PROCEEDINGS OF
THE INTERNATIONAL CONFERENCE ON
RECENT TRENDS IN AGRICULTURE, ENVIRONMENT &
BIO SCIENCES 2018
International Academic Research Conference Chandigarh 2018
Govt of India Approved International Conference
MHA Vide F.No 42180150/CC ; MEA Vide F.No AA/162/01/2018-260

February 22-24, 2018


Editors
Dr. P.B.Reddy
Dr. Ratnakar D Bala

Organized by
INTERNATIONAL MULTIDISCIPLINARY RESEARCH FOUNDATION
Proceedings of the International Conference on Recent Trends in Agriculture, Environment & Bio Sciences 2018


Copyright © 2018, IMRF PUBLICATIONS

All rights reserved.
No part of this book may be reproduced in any form of print & electronic means without the written permission of the copyright owner.

Published by
International Multidisciplinary Research Foundation
# 1-90, Near VTPS Main Gate, Ibrahimpatnam, Krishna Dt, A.P., India

DISCLAIMER
The authors are solely responsible for the contents of the papers compiled in this volume. The Publishers or editors do not take any responsibility for the same in any manner. Errors, if any, are purely unintentional and readers are requested to communicate such errors to the editors or publishers to avoid discrepancies in future.

Typeset & Printing by

IMRF INTERNATIONAL PUBLISHING HOUSE,
# 1-90, Near VTPS Main Gate,
Ibrahimpatnam, Krishna Dt, A.P., India
Email: info@imrf.in Tel: +91 9533 42 1234
Website: https://www.imrfedu.org/
PREFACE

Dear Associates

Welcome to each and every one of you congregated for the prestigious IMRF’s 67th International Gathering - Proceedings of the International Conference on Agriculture, Environment & Bio - Sciences 2018 organized by International Multidisciplinary Research Foundation (IMRF), India which is considered to be one of the premier events for the distinguished academic and research cult.

We know that an academic conference is a symposium for inventive academicians and imaginative researchers to give academics an opportunity to present their academic works, concepts and new discoveries and to exchange their ideas and develop their works and also to share idea in presenting for development of the new research and topics and so forth. Together with academic or scientific journals, conferences plausibly provide a central channel for exchange of information among earnest researchers.

IMRF, India and beyond (with its Academic Chapters in 8 Countries), since inception, has a great academic, research and social priorities to promote the spirit of values and orientations in multidisciplinary research functions of education by working out in dexterity required by the integrity of a sophisticated social world order duly transmitting central heritage with scientific bent of mind forming socialization process in respect of reformation of attitudes to confer a serene status for a rational being called man on this civilized planet, of course, from the threshold of Ratna Prasad Multidisciplinary Research and Educational Society, Vijayawada, India.

IMRF has left no stone unturned for the accomplishment of its vision and mission catering its influential services in the academic and research disciplines comprising the streams of Human Rights, Social Sciences, Arts and Education, English Studies, Business Sciences, Engineering Sciences, Mathematical Sciences Life Sciences, organizing International Conferences humbly witnessing the virtuous presence and innovative presentations of investigating pioneers, potential leaders, promising researchers, intellectual academicians, working faculty, industry magnates, advanced educationists, eminent scientists, rational thinkers, earnest scholars and superior students with their bonafide work of discovery from as many as 50 and more countries in the world (with their recurring presence) including home towards showcasing their professional performance with excellent communication skills based on their accumulated experience in the fields concerned successfully.

Globalization is a fact. Its internalization process integrates multidisciplinary fields to embark on an adventure in the realm of academics and research. As such, this conference by International Multidisciplinary Research Foundation (IMRF). I am pleased to unveil the fact that this Copy of Proceedings marked with ISBN No 978-93-86435-38-5 presents an educative network of research with strength of quality, originality and contribution to knowledge of significant fields of multidisciplinary realms duly identified by the solemn research portals and academic destinations in the world.

While presenting you with this sonata of latest academics and research findings, I humbly place on record my loyal acknowledgement of sincere appreciation, due recognition and heart-felt thanks to all intellectual paper presenters, article contributors, members on the esteemed Editorial Board, centres of higher learning in collaboration with IMRF, foreign-national delegates, erudite plenary speakers, scholarly participants and all those who are directly or indirectly in conformity with this IMRF conferences from home and abroad for their righteous everlasting support in one and all aspects and my sincere thanks to Institutes of Higher Learning, for their ever dynamic support and cooperation. Gratitude is attitude!

With effusive thanks,
Dr. Ratnakar D. Bala
Conference Chairman
EDITORIAL BOARD

Editor in Chief
Dr. Ratnakar D Bala, Director (Academics), International Multidisciplinary Research Foundation.
HQ : Andhra Pradesh, India ; Academic Chapters: All Over the World.

Managing Editor
Prof. P. Vijaya Vani, Dept of International Business , Acharya Nagarjuna University,
Guntur, Andhra Pradesh.

Executive Editor
Dr. P.Bhaskar Reddy, Dept of Zoology, GOVT PG College, Ratlam, Madhya Pradesh, India

Editorial Board Members (Overseas)
Dr. B.Sai Ram Pattnaik, Dept of Zoology & Ecological Studies, WolaitteSata University, Ethiopia
Dr. Dambaru Bhatta, Dept of Mathematics, The University of Texas-Pan American, Edinburg, USA.
Dr. Kankeyanathan Kannan, Dept of Maths & Statistics, University of Jaffna, Jaffna, Sri Lanka.
Dr. Krupa Daniel, Dept of Human Anatomy, Southern Medical University, Guangzhou Pr, China.
Dr. Mohammad Sajid, Qassim University, Buraidah, Al-Qassim, Kingdom of Saudi Arabia
Dr. Saratha Sathasivam, Pusat Pengajian Sains Matematik, Universiti Sains, Malaysia.

