Screenshots of research articles showing the title of the article, affiliation, name of the journal, year and authors name, *DOI number not available* (Academic Year 2017–2022)

Content

Government Holkar (Model Autonomous) Science College, Indore (M.P.)
Bhawarkuan, A.B. Road, Indore (M.P.) 452001

Title: - Screenshots of research articles showing the title of the article, affiliation, name of the journal, year and authors name, DOI number not available (Academic Year 2017–2022)

	3.4.3 Number of research papers published per teacher in the Journals as notified on UGC CARE list during the last five years					
S.NO.	**Title of paper**	**Year of publication**	**ISSN number**	**Link to the recognition in UGC enlistment of the Journal**		
				Link to website of the Journal	**Link to article/paper /abstract of the article**	**Is it listed in UGC Care list**
1	Polarographic And Antimicrobial Study Of Benzothiazole – 2 – Ylsulfanyl Acetic Acid (Schiff Base) And Their Fe (Ii), Co (Ii) Complexes	2022	2278-4632	http://junikhyatjournal.in/	Print Copy	UGC Approved
2	Oral Drug delivery : A molecular Mechanism and its production	2022	2249-6661	https://sambodhi.co.in/	Print Copy	UGC Aproved till july 2022 Peer Review
3	Microbiological Analysis of Water	2022	0973-9661	https://ircpaper.blogspot.com/	Print Copy	Peer Reviewed

	Samples from different locations in GHSC, Indore Campus.					
4	Elemental Investigation of Sewage Sludge Samples Using Synchrotron Radiation Based XRF Spectrometry	2022	0012-2440	https://www.dickensfellowship.org/index.php/read/the-dickensian	Print Copy	UGC Approved
5	Avian diversity a : review	2022	2319 - 4847	www.ijaiem.org	Print Copy	Peer Reviewed
6	Diversity and Relative Abundance O Butterfly Species of Family Lycaenidae (Order: Lepidoptera) At Govt. Holkar Science College, Indore (M.P.)	2022	0973-9661	https://ircpaper.blogspot.com/	Print Copy	Peer Reviewed
7	A Checklist of Diversity of Butterflies in Madhya Pradesh, India	2022	0973-5453	https://connectjournals.com/lsb	Print Copy	Peer Reviewed
8	Physico-Chemical analysis of water of sonar river Damoh district (M.P.)	2022	2394-7500	https://www.allresearchjournal.com/	Print Copy	Peer Reviewed

9	Comparative study of Routine Fertilizer V/S Soluble Silica Fertilization	2021	2452-5406	Print copy	Print Copy	Peer Reviewed
10	Optimization of Dyeing Condition For Eucalyptus Globulus Leaves Extract With Natural Mordants	2021	2454-5406	https://collegeholkar.org/Holkar_Research_Spectrum.html	Print Copy	Peer Reviewed
11	The quantification of microorganism in soil of potato fields of Indore district of Madhya Pradesh	2021	2454-5406	https://collegeholkar.org/Holkar_Research_Spectrum.html	Print Copy	Peer Reviewed
12	A Review Study On Azo Dyes And Its Metal Complexes	2021	2278-4632	http://junikhyatjournal.in/	Print Copy	UGC Approved
13	Forgery over Genuine Signature	2021	2278-4632	http://junikhyatjournal.in/	Print Copy	Peer Reviewed
14	Biodiversity and Concentration of Airborne Fungi in different locations of Indore city	2021	2454-5406	Print copy	Print Copy	Peer Reviewed
15	Optimization of Media and PH For Production of Secondary Metabolites in Invitro Cultures of Bacopa Monnieri (Brahmi)	2021	2277 - 8160	https://www.worldwidejournals.com/global-journal-for-research-analysis-GJRA/	Print Copy	Peer Reviewed

16	Peripheral Leaf Architectural Studies of Selected Species of *Malvaceae* in Indore City	2020	0973-9661	https://ircpaper.blogspot.com/2014/04/about-irc.html?m=1	Print Copy	Peer Reviewed
17	Foliar Micromorphological Characterization of Epidermis in Some Commonly Cultivated Species of *Malvaceae*	2020	0973-9661	https://ircpaper.blogspot.com/2014/04/about-irc.html?m=1	Print Copy	Peer Reviewed
18	Cancer: A Challenge	2020	2278-4632	http://junikhyatjournal.in/	Print Copy	UGC Approved
19	Percent Occurrence Of Birds Recorded In Indore City Of MP	2020	1001-2400	http://xadzkjdx.cn/	Print Copy	Peer Reviewed
20	Effect On Lipid Profile In Mice Experimentally Infected And Vaccinated With Aspicularistetraptera	2020	2236-6124	https://internationaljournalofresearch.com/	Print Copy	Peer Reviewed
21	Dye Yielding Plants of Barwani District, Madhya Pradesh	2019	0974-6382	http://jpds.co.in/	Print Copy	Peer Reviewed
22	The Comaparitive Study of Seed Yeild In Desi And Kabuli Varieties Of Chikpea (Cicer Arietinum L.) Under Moisture Stress And	2019	0973-9661	https://ircpaper.blogspot.com/	Print Copy	Peer Reviewed

	Non-Moisture Stress Environment.					
23	Biological Control Of Mosquito Population By Bradinopgya Geminata	2019	0972-995X	Print Copy	Print Copy	Peer Reviewed
24	Study of Sodium Arsenate Induced haematological Changes in Catfish, Clarias Batrachus	2019	0976-6685	https://www.pramanaresearch.org/	Print Copy	Peer Reviewed
25	Histopathological investigation of Fasciala Hepatica infected liver of Goats of Indore Region	2019	0973-9661	https://ircpaper.blogspot.com/	Print Copy	Peer Reviewed
26	Narmada Nadi me Matasya Prajatiyo ki vividhata, Vartman isthati tatha Unka Sanrakshan	2019	2249-694X	http://www.lbp.world/	Print Copy	Peer Reviewed
27	Narmada Nadi ki Jaliya Gunwataa ka Adhayan	2019	2319-9318	http://www.vidyawarta.com/	Print Copy	Peer Reviewed
28	Status Of Serum AMH And Lipid Profile In Polycystic Ovarian Syndrome	2018	2277-2812	https://statperson.com/Journal/ScienceAndTechnology/IJSciAndTech.php	Print Copy	Peer Reviewed
29	Phytochemicalanalysis of Carica Papaya Leaves & Root	2018	0973-9661	https://ircpaper.blogspot.com/	Print Copy	Peer Reviewed

	Extracts And Citrus Sinensis Leaves Extracts.					
30	Diversity of Benthic Macroinvertebrate In Samalda Reservoir District Dhar (MP)	2018	2278-8808	http://www.srjis.com/journal?jrId=1	Print Copy	Peer Reviewed
31	Evaluation Of Antimicrobial Potential Of Silver Nanoparticles Using Osmium Sanctum Ficus Bengalensis Against Two Pathogenic Bacteria	2018	2236-6124	https://ijrpublisher.com/	Print Copy	Peer Reviewed
32	Application of Multivariate Statistical Method (Cluster Analysis) to physico-chemical parameters of Munj Sagar Talab, Dhar (MP)	2018	0973-9661	Print copy	Print Copy	Peer Reviewed
33	Mating strategies of solifugae Galeodes Olivier 1791, (arachnida: galeodidae) in laboratory conditions	2018	2455-9571	https://www.ijzab.com/	Print Copy	Peer Reviewed
34	A Study of Avian fauna at Ralamandal Wildlife Sanctuary,	2018	0976-9498	Print copy	Print Copy	Peer Reviewed

