeeta Gupta	75370-75373
201	Data-Driven Urban Futures: The Architectural Evolution of Indian Smart Cities through IoT and Big Data Innovation P. Prabhusundhar and A Roselin	75374-75381
202	A Novel Multimodal-Imaging based Approach for Early Detection of Glaucoma using Deep Learning Techniques Prabavathy Balasundaram, Sushaanth Srinivasan and Sharvesh Shankar	75382-75391
203	Unveiling the Neuroprotective Power: Exploring the Therapeutic Benefits of the Ketogenic Diet in Epilepsy Management – A Review Article Soma Basu and Hemamalini A.J.	75392-75400
204	Association between Oral Cancer and Periodontal Disease Ripan Seikh, Rojalin Parida, Riddhiman Dutta, Priyanka Parida and Md Jalaluddin	75401-75407
205	Biochemical Analysis of Edible Insects, Health Benefits and Prospects of Food Security - A Review Sweta Das, Kumar Aditya Narayan Deb, Karabi Kalita, Babli Das, Priyanku Sarma and Tarali Kalita	75408-75416
206	Efficacy of Hypoglycaemic Agents in Type-2 Diabetes Mellitus with Associated Co-Morbidities: A Prospective Observational Study Pradeep Battula, S Sai Harshini, M Srivani, G Vijaya Kumar and Setlem Sai Venkata Krishna	75417-75426
207	Comparative Evaluation of Three Different Provisional Restorative Materials for Surface Roughness using Two Different Polishing Agents - An <i>In vitro</i> Study Pranoti Shivkumar Chinchansure, Shriprasad Basavraj Alure, Ajit Janakar, Bhushan Bangar, Shashi Patil and Shivani Raut	75427-75431
208	A Clinical Investigation into the Efficacy of Shirodhara and Abhyanga in Managing Generalised Anxiety Disorder (Atatvabhinivesh) Manvi Yadav, Gyan Prakash Sharma, Abhimanyu Kumar	75432-75440
209	Formulation and Evaluation of Polyherbal Face Pack for Antibacterial and Radiant Skin Care Vivek Barik, Shrayata Jana, Pradip Nandi, Shubho Debnath and Piyali Khamkat	75441-75447
210	The Psychology of Adapting to Change: An Inquiry on Dr. Spencer Johnson's Who Moved My Cheese? and The Present B. Kanchanamala	75448-75453

211	Bio Regulators-Enhanced Poultry Manure on the Alfisol's Nutrient Release Pattern J. Revathi, D. Vasanthi, K. Prakash and S.Chandraprabha	75454-75458
212	The Role of Epigallocatechin Gallate In Chemoprevention - A Review Mirra Rajalakshmi M	75459-75466
213	Oxadiazole and its Derivatives: A Review on Recent Progress in an Anti-Diabetic Activity. Ujwala B. Belge and Vijaya S. Vichare	75467-75475
214	Exploring the Nutritional and Therapeutic Potential of Ash Gourd ( <i>Benincasa hispida</i> ): A Comprehensive Analysis of Health Benefits, Consumer Awareness and Marketing Strategies Sarika Chhabria Talreja, Kishori Swapnil Tarfe, Varsha Vaswani and Jiya Chawla	75476-75481
215	Data-Driven Predictive Modeling of BMI Utilizing Nutrition Data: A Machine Learning Perspective V Selvakumar, PakkiVenkataTeja and Eranki Aditya Charan	75482-75491
216	An Explorative Study On Formulation And Analysis Of Healthy Snacks And Tea Using Herbs & Spices N.Sabitha and A.Saranya	75492-75501
217	Nutrient Content, Phytochemical Constituents and Extracted Protein Quality of <i>Lantana camara</i> Leaves Saranya.A and Kalpana C.A	75502-75507
218	Fish Scales and their Degradation from the Environment and their use as Potential Sources of Fungi Rashmi Sinha, Jitendra Kumar and Nishant Kumar	75508-75515
219	Steady MHD Flow and Heat Transfer on a Stretched Vertical Permeable Surface in Presence of Heat Generation, Thermal Radiation, Soret Effects and Chemical Reaction Sunmoni Mudoi, Dipak Sarma and Ankur Kumar Sarma	75516-75524
220	Transient Suffering, Enduring Hope: Mamet's Dark Pony and the Power of Humanism M. Renuga	75525-75528
221	Some Types of Neutrosophic Ideals in BN-Algebras A.Ibrahim and B. Kavitha	75529-75537
222	On Nano Star Generalized Alpha Closed Set and Nano Star Generalized Alpha Continuous Function in Nano Topological Space K. Baby and H. Aaminumariyam	75538-75544
223	Systematic Inspection of Digital Advert Impact on Teenagers in Artificial Intelligence (AI) Environment Vishwas G	75546-75549
224	Analytical Method Development and Validation for Estimation of Simethicone and Loperamide in Tablet Dosage Forms M.Siva Prasad, P.V.Suresh, N.Rama Rao and M.Dinesh Kumar	75550-75557
225	Bioremediation of Lead and Cadmium Metals from Contaminated Soil Samples using Microbial Siderophore G. Sri Lakshmi, S. Prasanna, K. Mounika, S. Anju, J.Sarada and J. Sai Kumar	75558-75566