Editorial Board Members (India)
Dr. A. Nishadh, Department of Food Processing & Engineering, Karunya University Coimbatore, TN
Dr. Aulwar Uma Laxman, Dept of Botany, S.P.College, Pune, Maharashtra.
Dr. Bhawna Srivastava, Assistant Professor of Zoology, D.A.V College, Kanpur
Dr. Jalaja Kumari Divi, Department of Food Processing & Engineering, Acharya Nagarjuna University
Guntur, Andhra Pradesh.
Dr. M.Aruna, Associate Professor & Head of Botany, Telangana University, Nijamabad, Telangana.
Dr. Manju Dewan, Dept of Microbiology, DAV College, Chandigarh,India.
Dr. P.K. Mahajan, Professor of Statistics, University of Horticulture & Forestry, Solan, Himachal.
Dr. P.Bhaskar Reddy, Dept of Zoology, GOVT PG College, Ratlam, Madhya Pradesh, India
Dr. P.K. Mahajan, Professor of Statistics, University of Horticulture & Forestry, Himachal Pradesh.
Dr. Pulluru Sanjana Reddy, Senior Scientist, Plant Breeding, Directorate of Sorghum Research,
Rajendranagar, Hyderabad, Telangana.
Dr. S.A. Mariadoss, Research Mentor, Sahyadri Engineering College, Mangalore.
Dr. Samarjit Kar, HOD Mathematics, NIT Durgapur,Durgapur ,West Bengal.
Dr. Shamim Ahmed Bandey, Coordinator Add on course in sericulture, Poonch J and k.
Dr. Smit, Assistant Professor of Aquaculture, Kamdenu University, Gandhinagar, Gujarat
Dr. Sridevi, Dept of Microbiology, St.Pious X Degree & PG College for Women, Hyderabad,
Telangana.
Dr. Sujay Ghosh, Assistant Professor of Genetics, University Of Calcutta, Kolkata
Dr. Swapna Ashish Mohite,Dept of Aquaculture,College of Fisheries, Rathagiri, Maharashtra.
Dr. Swaroopa Maralla, Post Doc Fellow In Biomedicine, Sri Padmavati Mahila University, Tirupati
EDITORIAL BOARD

Cont..

Dr. Swati Misra Shekhar, Winsor, Shipra, Suncity, Indirapuram, Ghaziabad.
Dr. T. Malathi Rekha, Dept of Chemistry, SPMH Kalasala Machilipatnam, Andhra Pradesh.
Dr. Vijay Kumar, Scientist (Animal Physiology), National Research Centre on Equines, Equine Production Campus, Bikaner, Rajasthan
Dr. Vijay R. Ram, Dept of Chemistry, KSKV Kachchh University, Bhuj-Kachchh, Gujarat.
Prof. Tabhita, Faculty, Dept of Mathematics, Andhra Loyola College, Vijayawada, A.P.

***

Note: Alphabetically Arranged
<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A009A</td>
<td>ASSESSMENT OF ENDOCRINE AND REPRODUCTION DISTURBANCE IN LABEO ROHITA</td>
<td>Reddy, P.B</td>
<td>11</td>
</tr>
<tr>
<td>A010A</td>
<td>SKILL BASED EDUCATION AND VOCATIONAL EDUCATION IN INDIA FOR SUSTAINABLE DEVELOPMENT</td>
<td>Dr. Shamim Ahmed Bandey, M.H Shah</td>
<td>12</td>
</tr>
<tr>
<td>A013A</td>
<td>TARGET SCREENING FOR DRUGS OF ABUSE IN AUSTRALIAN RECYCLED WASTEWATER</td>
<td>Meena K. Yadav, Michael Short, Cobus Gerber, Christopher P. Saint B</td>
<td>13</td>
</tr>
<tr>
<td>A014A</td>
<td>APPLICATION OF CORRELATION MATRIX ANALYSIS IN SURFACE WATER QUALITY ASSESSMENT</td>
<td>Bhawna Srivastava, Reddy, P.B</td>
<td>14</td>
</tr>
<tr>
<td>A014B</td>
<td>LIMNOLOGICAL STUDY OF POLLUTED SHALLOW WATER SYSTEM AND ITS IMPACT ON THE POPULATION OF DIFFERENT SPECIES OF EUGLENA: KANPUR(UP).</td>
<td>Saras, Bhawna Srivastava</td>
<td>15</td>
</tr>
<tr>
<td>A018A</td>
<td>ISOLATION AND CHARACTERIZATION OF CADMIUM DEGRADING MICROORGANISMS FROM ELECTROPLATING INDUSTRY</td>
<td>Sneh</td>
<td>16</td>
</tr>
<tr>
<td>A015A</td>
<td>USE OF SPIRULINA FOR THE DETERMINATION OF SECRETORY ACTIVITY OF FAT BODY AND SILK GLAND ABILITY IN SILKWORM</td>
<td>Neelam Kumari</td>
<td>17</td>
</tr>
<tr>
<td>A019A</td>
<td>ISOLATION AND CHARACTERISATION OF PETROLEUM DEGRADING BACTERIA FROM OIL CONTAMINATED SOIL</td>
<td>Dr. Kuntal Kanti Goswami, Dr. Soma Halder, Abhimanyu Dalal, Arpan Chatterjee, Debsruti Majumdar, Prathama Talukdar, Pratik Dasgupta</td>
<td>18</td>
</tr>
<tr>
<td>A020A</td>
<td>MEDICO - BOTANICAL INVESTIGATIONS OF MEDICINALLY IMPORTANT PLANTS AMONG THE TRIBES OF PATALKOT VALLEY, DISTRICT CHHINDWARA (M.P.)</td>
<td>Sanjay Pawar, Nikhil Kanungo</td>
<td>19</td>
</tr>
<tr>
<td>A021A</td>
<td>ROLE OF FUNGAL LIPASE IN BIOREMEDIATION OF OIL CONTAMINATION</td>
<td>Toshi Wadia, Sudhir Kumar Jain</td>
<td>20</td>
</tr>
</tbody>
</table>
## CONTENTS