	Ralamandal, Dist. Indore (MP)					
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38	English as a global language	2017	2249-5967	https://www.garbhanal.com/	Print Copy	Peer Reviewed
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40	Water Management, Challenges and Solutions, Vision - 2050	2017	2454-5406	Print Copy	Print Copy	Peer Reviewed
41	Watershed – Its Development, Management and Role of Geologist.	2017	2454-5406	Print Copy	Print Copy	Peer Reviewed

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44	Carbon Sequestration In 15 Woody Plants Found In Dhar, Alirajpur & Jhabua Dist. of M.P.	2017	0973-9661	https://ircpaper.blogspot.com/	Print Copy	Peer Review
45	Adsorption of Crystal Violet Dye from Wastewater by Zeolite Synthesized from Coal Fly Ash	2017	2394-3386	http://www.ijetsr.com/faq.html	Print Copy	UGC Approved
46	QSAR Study of Some Anti-Hepatitis B Virus Agents Comprising 4-Aryl-6-Chloro-Quinoline-2-Ones and 5-Aryl-7 Chloro-1,4-Benzodiazepines	2017	2394-3386	http://www.ijetsr.com/faq.html	Print Copy	UGC Approved
47	Use of Effective Herbal Plants Against Tick Removal In Mhow Region (M.P.)	2017	0973-9661	Print copy	Print Copy	Peer Reviewed

48	Hunting Behavior And Stenophagous Diet Of Spider Myrmacophage Amyciaeaforticeps	2017	0973-9661	Print copy	Print Copy	Peer Reviewed
49	Time Related Expulsion of Heligmosomides polygyrus in Mice vaccinated with adultsomaticantigens	2017	0973-9661	Print copy	Print Copy	Peer Reviewed
50	Narmada Nadi ke Bhotik Rasayanik Manako ka Muliyankan	2017	2394-5303	https://www.vidyawarta.com/03/	Print Copy	Peer Reviewed

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POLAROGRAPHIC AND ANTIMICROBIAL STUDY OF BENZOTHIAZOL- 2-YLSULFANYL ACETIC ACID (SCHIFF BASE) AND THEIR Fe (II), Co (II) COMPLEXES

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Abstract:

We have synthesized benzothiazol-2-ylsulfanyl acetic acid (Schiff base) and their Fe (II), Co (II) complexes were studied in the presence of DMF media at pH 7.2±0.1 by polarographic method. Benzothiazol-2-ylsulfanyl acetic acid (Schiff base) and their Fe (II), Co (II) complexes produces a well-defined direct current Polarogram DCP and differential pulse polarogram DPP in 0.04M Britton Robinson buffer (supporting electrolyte) at pH 7.2±0.1. Lingane method has been applied for the determination of stability constant of the complexes show stoichiometric 1:2 (M:L) ratio. Schiff base and their iron, cobalt complexes were tested for antimicrobial activity against bacteria, B. *Subtilis* and E. *coli* by serial tube dilution method. The results showed that the Schiff base became more pronounced when binding with metal ions take place and formed complexes.

Key words: Schiff base, benzothiazol-2-ylsulfanyl acetic acid, DPP, DCP, metal complexes, antimicrobial activity.

Introduction:

Organic compounds containing a highly polar or unsaturated bond are reduced by dropping mercury electrodes into the polarographic method[1]. Heterocyclic compounds containing sulfur, which contain the functional group N=C-S, N-N-S, -NH-CS-S-, -SH generate a well defined anodic waves[2-4]. Benzothiazole and its derivatives have been reported to have a variety of applications such as biochemical, analytical and metal complexing agents[5]. Our interest in benzothiazol-2-ylsulfanyl acetic acid is due to the presence of N=C-S and O=C-O moiety as they play an important role in chemotherapy and pharmaceutical importance[6]. Polarographic method is applicable for oxidation reduction behavior appears in the solution-mercury interface of the compounds and can be useful as a physiological perspective. In this article we described the polarographic behaviour and antimicrobial activity of benzothiazol-2-ylsulfanyl acetic acid (Schiff base) and their metal complexes.

Experimental:

Material and Methods

All organic chemicals used in this polarographic and antimicrobial study were A.R. grade. 2-Mercapto Benzothiazole (MBT) (Sigma Aldrich Chemicals Pvt. Lt.), absolute Ethanol(E. Merck) were used after distillation. Fe (II) and Co (II) chloride (E. Merck) were used as received with no further purification. Elico DC Polarograph Model CL-362 used for Direct Current Polarogram DCP and Differential Pulse Polarogram DPP, and pH of all the test solution measured by digital pH meter (systronic MK VI). Stock solution of Schiff base and their iron, cobalt complexes are prepared in DMF solution. Britton- Robinson (0.04M) buffer was used for pH control and prepared by using a mixture of boric acid, acetic acid, phosphoric acid and sodium hydroxide. The polarogram of Schiff base and their metal complexes were recorded at -1100 mV (maintaining the initial potential). Melting points for compounds were identified using open glass capillary methods and were not corrected. The purity of the compounds was regularly verified using silica gel-based thin-layer chromatography (TLC). Elemental analysis (CHNS) was analyzed by Elemental Vario Analyzer and

Oral drug delivery: A molecular mechanism and its production

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Abstract:

In the past, apothecaries later took over the preparation of medications from doctors. Today, the discovery of new drugs depends on the cooperation and work of highly qualified scientists at academic institutions and for-profit businesses. The most popular method of drug administration among all those that have been investigated for systemic drug delivery using diverse pharmaceutical products in various dose forms is oral drug delivery, which has been known for decades. Pharmaceutical products with an extended release (E.R.) or controlled release (C.R.) mechanism have gradually gained medical acceptance and popularity over the past ten years since their introduction to the market received regulatory approval for marketing and their clinical advantages over pharmaceuticals with an immediate release mechanism have come to light.

Introduction:

A constant state blood or tissue level that is therapeutically effective and nontoxic for a long time is the fundamental aim of therapy. A key component in achieving this goal is the formulation of an effective dosing regimen.[1]. To create a degree of in vivo environment in which the medicine is delivered, the main goal in the design of a dosage form is to optimize the administration of the medication. This is typically done by increasing the amount of medicine available, i.e., by aiming for the highest rate and volume of drug absorption. However, regulating bioavailability in order to lower drug absorption rates means controlling drug activity through formulation as well.[2]. Altered release Drugs that had lost their marketability due to the need for frequent dosing, dose-related adverse effects, and gastro intestinal problems have found fresh life thanks to oral dosage formulations.[3]. To obtain the necessary blood concentration level and therapeutic effect, drug ingredients that may need to be taken up to four or six times daily may be made into an extended-release dosage form, allowing the modified tablet or capsule to be taken only once or twice per day. For an oral dosage form, drug diffusion, dosage form erosion, osmosis-mediated drug delivery, among other mechanisms, can be used to modify drug release. [4]. Maximum therapeutic advantages are delivered via an ideal dosage form, while any negative side effects are kept to a minimum.[5]. There is growing interest in drug delivery methods that regulate drug release rate and are site-specific. Several diverse systems are utilized to regulate drug release rate, including enteric coating, osmotic pump, prodrugs, transversal patches, matrix tablets, and capsules. [6].

A controlled drug delivery system is desirable if it can distribute the drug locally or systemically at a predetermined rate for a predetermined amount of time.[6]. Controlled release, programmed release, sustained release, scheduled release, delayed release, extended release, and various dose forms are among the phrases that are frequently used interchangeably.[7]. Contrary to sustained release systems, which

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MICROBIAL ANALYSIS OF WATER SAMPLES FROM DIFFERENT LOCATIONS IN GHSC, INDORE CAMPUS

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ABSTRACT :Humansneed drinking water to survive and water may contain many harmful constituents which should be considered before consuming.The aim of the study was to investigate microbial quality of drinking water on Govt. Holkar Science College campus to ensure the health of students. Atotal of 15 drinking water samples collected from various water sources on campus were analyzedaccording to guidelines by WHO and ICMR. Out of 15 locations water samples from 7 locations showed positive presence of coliforms and the remaining 8 water samples were safe for drinking purpose.