226	Predictive Modeling of Financial Distress: A Coot-SCA for Mutual Information Approaches Eega Varnika and G.Madhavi	75567-75573
227	Beyond the Decibels: Delving into the Science of Noise Pollution Rajesh Trehan and Aarti Trehan	75574-75584

### **Editorial..**

#### **Science and Women Empowerment**



*No one can deny that the contribution of women is behind all the various advanced scientific and technological innovations that we use today. But historically, women have been underrepresented in these fields due to various factors including social norms and prejudice. The need to promote women's empowerment and gender equality is critical, especially in the fields of science, technology and engineering. It is a fact that by empowering women and promoting gender equality, we can create a more inclusive, diverse and robust scientific ecosystem. Encouraging and supporting women's participation in scientific fields is essential for diverse innovation. By empowering women and promoting gender equality, we can create a more inclusive, diverse and robust scientific ecosystem. From improving health to combating climate change, harnessing the diversity and talents of women can broaden the bases of research by prioritizing them in these fields. The women's community always has new perspectives, talent and creativity. Global programs for sustainable development proclaim that women and girls play an important role in scientific and technological communities and that their participation should be strengthened. While science, technology, engineering and mathematics (STEM) fields are considered critical to national economies, experts say we have yet*

*to achieve gender parity in these fields. A significant gender gap at all levels has persisted over the years. Although women have made tremendous progress in increasing their participation in higher education, they are still underrepresented in these fields. Gender equality will not only contribute to the world's economic growth, but also to progress towards all the goals of the 2030 Agenda for Sustainable Development. It is the empowerment of women and girls. Only one in five (22%) are women in cutting-edge fields like artificial intelligence. Only 12% of the members of the Academies of Sciences are women. Despite skills shortages in most technology fields fueling the fourth industrial revolution, women still make up 28% of engineering graduates and 40% of computer science and informatics graduates. Currently, UNESCO is taking action in the field to promote and recognize the talents of women researchers. It is good news that the Government of India and the State Government's Science and Technology Departments are devising and implementing the necessary programs to fully involve women in the fields of Science, Technology and Engineering. According to a recent UNESCO Science Report, women currently make up one-third of scientists and 37% of marine scientists. Women are breaking the glass ceiling of social barriers, starting scientific careers, and moving the world forward through their research. It is the expectation of academics that in our educational policies, it is necessary to immediately take all necessary steps to position women in higher education and especially in research.*

**Editor, IJONS**

*Image Credit: Science Europe*

*Cover Image Credit: Vijikumar Sahadevan*