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title</th>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A022A</td>
<td>THREATENED MEDICINAL PLANTS SPECIES FROM CHHATTISGARH</td>
<td>Alok Kumar Chandrakar</td>
<td>21</td>
</tr>
<tr>
<td>A026A</td>
<td>TREES ALONG THE RIPARIAN ZONE OF RIVER NARMADA IN MADHYA PRADESH</td>
<td>Ravi Upadhyay, Sharad Trivedi Upadhyay, K.W.Shah</td>
<td>22</td>
</tr>
<tr>
<td>A027A</td>
<td>STUDY OF IN-VITRO INDUCTION OF VITEX NEGUNDO L.</td>
<td>Vaishalee Thakur, Dr. Anu Jha</td>
<td>23</td>
</tr>
<tr>
<td>A028A</td>
<td>STUDY ON THE ANALYSIS AND SYNTHESIS OF DESIGNER DRUGS, PIPERAZINE</td>
<td>Rhythm Gandhi, Amit Chauhan, Dr. S.K Shukla</td>
<td>24</td>
</tr>
<tr>
<td>A029A</td>
<td>ASSESSMENT OF PHYSICO-CHEMICAL CONTAMINANTS IN SURFACE WATERS OF KSHIPRA RIVER AT UJJAIN, M.P</td>
<td>Deependra Singh Raghuwanshi</td>
<td>25</td>
</tr>
<tr>
<td>A030A</td>
<td>MODERN AGRICULTURE INTERVENTIONS, TO URBAN FARMERS BY INNOVATIVE PORTABLE LOW COST VERTICAL FARMING (MULTIPLE UTILITY) AT DOORSTEPS</td>
<td>Gajula Praveen Kumar, Dr. Ravindranath</td>
<td>26</td>
</tr>
<tr>
<td>A031A</td>
<td>TEXT MINING FOR ANTI-INFLAMMATORY PLANTS USED IN CHYAWANPRASH</td>
<td>Priyanka Sharma, Subhash Chandra, Sushma Tamta</td>
<td>27</td>
</tr>
<tr>
<td>A032A</td>
<td>STUDY OF FISH FAUNA, THEIR ABUNDANCE AND BIOMASS IN THREE DIFFERENT PONDS OF BARWANI DISTRICT, M.P. INDIA</td>
<td>Anjali Mulewa (Bhayal)</td>
<td>28</td>
</tr>
<tr>
<td>A056A</td>
<td>CHARACTERIZATION OF SEED DORMANCY AND SEED GERMINATION IN BUNIUM PERSICUM</td>
<td>Shelly Banyal, Shashi Sharma, R K Aggarwal</td>
<td>29</td>
</tr>
<tr>
<td>A057A</td>
<td>EFFECT OF DOMESTIC EFLOULENTS ON TOMATO CROP (SOLANUM LYPERSICON MILL.) PRODUCTION</td>
<td>Shreya Handa, Meena Thakur, S K Bhardwaj, R K Aggarwal</td>
<td>30</td>
</tr>
</tbody>
</table>
ASSESSMENT OF ENDOCRINE AND REPRODUCTION DISTURBANCE IN LABEO ROHITA

REDDY, P.B

Abstract: Aquatic life means that fish is immersed continuously in a solution containing contaminants. The uptake of chemicals voluntarily happens through the gills, skin, and via the food intake. The exposure of fish in early life stages to the cocktail of contaminants existing in some aquatic environments may be of specific concern, as it is a vulnerable period in their development. Relationship between exposure to industrial and municipal effluents and distorted reproductive function in freshwater fish is already evident with many publications. The presence of various pollutants (pharmaceuticals, personal care products and illegal drugs are common in surface waters of many Indian Rivers pose serious threats to aquatic organisms. Significant published evidences are available for endocrine disruption by these pollutants in freshwater fish inhabitants living in stretches of downstream of various rivers. The present study was aimed to explore the impact of aquatic pollution on ovarian structure and steroid hormones level in female Labeo rohita, collected from both upstream and downstream of Chambal River at Nagda, Ujjain (India). Results exhibited that the values of many water quality parameters were exceeded standard limits and contain higher levels of heavy metals. The ovarian histology of fish from downstream revealed an increase in deformed oocytes and atretic follicles compared to ovaries of control (upstream) fish. The estradiol, progesterone, and gonadosomatic index (GSI) values also decreased in the fish of downstream compared to reference site. The percentage of distorted cells with picnotic nuclei was high in the ovary of fish from downstream. The study revealed an endocrine disruptive action on the reproductive activity of the fish by affecting the quantity of gonadotrophic cells, histology of ovary and reduced hormone level, which could have a negative effect on population survival under prolonged exposure to pollution.

Keywords: Aquatic Pollution, Endocrine Disruption, Labeo Rohita, Reproductive Function.

***

Reddy, P.B
Department of Microbiology, Biotechnology
Government PG College, Ratlam, M.P. India
reddysirr@gmail.com

SKILL BASED EDUCATION AND VOCATIONAL EDUCATION IN INDIA FOR SUSTAINABLE DEVELOPMENT

DR. SHAMIM AHMED BANDEY, M.H SHAH

Abstract: India has one of the largest technical manpower in the world. However, compared to its population it is not significant and there is a tremendous scope of improvement in this area. In India, the emphasis has been on general education, with vocational education at the receiving end. This has resulted in large no of educational people remaining unemployed. This phenomenon has now been recognised by the planners and hence there is a greater thrust on vocationalisation of education. Presently no. of polytechnics and institute for industrial training are being opened. Besides various ministries are trying to import vocational courses through innovative institution, specially launched for the purpose. Under xth plan, vocationalisation of education has received a boost with more funds being allocated for the purpose. Besides, it is also being ensured that the marginalised sections of the society, including women, get adequate representation in these courses. It can thus be hoped that skill based education and vocational education play a major role in improving the lives of the people of India.