KEY WORDS : Water analysis, MPN, Microbes.

INTRODUCTION

Clean and safe water is an absolute need for health and productive life. Good quality of drinking water is one of the most important human necessities, and the lack of access to adequate safe water supplies leads to the spread of diseases (Howard and Bartram, 2003). Almost 10 % of the global disease burden could be avoided by improving water supply, sanitation, hygiene and management of water resources (WHO 2008). Assessment of water is essential in order to provide quality drinking water for human consumption and for everyday domestic purposes. Microbial water quality is a measure of the microbiological conditions of water which includes the concentration and prevalence of pathogenic microorganisms (Pachepsky *et al.*, 2018). Indicator organisms are commonly used to assess the microbiological quality like faecal coliforms. These coliforms are indicative of the general hygienic quality and potential risk of infectious diseases from water. High Total cpliforms counts in water are usually manifestedin the form of diarrhoea, fever and other secondary complications.

The aim of this study was to investigate the microbial quality of drinking water from various water sources of Government Holkar Science College.

MATERIALS AND METHODS

A total of 15 drinking water samples collected from various water sources of campus of Government Holkar Science College district Indore were analyzed in the Department of Microbiology. The samples were collected aseptically in sterilized containers and tested according to the guidelines by WHO and ICMR in 'WHO guidelines for Drinking Water Quality' and 'Manual of Standards of Quality for Drinking Water Supplies' (WHO 2010). Two hundred milliliters of water samples from each source were collected in sterile glass stoppered bottles for microbiological examination. The samples were transported and stored strictly in accordance with guidelines described in standards methods. Presumptive coliform count test based on multiple tube fermentation method to estimate the most probable number (MPN) of coliform organism in 100 ml of water for diagnosis of bacteriological contamination. The test was carried out by inoculation (for 48 hours at 35°C) of measured quantities of sample water (0.1, 1.0 and 10 ml) into tubes of double and single strength McConkey's Lactose Bile Salt Broth with Bromocresol purple as an indicator. The tubes showing gas formation were regarded as 'Presumptive Coliform Positive'. The results of MPN are interpreted by MLG Appendix 2.05 MPN Table 1 for the number of tubes showing acid and gas fermentation by coliform organisms to define the sample as satisfactory or unsatisfactory (Tillett 1987). Presence of *E.coli* was confirmed by subculture on MacConkey agar and EMB agar followed by Gram's staining.

ELEMENTAL INVESTIGATION OF SEWAGE SLUDGE SAMPLES USING SYNCHROTRON RADIATION BASED XRF SPECTROMETRY

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Abstract: *The present work describes the capability of synchrotron radiation X-ray fluorescence technique for the determination of various elements that subsist in sewage sludge collected from sewage treatment plant (STP) before and after adsorption of Malachite green (MG), Crystal violet (CV) and Brilliant green (BG) dyes. The sludge was activated at 9000C for 30 minutes and tried as a good adsorbent for the removal of these industrial dyes from wastewater samples. Various elements have been identified by comparing the SRXRF spectra of as collected, activated and dyes treated sewage sludge samples excited using X-ray energy of 18.9 keV. Our results demonstrate the presence of two major elements Fe and Ca and twelve minor elements in sewage sludge samples. Gallium was added as an internal standard. It was found that their concentration value increased in activated sewage sludge and decreased in dyes treated sludge samples. The concentration of various heavy metals such as Zn, Cu and As varies in these sludge samples but were found to be within the WHO permissible range.*

Keywords: **Synchrotron Radiation, X-ray fluorescence, Elemental Analysis, Sewage Sludge, Dyes.**

1. INTRODUCTION

Dyes are widely applied in the paper, leather, fur, hair, drugs, cosmetics, waxes, greases, plastics and textile materials.[1] The textile dying industry produces a large amount of effluents and solid waste every day.[2] It is responsible for an immense source of water pollution.[3] Most of the synthetic dyes are toxic and carcinogenic, possess a severe health risk to human health.[4-5]

Dyes containing wastewater is usually treated by physical methods such as adsorption,[6] coagulation-flocculation,[7] froth-flotation,[8] ion exchange[9] and electrocoagulation.[10] Chemical pathways such as Fenton process,[11] ozonation process[12] and biological processes,[13] such as decolourization & biodegradation,[14] anaerobic-aerobic,[15] degradation & detoxification.[16] Activated carbon has been extensively studied and might be the most widely used adsorbent for the treatment of color effluents in the past few years.[17-18] However, due to its high price, activated carbon could not be used in developing countries.

Industrial waste and city sewage are the enormous source of water pollution. It produces pollutants that are extremely harmful to people and the environment.[19] Sewage sludge consists of by-products of industrial wastewater treatment. It is a mixture of water, inorganic, and organic materials. It is also referred to as bio-solids.[20] Due to extensive industrialization, the world is faced with problems relative to its management.[21]

Presently sludge is being used in the cement industry as an alternative fuel source,[22] it is also used in land application,[23] forestry and nurseries.[24] Efforts have been made to utilize this waste material for some useful purpose by converting it to a cheap adsorbent material and see its utility in the removal of dyes and heavy

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AVIAN DIVERSITY: A REVIEW

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ABSTRACT

Bird species will be able to survive in the urban landscape or not, depends on their ability to adapt or the available resources. Birds and their melodious song increase the quality of life, especially for people living in urban areas. Nowadays city planners are making these habitats attractive, so that this may increase the faunal diversity. The current review aims to provide an analysis of avian fauna recorded. Wetland birds and terrestrial species are included from various water bodies and greenspaces of this area.This review highlights various aspects of avian diversity which were enlisted over these years and it will also form a base for further research.

Keywords: Indore, Avifaunal Diversity, Indices, Urban and Line transect.

1. INTRODUCTION

Avian diversity is also a bio-indicator of various habitats [1]. Current development in cities embodies one of the irreversible transformationsfor existing floral and faunal diversity [2]. Several factors like noise, light and water pollution etc. can indirectly affect bird capacity to survive and reproductive capacity in these areas [3]. Ornithologists have explored several ways of bird count techniques and have given simpler techniques for the researchers [4]. With all the guides and books, the data interpretation of avifaunal diversity is comprehensive [5].

Birds are a significant element of global biodiversity [2]). There are about 1,314 species from the Indian Subcontinent, out of which 450 species are reported from Central India [34]. In recent years, ornithologists have delved into various habitats and highlighted that birds are highly sensitive to obnoxious conditions. Estimation of avian diversity is an essential tool in the assessment of ecological health (Qualitative and Quantitative) of an ecosystem [13].

Since, land-use patterns have changed over the years, the emergence of pastures over the forest covers, farming croplands, botanical gardens, and highly urbanized human-dominated habitats. So, by calculating the avian diversity, one can estimate ecological health in both ways qualitatively and quantitatively. It's study functions as an ecological tool. As we know it performs several other functions in the ecosystem for example as a pollinating agent, seed dispersal, and disease regulation [2].

2. REVIEW

Balkhande [6] studied the avifaunal nesting pattern at Devi Ahilya Vishwavidyalaya, Indore (200 acre) by using line transect method and reported 34 bird species which belonged to 23 families in a period of one month. While studying nesting patterns of 6 different bird species were found breeding and nesting in the college campus. Species wereWhite breasted water-hen, Red wattled lapwing, Red vented bulbul, Common swallow, Ashy Prinia and Ring dove. They have concluded that the campus was sustaining many bird species because of dense greenery and maintenance. Rapid urbanization is immensely altering the environment for birds and these effects were seen in the study conducted by [7] at Ralamandal Wildlife Sanctuary, Indore (M.P.). There were 2 species of great concern i.e. Egyptian vulture, which comes in Endangered category and Alexandrine parakeet, was found to be in Near threatened category.

Similarly, 51 species of Avian fauna were observed in the campus of Government Holkar Science College, Indore and only 1 species (Alexandrine parakeet) was found in Near threatened category of IUCN. Thus, areas like college campus are excellent places as they contain mature trees and dense foliage. In spite of the fact that campus has good ecological health, proper maintenance is required to increase the number of species dwelling in the area [8],[9].According to the studies done by [10] sites of Indore city have a potential of sustaining a greater number of avian faunas shortly. Their study was the first-ever record of avian species in the Meghdoot garden, Nehru park and Lalbagh. Their findings support the scope of conservation of these spaces for increasing the number of species shortly. They have prepared a record of the Residential, IUCN and WPA status of the birds recorded in four sites of Indore city for one-year duration (2018). The results showed that there were five species as winter migrants, one as summer migrant, six as local migrants, and 46 as resident species.

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DIVERSITY AND RELATIVE ABUNDANCE O BUTTERFLY SPECIES OF FAMILY LYCAENIDAE (ORDER: LEPIDOPTERA) AT GOVT. HOLKAR SCIENCE COLLEGE, INDORE (M.P)

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ABSTRACT :The present study has been carried out to investigate the diversity status of butterflies of butterfly family Lycaenidae at the campus of Government Holkar Science College, which is situated in a region of Indore where a dense population resides. This investigation was conducted over a period of 9 months, from October 2021 to June 2022. A total of 21 species of butterfly of the family Lycaenidae are found from 18 different genera, 2 subfamilies, and 4 tribes. 9 new species for the study area has also recorded. The Lycaenidae butterflies commonly look blue when they open their wings. The structure and number of black spots, lines, and curves on the underside surface of wings make them identifiable. The identification of these butterflies required the keen study of their analogs. The slight difference in the analogue of individuals changes the species. Taking all the identification keys into consideration, this investigation has been done. The Campus of Holkar Science College and its central gardens were taken into the study area for the broad findings of Lycaenidae butterflies. The butterflies recorded are very common- 4, common-6, less common-2, rare 4, and very rare-5. Remarkable findings of this study are Common Red Flash, Angled Pierrot, Large Oakblue, Rounded Pierrot, Dark Grass Blue, Tiny Grass Blue, Plains Cupid, Forget-Me-Not, Pea Blue, Common Lineblue, and Tailless Line blue. The most abundant butterfly species are Red Pierrot, Zebra Blue, Gram Blue, and Tiny Grass Blue observed on campus. The purpose of this study is to conserve these important species of butterflies, which indicate environmental health condition.

KEY WORDS : Database, Diversity, Entomophily, Holometabolous, Landscape.

1. INTRODUCTION

Butterflies are insects having colored scaly wings. They belong to the order Lepidoptera of class insecta. Butterflies are very reactive in nature towards varying environmental disturbance and variations. They are a very important constituent of open habitat and they are considered as an indicator of environmental quality (Kocher & William, (2000). They are also considered as a central pollinator because they keep visiting flowers for nectar consumption (Sharma, 2021). The butterfly superfamily Papilionoidae consists of six different families out of which the family Lycaenidae covers 30-40% species of total species. Lycaenids are very small butterflies from all other species from different families and these are also known as "Blues", "Coppers", "Hairstreaks", and "Metalmarks" (Kanagaraj & Kathirvelu, 2018). The largest Lycaenid found in India is Large Oakblue (Arhopala amantes) with a wingspan of 51mm (Wikipedia), and smallest lycaenid is Grass Jewel (Chilades trochylus) with a wingspan of 15mm. The study of butterflies of Lycaenidae becomes very interesting because they possess various different intriguing characters and features. Many butterfly species of Lycaenidae family shows association with ants, termed as Myrmecophily. This relationship is likely to be based on specific exocrine gland secretions and vibrational communication (Fielder, 1995). A butterfly Red Pierrot (Talicada nyseus), its larvae forms a burrow in the fleshy leaves of Bryophyllum and spends its larval stage in the middle of leaves till the pupation.

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A CHECKLIST OF DIVERSITY OF BUTTERFLIES IN MADHYA PRADESH, INDIA

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ABSTRACT : A checklist of butterfly species diversity recorded from Madhya Pradesh. A total of 166 species belonging to 7 families were recorded. Madhya Pradesh also known as Heart of India is largest state of central India covering an area of 3,08,252 sq/km which is 9.38% of the total geographical area of the country. It shares its border with Uttar Pradesh, Chhattisgarh, Maharashtra, Gujarat, and Rajasthan. Total forest area of Madhya Pradesh is 80.9 million hectare and consists of 11 National parks and 25 sanctuaries spread over an area of 10,862 km that is 11.40% of total forest area. The vegetation is mostly deciduous forests with mixed forest as well. Being rich in vegetation Madhya Pradesh is home to several species of butterflies. Studies on butterflies of central India dates back to Forsayeth (1884), Swinhoe (1886), Betham (1890,1891) and Witt (1990). Some books on fauna in Madhya Pradesh include Evans,1932; Talbot,1939,1947 and Wynter-Blyth,1957. In recent years several enthusiast have studied butterflies in M.P. This paper is compilation of all the studies and records of species of butterflies found in M.P.

Key words : *Checklist, Butterflies, Species, Madhya Pradesh.*

INTRODUCTION

Butterflies are beautiful flying creatures that humans are attracted to since ages. They are not only beautiful but play a very important role in our ecosystem. They act as pollinators and transfer pollen grains while they are feeding on the nectar from the flowers. Butterflies also help in producing genetic variation in the plants as some butterfly species migrate over long distance and share pollens across plants which are far away from one another. This helps plants to become disease resistant. Butterflies are an important part of food web. They act as a food source for many birds, spiders, bats and lizards. It is observed that breeding season of many birds depend upon maximum availability of caterpillars to feed their young ones. Loss of butterflies will result in the collapse a delicate ecosystem.

The world is facing a very big problem of biodiversity loss due to increase in pollution, population, habitat destruction and global warming. Increase in temperature due to global warming and decrease in precipitation adversely affects ecosystem. Analysis of the impact of these changes on our ecosystem is very important. Also due to these changes in environment many organisms are extinct, while some are endangered which further disturb the ecological balance. Biodiversity conservation and management is therefore a worldwide concern. Bio-indicators play a very important role in the conservation and management of biodiversity. Bio-indicators are group of living organisms which are used to assess the health of the natural ecosystem and biogeographic changes taking place in the environment.

Butterflies are considered as one of the best bio-indicators as they are extremely sensitive to any changes in their environment like temperature, light ,rainfall, humidity & loss of habitat .They also have short life cycle due to which their response to change is quick and easily visible. Butterflies are indicators of a healthy environment. Their abundance indicates healthy ecosystem whereas decrease in their number shows disturbance in ecosystem. Change in Habitat & climate coupled with the loss of habitat are the biggest threat to butterflies. At present there are 315 butterfly species in red data Book, and many of them are extinct. Therefore survey to evaluate status of butterflies is very important for conservation of butterflies and ecosystem.

Table. 1 List of butterflies recorded from Madhya Pradesh.