KeyWords: Skill, Vocational, Education, funds.

Dr. Shamim Ahmed Bandey  
Coordinator in Sericulture  
Govt. Degree college Poonch, Jammu and Kashmir  
dr.sanb20@gmail.com
TARGET SCREENING FOR DRUGS OF ABUSE IN AUSTRALIAN RECYCLED WASTEWATER

MEENA K. YADAV, MICHAEL SHORT, COBUS GERBER, CHRISTOPHER P. SAINT B

Abstract: Treated wastewater reuse is a worldwide used approach to overcome the demand for water. In Australia, ~10 percent of wastewater is recycled every year. This recycled wastewater is used for irrigation, groundwater replenishment or landscapes. In this research, water samples were collected from a Dissolved Air Flotation & Filtration (DAFF) plant operated in Adelaide, South Australia. The DAFF plant treats wastewater from the Bolivar WWTP through a tertiary process of filtration and disinfection (chlorination) that is used for irrigation and groundwater replenishment. Water samples collected after DAFF and chlorination treatments were analysed by Liquid Chromatography-tandem Mass Spectrometry (LC-MS/MS). 33 drugs of abuse were targeted in the study that belongs to the class of opioids, amphetamine-type stimulants, cocaine and their metabolites. Overall, 12 compounds (including amphetamine, benzoylecgonine, codeine, cotinine, methamphetamine, MDA, MDMA, methadone, methcathinone) were detected in post DAFF and post-chlorination water samples at low ng/L concentrations. The results show that the drugs concentrations were lower in chlorinated water samples as compared to DAFF treated water. The findings from the study recommend the use of disinfection process prior to reuse wastewater. Overall, the compounds screening provided an evidence for the reuse of recycled wastewater as a potable water source.

Keywords: Illicit Drugs, Recycle Wastewater, Chlorination, Methamphetamine.

***

Meena K. Yadav
Natural and Built Environments Research Centre, University of South Australia, Mawson Lakes, SA 5095, Australia, Meena.Yadav@mymail.unisa.edu.au

Michael Short
Natural and Built Environments Research Centre, University of South Australia, Mawson Lakes, SA 5095, Australia, Michael.Short@unisa.edu.au

Cobus Gerber
School of Pharmacy and Medical Science, City East Campus, North Terrace, Playford Building, Level 4, Room 47, Adelaide SA 5000, Australia, Cobus.Gerber@unisa.edu.au

Christopher P. Saint
Division of Information Technology, Engineering and the Environment, University of South Australia, Mawson Lakes, SA 5095, Australia, Christopher.Saint@unisa.edu.au
APPLICATION OF CORRELATION MATRIX ANALYSIS IN SURFACE WATER QUALITY ASSESSMENT

BHAWNA SRIVASTAVA, REDDY, P.B

Abstract: To understand the consequences of intensive agricultural land use and industrial activities on water resources is necessary for better management of water quality and environmental improvement. This study mainly focuses on the application of Multiple Linear Regression analysis to evaluate water quality of Banbana talab at Nagda, Ujjain, M.P (India) due to anthropogenic activities. Water samples were collected from four study points where human and animal activities were negligible. A total of 63 samples were analyzed for 6 chemical parameters temperature, pH, Alkalinity, DO, TH, TDS, and Chloride, during Monsoon, winter and summer seasons of 2016-17. The total data points were analysed by multiple correlation regression analysis. Pearson’s correlation coefficient (r) value is determined using windows xlstat software to identify the highly correlated and interconnected water quality parameters. The outcome point out that the mean values of all the calculated physico-chemical parameters of pond water are within the acceptable limit set by ICMR/BIS. Therefore, water is found to be potable after some primary treatment. The correlation matrix studies are helpful to regulatory bodies to identify individual factors responsible for deteriorating water quality and thus to execute control measures for the water body.

Keywords: Banbana Talab, Multiple Linear Regression Model, Water Quality Parameters.

***

Bhawna Srivastava
Asst.Professor, DAV College, Kanpur, U.P.
Reddy, P.B
Assoc.Professor, Government PG College, Ratlam, M.P
LIMNOLOGICAL STUDY OF POLLUTED SHALLOW WATER SYSTEM AND ITS IMPACT ON THE POPULATION OF DIFFERENT SPECIES OF EUGLENA: KANPUR (UP).

SARAS, BHAWNA SRIVASTAVA

Abstract: In shallow waste water systems, planktons play an important role as primary producers. A lot of work have been done in the field of physico-chemical analysis of lentic water systems. Limnological study is valuable for water quality monitoring. The present work involves the use of abiotic components of shallow waste water system to assess the density fluctuation in different species of Euglena regarding with seasonal variations throughout the year.

With the seasonal variations, the values of pH, magnesium & calcium (Mg, Ca), dissolve oxygen & dissolved oxygen matter (DO, DOM) indicate variation in water quality which directly influenced the population of *Euglena acus* and *Euglena polymorpha*. On the basis of chemical analysis in terms of DO & DOM the shallow water system is moderately polluted. The fluctuation in the population densities of *Euglena acus* and *Euglena polymorpha* is positively correlated to DOM & Mg concentration and negatively correlated with DO & Ca concentration. The value of hydrogen ion concentration (pH) indicate positive correlation with both species (*Euglena acus* and *Euglena polymorpha*).

Keywords: Limnological Study, Shallow Waste Water System, Biomonitoring, Lentic Water System.

***

Saras
Department of Zoology, D.A-V.P.G. College, Kanpur (U.P.)
Bhawna Srivastava
Department of Zoology, D.A-V.P.G. College, Kanpur (U.P.)
ISOLATION AND CHARACTERIZATION OF CADMIUM DEGRADING MICROORGANISMS FROM ELECTROPLATING INDUSTRY

SNEH

Abstract: Increase in industrialization has raised the levels of heavy metal pollution in the country. Heavy metals can enter a water supply by industrial and consumer waste, or even from acid rain, which is releasing heavy metals into streams, lakes, rivers and groundwater. So ultimately these heavy metals are causing environmental pollution. It is very difficult to remove these potent and hazardous metals from environment as they cannot be degraded chemically and biologically. The use of microorganisms to remove heavy metals offers a great choice for research. The present study was undertaken for isolation, identification and characterization of heavy metal (Cd) tolerant bacteria from industrial effluents of electroplating industry SAS Nagar, Punjab (India). Initially a total of 20 bacterial isolates were screened and only two isolates were selected. They were characterized by performing different biochemical tests. These bacteria could tolerate cadmium up to 2000 ppm and 2500ppm. They showed their maximum growth at pH 6.5 and 7 and at 35° and 37 ° temperature and These isolated bacteria may be helpful for the bioremediation of heavy metal contaminated industrial effluents.

***

Mrs. Sneh
Assistant Professor, Department of Biotechnology
Chandigarh University
Sahibzada Ajit Singh Nagar (S.A.S Nagar), Mohali, Punjab
snehibiotech.cgc@gmail.com
USE OF SPIRULINA FOR THE DETERMINATION OF SECRETORY ACTIVITY OF FAT BODY AND SILK GLAND ABILITY IN SILKWORM

NEELAM KUMARI

Abstract: The silkworm, *Bombyx mori* has remained an object of rigorous scientific study due to its commercial importance. The current study is designed to find out the histological changes in the fat body, and silk gland of silkworm fed with treated *Spirulina* on mulberry MR2 leaves. Results revealed that distinctive histological changes in both fat body and silk gland of the V instars. The V instar fed with *Spirulina* on mulberry leaves exhibited remarkable changes such as swollen nucleus, with more vacuoles in the fat body. While, the silk gland displayed shrunken nucleus, vacuole in the epithelium and reduced lumen. The alterations may be due to the deployment of secretory material from posterior silk gland to middle silk gland to enhance and to store more amount of secretory substances for spinning. From the results, it may be concluded that the MR2 leaf treated with *Spirulina* is comparatively superior to MR2 leaf for sericulture industry to enhance the synthesis of more amount of secretory materials which influences the quantity and quality production of silk.

Keywords: *Bombyxmori*, *Spirulina*, Fat Body, Silk Gland.

***

Neelam Kumari  
Research Scholar, Magadh University, Bodh Gaya, Bihar, India
ISOLATION AND CHARACTERISATION OF PETROLEUM DEGRADING BACTERIA FROM OIL CONTAMINATED SOIL

DR. KUNTAL KANTI GOSWAMI, DR. SOMA HALDER, ABHIMANYU DALAL, ARPAN CHATTERJEE, DEBSRUTI MAJUMDAR, PRATHAMA TALUKDAR, PRATIK DASGUPTA

Abstract: Extensive hydrocarbon exploration activities have become a global environmental problem. Natural bioremediation is the only eco-friendly solution to resist its devastating environmental and economic damage. Polycyclic aromatic hydrocarbons (PAHs), as the major components of oil sludge, are hydrophobic and recalcitrant. In this investigation, petroleum degrading bacteria were isolated from oil contaminated samples from soil near petrol pumps of petrochemical industries of Kolkata. These organisms were studied using BUSHNELL HAAS medium (enrichment medium) supplemented with petrol as sole carbon source to determine their biodegrading activities on hydrocarbons (petrol). From the soil samples, four bacterial strains were isolated and were characterised by using standard biochemical tests and morphological studies. Amongst the isolates Organism 1 was found to be most effective in degrading petroleum hydrocarbon.

Keywords: Bioremediation, Eco-Friendly, Hydrocarbon Degradation, Petroleum.

***

Dr. Kuntal Kanti Goswami
Contractual Whole Time Teacher (CWTT), Asutosh College, 92, S.P. Mukherjee Road, Kolkata

Dr. Soma Halder
Associate Professor, Asutosh College, 92, S.P. Mukherjee Road, Kolkata

Abhimanyu Dalal
Student, Asutosh College, 92, S.P. Mukherjee Road, Kolkata

Arpan Chatterjee
Student, Asutosh College, 92, S.P. Mukherjee Road, Kolkata

Debsruti Majumdar
Student, Asutosh College, 92, S.P. Mukherjee Road, Kolkata

Prathama Talukdar
Student, Asutosh College, 92, S.P. Mukherjee Road, Kolkata

Pratik Dasgupta
Student, Asutosh College, 92, S.P. Mukherjee Road, Kolkata
MEDICO – BOTANICAL INVESTIGATIONS OF MEDICinally IMPORTANT PLANTS AMONG THE TRIBES OF PATALKOT VALLEY, DISTRICT CHHINDWARA (M.P.)