S.	Species	Common name	Distribution
	Family : Papilionidae		
1.	*Graphium agammenon* (Linn.)	Tailed Jay	Hoshangabad, Nimar, Umaria (Chandra et al.,2000b; Choudhary & Khan, 2002), Indore (Pawar *et al.*,2017), Ujjain (Shouche *et al.*,2015)
2.	*Graphium sarpedon* (Linn.)	Common blue bottle	Panna, Umaria (Choudhary & Khan,2002 and Siddiqui & Singh,2004)
3.	*Graphium sarpedon*	Common jay	Indore (Pawar *et al.*,2017), Ujjain (Shouche *et al.*,2015), Betul (Bhowate et *al.*,2020), Shahdol (Maini *et al.*,2017), Ujjain (Kesharwani & Shukla,2016)
4.	*Pathysa nomius nomius*	Spot swordtail	Balaghat, Hoshangabad, Mandla, Panna, Seoni, Umaria (Siddiqui & Singh 2004; Chandra *et al.*,2002; Choudhary & Khan,2002; Chandra *et al.*,2000b; Betham,1890-91), Kanha-pench (Harsh *et al.*,2015), Indore (Pawar *et al.*,2017)

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Physico-Chemical analysis of water of sonar river Damoh district (M.P.)

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Abstract
Water is the basic necessity for a living being and detritions in the quality of water led to many harmful impacts. Water is regarded as 'polluted' when it is changed in its quality or compositions, directly or indirectly as a result of human activities, so that it becomes less suitable for drinking, as well as domestic and other purposes. Pollution of fresh water results largely from the waste disposal. Most of the rivers have become darkened with sewage, chemicals and other undesirable foreign extraneous matter. Moreover, the rivers carry and deposit their pollutants in to the ocean. Hence, the oceans are also polluted by toxic wastes which cause contamination of sea-foods on a large-scale. The present study has been made to analyze the physicochemical parameters of the Sonar river at Damoh district. Samples were collected season wise from sampling site for analyzing the various physicochemical parameters such as Temperature, pH, TDS, Conductivity, DO, free CO_2, Sulphate, Phosphate, Nitrate, BOD, COD. The work highlights the condition of this river water in various seasons with respect to the parameters mentioned above.

Keywords: Physico-chemical parameters, Sonar River, Damoh, pollution.

1. Introduction
Water is a resource that has many uses, including recreation, transportation, and hydroelectric power, domestic, industrial, and commercial uses. Water also supports all forms of life and affects our health, lifestyle, and economic wellbeing. Although more than three quarters of the earth's surface is made up of water, only 2.8 percent of the Earth's water is available for human consumption (Iskandar, 2010) [1].

Fresh water is a finite resource, essential for agriculture, industry and even human existence, without fresh water of adequate quantity and quality, sustainable development will not be possible (Kumar, 1997) [2]. Rivers play a major role in assimilation or carrying off of municipal and industrial wastewater and runoff from agricultural land, the former constitutes the constant polluting source whereas the latter is a seasonal phenomenon (Muduli, *et al.* 2010) [3].

A majority of developing countries are in the tropical zone and have fast growing human population. Therefore, there is constant increase in the demand of food, fuel, fiber, medicine and constructions. It results in the exploitation of natural resources. In many countries including India, the rivers are not only being exploited but are also used as dumping places for effluents, sewage and solid wastes. Direct or indirect contact of chemicals or waste water to the sources of drinking water cause the undesirable changes in it which becomes dangerous for all living things. Considerable investigations of physico-chemical properties of the river water are carried out in India (Borse, *et al.* 2003, Singh and Gupta, 2004, Barai and Kumar, 2012, Deshmukh, 2012, Chaurasia and Karan, 2013, Napit, 2014) [4-9].

A water body affects the environment in its vicinity, like charging of ground water tables, conditions of climate etc. Most of the people like washer man, and fisherman, living in the surrounding area depend on this source of water for their survival. Any damages to this water source by any agency will not only make life miserable but that will also disrupt the aquatic ecosystem. It is therefore necessary to study the quality of river water, on the basis of physico-chemical parameters so as to assess its potability.

Damoh is a district of Madhya Pradesh State located in Central India. The district is part of Sagar Division. It is situated in the north-eastern part of the State and geographically located at 23°09' north latitude and 79°03' east longitude.

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Comparative study of Routine fertilizer V/s Soluble Silica fertilization

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ABSTRACT : Silicon is considered as a beneficial element which helps plants to overcome various biotic and abiotic stresses. The use of silicon for fertilization of plants may become important for farmers to get good quality and improve yield of crops in near future. Application of silicon is eco-friendly and can also be used in organic farming. The present research was undertaken to compare fertilization efficiency of silicon in the form of soluble silica with that of routine NPK fertilizers. Five treatments were designed for cultivation of banana viz Control (not supplied with any fertilizer), T1 (Routine NPK fertilizer), T2 (0.75 ml/L soluble silica), T3 (1 ml/L soluble silica) and T4 (1.25 ml/L soluble silica). Vegetative parameters of banana plant were positively affected by fertilization with soluble silica. Better results were obtained with use of soluble silica fertilizer than routine NPK fertilizer. Highest significant increase in the number of bananas in a single hand and the weight of a single hand was observed in T3 treatment (1ml/L soluble silica). Positive correlation was observed for weight of single hand of banana with pulp and peel ratio and number of banana in single hand. It was concluded from the present study that soluble silica could be used as a substitute of routine NPK fertilizer for improving yield.

KEY WORDS : Agribooster, banana, pulp to peel ratio, vegetative parameters.

INTRODUCTION

Fertilizers have become an important factor which is used by farmers to increase yield and improve quality of product. Silicon though shows a remarkable role in the growth of plants but is not used as fertilizer. However silicon has shown to enhance growth and productivity. The second highest element in earth's crust after oxygen is silicon. Silicon is not considered among the essential elements required for healthy growth of plants but is found to impart resistance against various biotic and abiotic stress. Silicon is reported to improve tolerance of plants against drought stress by maintaining water balance and increasing photosynthesis (Melo *et al*., 2003). In modern agriculture, Si is well recognized as a useful nutrient for a number of crops including rice, and plays a significant role in the growth and development (de Camargo *et al.*, 2019). Many studies have reported the positive effects of Si on crop yield (Alovisi *et al.*, 2014; Emam *et al.*, 2014; Gholami and Falah 2013; Kim *et al.*, 2012).

One of the depositors of silicon is banana (Henriet *et al.*, 2006). In India, bananas are the second most principal fruit crop. Banana is a member of Musa species. Export potential of bananas is also good. It has high nutritive value, is easily digested and also cheaper than other fruits (Gopalan *et al.*, 1989). Grand Nain is the most popular variety of banana.

Increase in resistance of plants can help in better growth and productivity. Present study was conducted to compare the potential of silicon fertilization in the form of soluble silica with that of routine fertilizer in improving vegetative growth of bananas.

Optimization of dyeing condition for *Eucalyptus globulus* leaves extract with natural mordants

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ABSTRACT : The demand for eco-friendly products is increasing day by day; naturally dyed fabric is one of them. In the present study, *Eucalyptus globulus* leaves extract was taken as a dye source. Alum, *Musa acuminata* Pseudostem sap, *Terminalia chebula* fruits, and *Punica granatum* rinds were used as bio- mordant. Dyeing conditions such as concentration of mordant, pH, temperature and time affects dyeing quality. Optimization of different dyeing conditions was assessed by colour strength (K/S value).The condition with highest colour strength was selected for optimization. Each mordant gave the highest results in different conditions with *Eucalyptus globulus* dye.

KEY WORDS : *Eucalyptus globulus,* dyeing, optimization, colour strength

1. INTRODUCTION

Interest in the application of natural dyes has been growing rapidly due to the result of stringent environmental standards imposed by many countries for harmful and hypersensitive responses associated with synthetic dyes (Grover and Patni 2011). With the world's situation getting more cognizant of ecology and environment there is a greater need today to revive the tradition of natural dye (Thiyagarajan et al. 2016). Textile industries commonly use chemical/ synthetic dyes in the dyeing process which are not safe for dyers, consumers, and the environment. On the other hand, natural dyes are biodegradable, safe to use, non-carcinogenic, non-allergic, non-toxic, easily biodegradable, and available in huge quantities (Gulrajani and Gupta, 1992). The fabric or fiber dyeing process requires dye and mordant which is generally produced by chemical or synthetic material. In the natural dyeing process dyes also need mordant/fixative to adhere to the fabric. Mordants are the substance which is generally used for the fixation of dye on fabric. Mordants include certain salts of aluminium, chromium, iron, potassium, and sodium. Usually, natural dyes are applied on fabric with chemical or synthetic mordants by dyers. This is neither completely natural dyeing nor ecofriendly. The long-term exposure to these chemical dyes and mordants reported skin irritation, respiratory problems, even organ damage with prolonged time (Krewski et al. 2007). Dyeing comprises three steps –exhaustion, diffusion, and migration. In dyeing with natural dyes, the role of auxiliaries needs to be studied and procedures developed to optimize their use for dye uptake enhancement. The dyeing process is influenced by the concentration of mordant, pH, temperature, and time. These parameters can be standardized with the assessment of colour strength. The reason behind the less use of natural dyes in the textile industry is difficult to recreate the same shade (Khatri and White 2015). Optimization of dyeing conditions provides a way to produce almost similar shade on fabrics. Therefore, optimization of each dyeing parameter was accessed

"The quantification of microorganism in soil of potato fields of Indore district of Madhya Pradesh"

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ABSTRACT : The microorganisms of the rhizosphere are one of the important biotic factors for plant growth. These microorganisms are responsible for plant growth and sometimes pathogenic microorganisms can cause disease in the plant. The rhizosphere is a defined region of soil, it is directly influenced by soil microorganisms. In the present study, we have assessed the quantity of bacterial as well as fungal species using serial dilution methods followed by defined media plates. During the seedling stage, the peak of vegetative growth and fruiting of the potato fields of Indore district of Madhya Pradesh. The bacterial counts were recorded low (4.46×10^6 CFU gm-1 of soil) in the seedling stage and observed high (7.06×10^6 CFU gm-1 of soil) during the peak of vegetative growth followed the fruiting stage of potato in the rhizosphere of the potato fields while bacterial count were recorded high in rhizoplane during the vegetative growth of the potato plant. The quantification study of fungus from rhizosphere region and rhizoplane samples of Potato fields were done from different three tehsils of Indore district of Madhya Pradesh, reported the range from 2.77 ×103 to 4.94×104 CFU gm-1 in rhizosphere soil.

KEY WORDS : Bacterial isolates, Fungal species, Rhizosphere, rhizoplane .

INTRODUCTION

The recently human population increasing by alarming rate so far 7.8 billion have been reported by 2020 (Worldometer) and it is increasing drastically every second. India also possess second most position in the world in terms of human population. In India, the most of the population depended on the staple food crops, viz. rice, maize, wheat and after meet for their routine needs of hunger. Following these cereals comes the fourth most important and staple food crop worldwide i.e. Potato (*Solanum tuberosum*) (Hong *et. al* ., 2017 and Spooner, 2013). Potato being the king of non-grain food commodities, also faces a number of soil-borne diseases. According to a study, potatoes experience more than 40 types of diseases and pests from insects, nematodes, viruses, bacteria and fungi (Fiers *et. al.*, 2012).

On the basis of the type of damage the soil-borne diseases causes in potato, they are grouped into two broad categories viz. (i) symptoms showing damage to tuber and; (ii) symptoms showing damage to other parts of plant (Gudmestad *et. al*., 2007 and Fiers *et. al.*, 2012). Among the various causative agents, the one which causes immense loss to the potato industry are fungal infections. The prominent fungal diseases of potato are Late Blight of potato, Silver Scurf, Pink rot, Dry rot, Verticillium wilt, Rhizoctonia and Early Blight of potato Early Blight disease is a wonder in its name itself. On the contrary to its name, this disease does not happens any early in the growing period of potato. Moreover it occurs at the time of maturation (El-Mougy and Abdel-Kader, 2009). The fungus responsible for causing Early Blight is Alternaria solani (Herriott *et. al.*, 1990 and Mamgain *et. al.*,

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A REVIEW STUDY ON AZO DYES AND ITS METAL COMPLEXES

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Abstract
Dyes play a very important role since ancient time in human civilization. Azo dyes are the dominant class of commercial dyes and emergence of new technologies has stimulated a renewed interest in their chemistry. Interest now extends from the more traditional fields of textile dyeing and effluent degradation to areas as diverse as optical data storage, ink-jet printing, biochemical assays and potential pharmaceutical treatments. One important area of study is that of intermolecular interactions. Metal complexes of dyes play an important role in inkjet printing, nano chemistry, supramolecular chemistry and in various research fields. In this paper a systematic study on review of azo dyes and metal complexes has been carried out. With the help of this review a new researcher can be start a research works in the field of dyes and its metal complexes.

Key word: Azo dyes, matal complexes, sudan dyes, liquid membrane, spectrophotometry.

Introduction:

A dyes or dyestuffs are usually Colored Organic compounds, that may be used for imparting colour to a substrate such as cloths, paper, plastic or leather in a reasonably permanent fashion. The dye is generally applied in a solution and may be required a mordant to improve the fastness of dye on fibers. Previously dyes were obtained from animals or vegetables sources. Now a day's most of the available dyes are synthetic dyes prepared by aromatic compounds which are obtained from coal tar or petroleum.[1]

Azo Compounds are very important class of chemical compound, receiving attention in scientific research. They are highly colored and have been used as a dyes and pigments for a long time[2, 3]. Furthermore, they have been studied because of their excellent properties in applications such as optical recording medium[4, 5, 6], toner[7, 8], ink-jet printing[9, 10], oil soluble lightfast dyes[11] etc. Recently azo metal chelates have been increasing attention due to their interaction with metal cations[12].

This research paper is mainly concerned to a systematic review study on complexation behavior of transition metal complexes of azo dyes.

Review and history of Dyes Metal Complexes:

Dyes play an indispensable role in human history since ancient time. Dying processes are often considered as an important characteristic of a particular civilization or culture. Dyes are almost used in every commercial product such as food, clothing, pigments and paints etc. There are many different classes of dyes in which Azo dye is certainly one of the most important class. About half of the dyes used in industries are azo dyes. *William H. Perkin* produced the first synthetic dye in 1856. The brilliant work of Perkin in this field attracted much attention and stimulated other chemist to carry out similar experiments. In 1880's ***John Peter Griess*** discovered diazo compound which laid to the foundation for the development of azo dyes. The first true azo dye is called **Bismark Brown** was developed by *Matrius* in 1863. In nineteen century most of the dyes were synthesized.[13]

The survey of literature reveals that a kind of work has been done on the complexation behavior of metal ions with different compounds. Transition metal complexes of amino acids and peptides show that the most attention has been paid on the stability constant, structure and mechanism of interaction of complexes formed [14]. In the field of transition metal ions the stability constant of polyamino chelates of

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FORGERY OVER GENUINE SIGNATURE

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ABSTRACT

Many times a disputed document bears genuine signature but the actual person whose signature is on the document denies that he has never signed such document. Forgery of this kind is also prevalent in few numbers of cases. The forger anyhow obtains a genuine signature either by request being known to the forger or by chance gets some blank paper which bears his genuine signature. After that the signed document is utilized by him to create forgery. For example a receipt of advance of rupees 5000/- was denied by the person whose sign was there on the receipt and a signature was obtained by the employee on blank sheet when the employee has joined the service and then utilized by the forger to prepare the forged document. This research paper focuses on the forgery by a fraud in which forged document has been prepared by the forger over genuine signature.

Keywords: Forgery, Genuine Signature.