SANJAY PAWAR, NIKHIL KANUNGO

Abstract: Chhindwara district lies between latitude 21 to 22º North and longitude 78 and 79º East. It is located in south-west of Madhya Pradesh and is a well known tribal district. Patalkot valley is spread over an area of 79 Sq.Km. at an average height of 2750-3250 feet above Mean Sea Level lies between 22.24 to 22.29º North, 78.43 to 78.50º East. The place is located at a distance of 62 Km from the district headquarters in the North-West direction, and 23 Km from Tamia in North-East direction. People living in interior and inaccessible remote rural areas of Patalkot have excellent knowledge about medicinal utility of local flora for curing their various health disorders, due to low cost and sometimes it is a part of their social life and culture. The main tribe found in the area belongs to Mavashi, Bariya and Gond. Information was obtained through structured questionnaire administered to traditional healers and herbalists in the region. The study revealed 25 species of plants belonging to 18 families namely Alangium salvifolium (L.F.) Wong., Semecarpus anacardium Linn., Wrightia tinctoria ssp. Tinctoria R.Br., Glossocardia bosvallia (L.F.) DC., Tridax procambens Linn., Vernonia cinerea(L.) Less., Stereospermum colais (Dilliw.) Mabb., Bauhinia variegata Linn., Olea dioica Roxb., Celastrus paniculata Willd., Terminalia cuneata Roth., Diplocyclos palmatus (Linn.) Jaffrey, Citrullus colocynthis (L.) Schrad, Sida cordata Linn., Martynia annua Linn., Soymida febrifuga (Roxb.) A. Juss., Cissampelos pareira Linn., Tinospora cordifolia (willd.) Miers. ex. Hk. F. &Th., Butea monosperma (Lamk.) Taub., Pueraria tuberosa (Roxb.ex.willd.) DC., Clematis gouriana Roxb.ex.DC. Cardiospermum helicacabum Linn., Firmiana colorata (Roxb.) R. Br., Eugenia ooejensis (Roxb.) and Radermachera xylocarpa (Roxb.) K. Schum. were documented with their scientific name, family name, local names, active ingredients and medicinal uses. A few decades back these herbs was very common in this region but due to commercial exploitation, the natural population is decreasing at an upsetting rate, some herbs has become almost wiped out in these parts.

Keywords: Ethno-Medicine, Patalkot, Traditional Knowledge.
ROLE OF FUNGAL LIPASE IN BIOREMEDIATION OF OIL CONTAMINATION

TOSHI WADIA, SUDHIR KUMAR JAIN

Abstract: Lipase producing microorganisms (fungi and bacteria) have been isolated from a wide range of oil contaminated environments such as temple sites, oilseeds, deteriorated food vegetables, oils processing factories and dairy products. Fungal enzymatic systems among microorganisms have important effects on bioremediation of undesirable compounds, including various oils. In this work, we aimed to isolate and identify the extracellular lipase producing fungi and crude enzyme extraction from selected fungi. Standard methods of isolation and identification were used for the fungal isolation from oil contaminated soil. Extraction of lipase in the form of crude enzyme was also done by submerged fermentation using minimal salt media (MSM) with olive oil as substrate and filtration followed by centrifugation. Crude enzyme extract was subjected to lipase assay to determine the oil degradation activity. Aspergillus niger, and Alternaria species are identified as potent extracellular lipase producers among all isolated fungi. These two fungi were also used for extraction of lipase. Results of the present work are promising in terms of bioremediation of oil. These lipases can be used to treat the oil contamination present in natural environment.

Keywords: Crude Enzyme, Fungi, Lipase, Oil Degradation.

***

Toshi Wadia
School of Studies in Microbiology, Vikram University, Ujjain (Madhya Pradesh)

Sudhir Kumar Jain
School of Studies in Microbiology, Vikram University, Ujjain (Madhya Pradesh)
THREATENED MEDICINAL PLANTS SPECIES FROM CHHATTISGARH

ALOK KUMAR CHANDRAKAR

Abstract: Chhattisgarh state, lying in the Vindhyan hill regions and Deccan plateau in central India, has over 44% of its land area under forests and is rich in biodiversity. Around 7.8 million indigenous and tribal communities eke out their livelihood from these forests and biological resources. Medicinal and aromatic plants (MAPs) and other non-timber forest produce (NTFPs) constitute most of the floral biodiversity. Increasing demand and market access of commercially important MAPs and other NTFPs have led to unregulated, unsustainable and destructive harvesting, resulting into resource depletion. Some species are facing very high level of danger and few of them are also reflected in the threatened category. The present paper revealed the threatened status of many medicinal plant species, which may become extinct due to unsustainable exploitation of forest resources. Loss of biodiversity is intricately linked with forest degradation and the current situation in this regard is a source of concern.

Keywords: Threatened Species, Medicinal Plants, Chhattisgarh.

***

Alok Kumar Chandrakar
Assistant Professor, Department of Forestry, Wildlife & Environmental Sciences,
Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh, India
TREES ALONG THE RIPARIAN ZONE OF RIVER NARMADA IN MADHYA PRADESH

RAVI UPADHYAY, SHARAD TRIVEDI UPADHYAY, K.W.SHAH

Abstract: A tree is any plant with the general form of an elongated stem, or trunk, which supports the photosynthetic leaves or branches at some distance above the ground. Trees play a significant role in reducing erosion and moderating the climate. They remove carbon dioxide from the atmosphere and store large quantities of carbon in their tissues. Trees provide shade and shelter, timber for construction, fuel for cooking and heating, and fruit for food and many other uses. They also provide habitat for many species of Insects, birds and animals. Because of their longevity and usefulness, trees have always been revered, in various cultures, and they play a role in many of the mythologies. River Narmada is a perennial and longest river in Madhya Pradesh. It flows in a rift valley formed in between Vindhya and Satpura Hills. The riparian zone is the interface between land and river system. These zones are rich in Vegetation and Biodiversity. The present study was conducted along the riparian zone of river Narmada in a stretch of 200 km. from Narsinghpur to Hoshangabad. Total 95 species of trees were identified from this area. The species were segregated in four groups on the status of distribution into Endangered, Threatened, and Vulnerable and out of danger. The status was also assessed depending upon their uses and economic importance. The data was collected of last 50 years through local informants to plan the restoration work of riparian zone.

Keywords: Tree, Riparian zone, Narmada River.
STUDY OF IN-VITRO INDUCTION OF VITEX NEGUNDO L.

VAISHALEE THAKUR, DR. ANU JHA

Abstract: Nirgundi is an important medicinal plant widely used as an active ingredient in many medicines. It is an attempt to conserve the plant through micropropogation of nodal segment. Experiment was conducted on shoot initiation with combination of growth hormone finally tried on multiplication.