I. INTRODUCTION

Any document with suspected origin, contents and manner through which it is produced is fall under Questioned document. [1] These types of documents are not genuine because it is made fraudulently for gaining some benefits. The forgery is as ancient as writing and in a number of ways a forged document can be produced which becoming updated by time and era. [2] To distinguish a forged writing/signature from genuine one, it is necessary to consider the characteristics features of genuine signature. Documents feature prominently the financial, legal, business, social and personal affairs. Also these documents involved in fraud, forgery, counterfeiting, impersonation, blackmail, threat or murder, etc. [3]

Many different techniques are adopted to produce a forged document. The easiest process is the process of tracing where the forger has the model of genuine signatures. The forger does not know that it is the most easy to detect. In such cases the forger does not possess the necessary skills to adopt Line quality, Speed, Manner of formation of letters and to the spacing and connecting stokes in genuine signatures in simulation process which is most difficult process and requires writing skills of superior class/grade.

Another easy method to prepare the forged document is forgery over genuine signature. It will depend upon the ingenuity to prepare a genuine signature on a plain paper/stamp paper with some excuse. Forgery can also be done through transplant process from photocopied method and by removing the original writing on some document through chemical erasure & then prepare forged document. Many other types of forgery and purpose related with it are described following:

1. Sometimes a signature is obtained from old relative for preparing some application to be submitted in government department to corporation for sanction to do repair/addition in building plan etc.
2. Sometimes a signed plain paper/stamp paper is given to close relative to give to advocate for submission an application, Affidavit etc.
3. In case of requirement one needs a loan for money lends.
4. To get signature of a recruited employee on the day offering him job in office/factory.
5. On the other opposite case a staff member may get a genuine signature of the proprietor/Sr. officer, kept between various letters for signatures at lower location of the page.
6. To make use of genuine signature signed with much space left in between the text written typed above.
7. To make use of blank space left between.

This research paper focused on forgery over genuine signature where two examples are discussed one includes Stamp Paper and a bank cheque related with it and second is a Receipt.

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Biodiversity and Concentration of Airborne Fungi in different locations of Indore city

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ABSTRACT : The extramural investigation was undertaken to study the biodiversity of aeromycoflora of the Indore city. The investigation period was of three months i.e. December 2017- February 2018. Air sampling was done daily by using a settled plate method. A total of 155 fungal colonies and other types have been identified from the outdoor air. The total number of fungal spore types and other types trapped from extramural investigation were 423540/m3 from different locations of Indore. The dominant species were *Aspergillus* sp. (43.11%) and *Alternaria* sp. (38 %) followed by *Rhizopus* sp. contributed (10.4%), *Mucor* sp. (8.4%), *Penicillium* sp. (7.8%), *Candida* sp. (2.6%) and *Cladosporium* sp. (1.3%). Unidentified fungi also contributed about (12.4%). Fungal spores and pollen grains act as aeroallergens. The presence of aeroallergens can be of great significance because they can cause Asthma, Allergic rhinitis, Skin and other allergic disorders in humans. Plants are also affected by the occurrence of aeromycoflora. The airborne fungal spores show great variation in composition and concentration from place to place and time to time. Hence aeromycological study was carried out in different extramural locations of Indore city.

KEY WORDS : Outdoor location, *Aspergillus*, Allergens, Biological pollutants

INTRODUCTION

The study of aeromycoflora of particular region provides the clear view about interaction of fungal spores in the form of disease on plants as well as occurrence of allergy in human being. If the specific fungal allergen is identified, the most effective therapy is specific hyposensitization, as complete avoidance is impossible [1]. So, it is of great clinical value to know the identity of the dominant airborne fungi in a particular area, as the fungal population varies from one place to another. Fungal spores are one of the dominant components in the air and on account of their dimensions (several micrometers), they are classed as bioaerosols[2]. Their occurrence is dependent on organic material or as parasites (mainly plant pathogens), so the majority of fungal spores in the air outdoors come from farms, forest land and decomposing plant matter [7]. The report from all over the world now clearly showed that fungal spores play a significant role in the etiology of respiratory allergic disorders. When sensitive individual inhaled the aerial fungal spores, allergic symptoms are noticed. In order to identify the dominant fungi, an aeromycology investigation has been conducted in the atmosphere of Indore.

MATERIAL AND METHOD

Present study was carried out in between the months of December 2017- February 2018 Total 12

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Original Research Paper | Biotechnology

OPTIMIZATION OF MEDIA AND PH FOR PRODUCTION OF SECONDARY METABOLITES IN *Invitro* CULTURES OF *Bacopa Monnieri* (BRAHMI)

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ABSTRACT Leaf explants of *Bacopa monnieri* were inoculated in MS and B5 medium supplemented with auxin 0.5 mg/l 2, 4 –D. The effect of media adjusted with variable pH (2,4, 6, 8) was studied on growth and production of secondary metabolites. It was observed that leaf explants cultured in MS and B5 medium supplemented with 0.5 mg/l 2, 4 –D with variable pH significantly affect the callus biomass and secondary metabolites production in *B. monnieri* cultures. MS medium with 2, 4-D (pH-6) and B5 medium with 2, 4-D (pH-4) significantly enhanced the callus biomass production. Whereas for secondary metabolite production, MS medium with 0.5 mg/l 2, 4 –D (pH-8,) was found best for production of alkaloids and pH-4 for phenol production and not significantly affect on flavanoid and saponin. On the other hand, B5 medium with 2, 4-D (pH-6 and 4) was found best for alkaloid and flavanoid whereas pH-8 significantly affect the phenol and saponin production respectively. Both the MS and B5 medium supplemented with 0.5 mg/l 2, 4 –D at pH-2, in which growth was not observed. The study signifies the effect of pH and media composition on the growth and medicinal value of tissue culture of *Bacopa monnieri*.

KEYWORDS : *Bacopa monnieri*, Secondary metabolites, Callus induction,

INTRODUCTION

Bacopa monnieri (L.) Pennell (Scrophulariaceae), commonly known as 'Brahmi' in India, is one of the sources of the medhya rasayan drugs of Ayurveda. *Bacopa monneri* is a small, annual, succulent creeping herb with fleshy leaves. The plant grows in wet, damp and marshy areas. It is distributed in the wet and marshy lands throughout India, Nepal, Sri Lanka, China and Hawaii. The ayurvedic uses of Bacopa on anxiety, epilepsy, bronchitis and asthma, irritable bowel syndrome and gastric ulcers[1]. The *in vitro* propagated medicinal plants provide a ready source of biochemical characterization and identification of phyto-constituents[2]. *Bacopa monniera* contained alkaloid brahmine, nicotinine, herpestine, bacosid, triterpenoid saponins, betulinic acid, stigmastanol, -sitosterol, stigmasterol and pseudojujubogenin glycoside[3]. Most secondary metabolites produced by plants exhibit different biological activities, which are used as pharmaceuticals, agrochemicals, flavors, fragrances, colors, biopesticides, and food additives[4]. So tissue culture technology has been known as an effective tool to propagate several valuable medicinal plants. Therefore now plant tissue culture has been included as an important tool under biotechnology so that production of metabolites of medicinal value from callus cultures through plant tissue culture paves an efficient way in intervening with the depletion of natural resources thereby, leading to the conservation of endangered plants. Plant cell and tissue culture technique has immense potential to enhance the synthesis and production of secondary metabolites of medicinal importance. Hence this technique was explored in our study to obtain callus biomas and production of secondary metabolites which endows value to the medicinal plants.

MATERIALS AND METHODS

Young and healthy plant of *Bacopa monnieri* were collected from Maharaja Ranjit Singh College of Professional Sciences, Indore (M.P), India. Leaves were used as explants material.

Surface sterilization:

The explants were washed with mild detergent under slow running tap water for 15 min followed by wash in sterile distilled water. The explants were transferred to laminar airflow then surface sterilized with 70% ethanol for 30 second and then the explants were surface sterilized with 0.1% HgCl2 for 2 min and washed thoroughly with sterile distilled water to remove any traces of mercuric chloride. The explants were inoculated on MS medium and B5 medium supplemented with 0.5 mg/l+2, 4-D with varied pH. (2, 4, 6, 8). The cultures were then incubated at 28 ± 2°C under fluorescent tubes in culture room.