Vaishalee Thakur
Asst. Prof. in Botany, Unique Girls College, Parasia, Chhindwara
Dr. Anu Jha
Asst. Professor, Dept. of Biotechnology, IPS College, Chhindwara
STUDY ON THE ANALYSIS AND SYNTHESIS OF DESIGNER DRUGS, PIPERAZINE

RHYTHM GANDHI, AMIT CHAUHAN, DR. S.K SHUKLA

Abstract: Designer drugs, also termed as “legal drugs” have evolved its availability to evade legal resolution. Earlier young users were the primary users but now with the changing trends these are consumed by a large part of the society. They are the drugs with psychotropic effects which can easily be synthesized with other raw material to obtain synthetic compounds. This research was done to analyses of these designer drugs (piperazine was analyzed) using gas chromatography- mass spectrometry and gas chromatography- infrared deviation. In this analysis it was observed that these techniques provided the confirmatory data for the structural differentiation of the components and provided specific confirmation of each of the isomeric form of the derivative of the designer drug( isomeric piperazine) respectively.

Keywords: Designer drugs, legal drugs, Piperazine, analysis.

***
Rhythm Gandhi,
Amity Institute of Forensic Sciences, Amity University,
Sec-125 (Noida) Uttar Pradesh, India
rhythmgandhi5@gmail.com

Amit Chauhan,
Amity Institute of Forensic Sciences, Amity University,
Sec-125 (Noida) Uttar Pradesh, India

Dr. S.K Shukla
Amity Institute of Forensic Sciences, Amity University,
Sec-125 (Noida) Uttar Pradesh, India
ASSESSMENT OF PHYSICO-CHEMICAL CONTAMINANTS IN SURFACE WATERS OF KSHIPRA RIVER AT UJJAIN, M.P

DEEPENDRA SINGH RAGHUWANSHI

Abstract: The entry of toxins and impurities into fresh water ecosystem can start out a series of complex chemical and biological reactions. In order to be aware of how and why these reactions occur and to manage an ecosystem effectively, a thorough knowledge of the structure and basic functioning of that particular ecosystem is essential. The present investigation is aimed to study the prevalence of various contaminants of holy River, Kshipra at Ujjain, Madhya Pradesh, India. 18 samples from three different study stations were analyzed for six chemical parameters like pH, DO, TDS, NO₃, SO₄ and PO₄, during summer of 2017. The data points were examined by multiple correlation regression analysis using windows xlstat software to spot the extremely correlated and consistent water quality parameters. The result point out that the mean values of all the estimated parameters are exceeded the acceptable limit set by ICMR/BIS. The results revealed that estimated physico-chemical parameters of all study stations were higher than the standard limits of BIS/WHO, which indicates the poor quality of the river. Overall, the water quality of Kshipra River was relatively poor with respect to its use for domestic purposes.

Keywords: Contaminants, Kshipra River, Ujjain.

***

Deependra Singh Raghuwanshi
Department of Chemistry, Government Madhav Science College,
Ujjain, M.P. India
MODERN AGRICULTURE INTERVENTIONS,
TO URBAN FARMERS BY INNOVATIVE PORTABLE LOW COST VERTICAL FARMING (MULTIPLE UTILITY) AT DOORSTEPS

GAJULA PRAVEEN KUMAR, DR. RAVINDRANATH

Abstract: Vertical farming can help decrease hunger problem by changing the way we use our mother land properly and the intake of farm inputs like chemical fertilizers and pesticides for agriculture. Vertical farming is the practice of producing the food with in a space in vertically slanted layers one up on other. Even though it is new modern agriculture intervention to reduce the hunger on urban areas still there are challenges to face, labour-intensive, and here talking about costs, we all know that urban land is far more expensive then the agriculture farm land, and the cost of creating such a concept among the locality and powering up a for vertical farming designs for lights, controlling ambient temperatures and the like, will not be a cheap exercise. So just how much will this produce cost the consumer It sounds as if it would cost them far more than what they will expect to pay for conventionally grown farm food. Controlling the environment within these buildings with regards to lighting, temperature, and the arrangement of plants will all be important factors for success. If we go with this Hi-Fi model it will be very expensive. Here we came up with new innovative way, portable vertical farming kits at kitchen doorsteps itself with low cost.

Innovative methods (Multiple Utility) to address the challenges facing by the urban farmers, Lack of space infrastructure (conservation of space), conservation of water, & Gau inputs (jeevamrutham, etc.) Space utilization, Water utilization/recycling of water, Comparative study of chemical farming and organic farming, Easy way of monitoring. Diseases /pest controlling, weed controlling, less dependency in terms of labour, less dependency in terms of farm machinery, can grow different varieties of veggies in a single vertical column healthy food at our kitchen door disaster management will taken care when we compare with conventional farming we can save or benefit the transportation charges too.

Keywords: Agricultural Interventions, Organic Framing, Low cost, Multiple Utility, Vertical Farming Kits (VFK).
TEXT MINING FOR ANTI-INFLAMMATORY PLANTS USED IN CHYAWANPRASH

PRIYANKA SHARMA, SUBHASH CHANDRA, SUSHMA TAMTA

Abstract: On searching any text the huge amounts of unstructured text data generated on the internet. Text mining is the process of extracting useful information or knowledge from a large amount of raw material. This extracted text has high commercial value. On the formation of chyawanprash, more than 50 medicinal plants are used which play a vital role in drug discovery. In this context, an increasing trend of using plant-derived phytochemical or chemotherapeutic agents is observed in modern drug discovery process. The present article aims to text mining of anti-inflammatory plants used in chyawanprash by using a web-based system like PubTator, Carrot2, and other online sources. There are eight anti-inflammatory plants as Aegle marmelos, Aquilaria agallocha, Boerhaavia diffusa, Malaxis acuminata, Oroxylum indicum, Phyllanthus emblica, Sesamum indicum and Uraria picta were identified from 50 medicinal plants of chyawanprash by collecting PubMed abstracts and other databases. Phytochemicals of these anti-inflammatory plants can be used in further drug discovery against chronic diseases.

Keywords: Anti-Inflammatory, Chyawanprash, Pub Tator, Text-Mining.

***

Priyanka Sharma
Research scholar Department of Botany, Kumaun University, D.S.B.Campus Nainital
Subhash Chandra
Department of Botany, Kumaun University, S.S.J.Campus Almora
Sushma Tamta
Department of Botany, Kumaun University, D.S.B.Campus Nainital
STUDY OF FISH FAUNA, THEIR ABUNDANCE AND BIOMASS
IN THREE DIFFERENT PONDS OF BARWANI DISTRICT, M.P. INDIA

ANJALI BHAYAL

Abstract: The present study is aimed to study the fish production in three different lotic ponds at Barwani district of Madhya Pradesh. Out of two hundred fresh water ponds in Barwani district, we selected three ponds (Talwada, Kasal and Sajavaya) for experimental study. The seasonal percentage composition of the fish catch from three different fresh water ponds of Barwani for 2012-2013 had shown the presence 38 species belonging to 14 families, 26 genera, and 7 orders. Based on species composition, Cypriniformes were found to be dominant with 17 species followed by Siluriformes and Perciformes (each of 7 species), Channiformes (3 species), Osteoglossiformes and Synbranchiformes (each of 2 species). The most abundant family was Cyprinidae, having 293 individuals (68.63%), a subdominant family was Perciformes accounted for 68 individuals (15.45 %), Siluriformes accounted for 62 individuals (14.09), Channiformes are having 8 individuals (1.8%) and Osteoglossiformes accounted for 9 individuals (2.04%). We also noticed that species richness varied greatly at spatial scale. Station 3 (Sajavaya) showed higher species richness with 36 and 226 individuals in all seasons compared to other two stations. The seasonal trend of the evenness index was almost consistent with that of the Shannon-Wiener diversity index, ranging from 0.45 in January 2012 to 0.89 in June 2012. The state and central government Regularly Authorities (/CPCB/ SPCBs/ PCCs) should make adequate preventive measures for the waste disposal by the local industries to prevent fish production in this region.

Keywords: Barwani, Icthyofana, Shannon-Wiener Diversity Index.

***

Anjali Bhayal
Research Scholar, Government PG College, Barwani, M.P.
CHARACTERIZATION OF SEED DORMANCY AND SEED GERMINATION IN BUNIUM PERSICUM

SHELLY BANYAL, SHASHI SHARMA, R K AGGARWAL

Abstract: Bunium persicum is a perennial herb of cold desert regions (Lahaul Spiti) of Himachal Pradesh and is used as carminative, diuretic and expectorant. The ripe fruits of B. persicum are rich in secondary metabolites like alkaloids, phenols, flavonoids, terpenoids and various essential oils. The seeds of B. persicum exhibit very deep dormancy which hampers the seed germination, thus restriction its cultivation. In present study; physico-chemical, hormonal assessment as well as chemical inhibitors detection for dormancy removal/ seed germination which helps to improve the B. persicum germination yield in harsh conditions (cold temperature).

Keywords: B. Persicum, Characterization, Seed Dormancy, Seed Germination.

***

Shelly Banyal
Department of Biosciences, Himachal Pradesh University, Shimla
shellybanyal24@gmail.com

Shashi Sharma
Department of Biosciences, Himachal Pradesh University, Shimla

R K Aggarwal
Department of Environment Science,
Dr Y S Parmar University of Horticulture and Forestry, Nauni, Solan (H.P)
EFFECT OF DOMESTIC EFUFLENTS ON TOMATO CROP (SOLANUM LYPHERICICON MILL.) PRODUCTION

SHREYA HANDA, MEENA THAKUR, S K BHARDWAJ, R K AGGARWAL

Abstract: Effect of domestic effluents on tomato crop (Solanum lycopersicon MILL.) production was carried out during 2015-2016 in pot experiment in the experimental farm of Department of Environmental Science, Dr Y. S. Parmar University of Horticulture and Forestry, Nauni, Solan which is located at an altitude of 1273 m AMSL and at latitude of 35.5°N, longitude of 77.8°E. The studies were conducted in pot experiment, comprising of 4 treatments viz., T₁ (75% of domestic effluent), T₂ (50% of domestic effluent), T₃ (25% of domestic effluent) and T₄ (control, pond water). The whole set of experiment was carried out in 3 replications in CRD. The analysis of effluent (100%) indicated pH in the range of 5.92 - 6.84, As content below permissible level, Cd, Cr, Cu, Fe and Pb content above permissible level except for pond water, high, Hg content (much above the permissible level) and negligible amount of Ni. Statistically, lowest number of flowers and lowest number of fruits were recorded at treatment T₄ (control, pond water) as compared to domestic effluent. Lowest leaf area was recorded at treatment T₄, respectively. Lowest plant height was recorded in treatment T₄, respectively. The number of branches varied from 2-3. The highest tomato fruit weight and yield was recorded in treatment T₁, respectively. The As, Cd, Cr, Cu and Pb content was below permissible level, whereas, Fe content was above the permissible level for soil and Ni was negligible. Heavy metal contents for tomato leaves and fruits was below the permissible level. The N, P, K values for soil, leaves and fruits of tomato varied, respectively.

Keywords: Heavy Metal, Effluent, Heavy Metal Accumulation.

***

Shreya Handa
Department of Environmental Science, Dr Y S Parmar University of Horticulture And Forestry, Nauni, Solan, Shreyahanda0027@gmail.com

Meena Thakur
Department of Entomology, Dr Y S Parmar University of Horticulture And Forestry, Nauni, Solan
S K Bhardwaj
Department of Entomology, Dr Y S Parmar University of Horticulture And Forestry, Nauni, Solan
R K Aggarwal
Department of Entomology, Dr Y S Parmar University of Horticulture And Forestry, Nauni, Solan