Extraction and estimation of secondary metabolites:- Callus biomass was harvested and dried in hot air oven at 50°C then extracted with 70 % alcohol. 10 mg methanolic extract was diluted upto 15 ml distilled water and sample was prepared. Then 1 ml diluted sample was taken into the washed test-tube and 1 ml distilled water was added to make up 2 ml total volume. The test-tubes were kept into oven at 50°C till dried.

Estimation of total alkaloids:- 5 ml phosphate buffer (pH-4.7) was added to dried 1 ml methanolic extract and then 4 ml BCG (Bromocresol green) was added. 4 ml Chloroform was added and mixed well. Now absorbance was taken at 470 nm in spectrophotometer. The quantitative estimation was performed with atropine as standard[5].

Estimation of total flavanoids:- 4 ml distilled water was added to the dried methanolic extract and after 5 minutes 0.3 ml 5% sodium nitrite ($NaNO_2$) was added. Now 0.3 ml 10% Aluminium chloride ($AlCl_3$) was added and after 6 minutes 2 ml 1M NaOH was added following by addition of 2.4 ml distilled water added. Now absorbance was taken at 510 nm in spectrophotometer. The quantitative estimation was performed with Rutin as standard[6].

Estimation of total phenols:- 0.4 ml Folin- Ciocalteu's reagent was added to dried 1 ml methanolic extract and after 5 minutes sodium carbonate solution was added. Then 3.6 ml distilled water was added to it and kept for 90 minutes incubation period. Now absorbance was taken at 750 nm in spectrophotometer. The quantitative estimation was performed with Gallic acid as standard[5].

Estimation of total Saponins:- 1.75 gm (0.7%) vanillin was diluted into 250 ml 65% H_2SO_4 and after cooling 5 ml solution was added to dried 1 ml methanolic extract and cyclomix the sample. Then the tubes were kept in water bath at 65 °C for 1

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PERIPHERAL LEAF ARCHITECTURAL STUDIES OF SELECTED SPECIES OF *MALVACEAE* IN INDORE CITY

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ABSTRACT : Plants of Malvaceae are well known for their exploitation for varied purposes like medicinal, economical and edible.The *Malvaceae* family comprise of plant members that are distributed throughout the world. Over the time, the members of this family have been used traditionally in treatment of ailments, as an antiseptic etc. The present study describes and compares the leaf architecture of six different members of the family. The difference among the species members have been postulated based on the shape, apex, base angle, texture, length of leaf etc. Other parameters that were considered include laminar symmetry, size, apex angle, base shape, margin,vein spacing and category. The plants include *Sida acuta, Hibiscus sabdariffa, Kydia calycina, Gossypium herbaceum, Malvastrum coromandelium* and *Chorchorus trilocularis.* The highest degree of venation order resolved was up to third (5°) degree. The number of primary (1°) veins, secondary (2°) veins and the venation patterns all vary from species to species. The study suggests that leaf architecture and venation patterns can be used to determine the clades within the family and can also be used to describe the relation among closely related species and in identification of the plant.

KEYWORDS : Malvaceae, *Sida acuta, Hibiscus sabdariffa, Kydia calycina* and *Chorchorus trilocularis.*

INTRODUCTION

Malvaceae is ecologically and economically important plant family that is widely distributed in tropics and subtropical areas. Majority of its species are found in Mexico, Africa, America, Madagascar and India. The morphological features of the members of *Malvaceae* include alternately arranged leaves which might be compound or palmately lobed and veined.

The study of leaf architecture is useful as different taxa have consistent patterns of leaf architecture that can be recognised at different taxonomic levels, from subclasses to species (Hickey 1975). Anatomical foliar data are often useful for solving problems of differentiating closely related taxa or for supporting morphological homologies (Stuessy 1990).

In the present investigation different members of the *Malvaceae* family were gathered from the forest of indore region and their leaf architecture and venation pattern were analyzed.

A review of the literature revealed that the leaf architecture of the members of family Malvaceae had also been done by Saibaba *et al.* (1990), Kunnur and Kotresha (1993), Bhat (1995), Larano *et al.* (2010) and Aworinde et al. (2012). But the leaf architectural studies of the species of Malvaceae from indore region is yet not carried out. Therefore, it is attempt to collect and identify the species of Malvaceae on the basis of micromorphological characters of the foliar venation pattern. This study is aimed to record the leaf architecture of some species of family Malvaceae.

MATERIALS AND METHODS

Plant Identification

The plants were identified with the help of the flora(Flora of Madhya Pradesh BSI).

Collection of Samples

The leaf samples were collected from parts of Indore (M.P.) region were analyzed for the presence of Malvaceae plants. The leaf samples were collected in sterile polybags for further study.

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FOLIAR MICROMORPHOLOGICAL CHARACTERIZATION OF EPIDERMIS IN SOME COMMONLY CULTIVATED SPECIES OF *MALVACEAE*

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ABSTRACT : Micromorphological characters of epidermis in some commonly cultivated species of *Malvaceae* were studied. Epidermal cells were found to be rectangular in shape,arrnagement was random or tetragonal or linear elongated with surface ornamentation either absent or with some thickened areas.Trichomes were present.stomata paracytic proper or polycytic cyclocytic or axillocytic or anomocytic. Leaves are hypostomatic or amphistomatic. Long axis of guard cell is parallel to major venation or random orientation over most of the surface, except for areas over veins. In hypostomatic leaves i.e in *Hibiscus rosa sinensis* stomatal index was 25 (approx) on upper surface and 19.40 (approx) on lower surface of leaf whereas in *Bombax ceiba* it was found to be 39.28 (approx). In amphistomatic leaves *Althea rosea* stomatal index was 40 (approx) on abaxial surface and 23.86 (approx) on adaxial surface whereas in *Abelmoschus esculentus* on abaxial surface stomatal index was19.04 (approx) and on adaxial surface stomatal index was 40 (approx). In *Malachra capitata*, on upper surface SI was 30 (approx) and on lower surface SI was 37.5 (approx). Stomatal index can therefore be used for both classification and definition purpose in the taxa.

KEY WORDS : *Hibiscus rosa-sinensis, Alcea rosea, Bombax Ceiba, Abelmoschus esculentus, stomata, epidermal cell, stomatal index*, paracytic, polycytic.

INTRODUCTION

Malvaceae are important not only economically but for edible purposes also.It is known to be exploited for their medicinal potential. Most of the species are significant, may be used as textile fiber such as cotton *Gossypium sp* and *Ceiba pentandra* (kapok), or for ornamental purpose Dombeya, Hibiscus (mallows), and Tilia (linden tree) or for Medicine like *Abutilon indicum (*Hindi-Kanghi) for fibre like *Corchorus* spp. (jute),or for food such as *Abelmoschus* (okra) and flavoring plants such as *Theobroma cacao*,for chocolate. Many others, such as *Adansonia digitata* (baobab), are of great local ecological value. Anatomy is a very useful tool for identification in taxonomy. Leaf epidermal characters can prove to be of great significance with respect to identification of a particular plant species and formulation of artificial key. In green leaves stomata are also present along with the epidermal cells, when stomata present on both surfaces (amphistomatic leaf) or on only one, either the upper (epistomatic leaf) or more commonly on lower that is hypostomatic leaf. In leaf epidermal anatomy, the number, form, and arrangement of specialized epidermal cells are associated with the stomatal guard cells. Stomatographic studies are valuable taxonomic and systematic evidence. The present study is an attempt to study the qualitative and quantitative characters of foliar epidermis.

MATERIALS AND METHODS

Sample collection

Samples of leaves of the four plants viz. *Hibiscus rosa-sinensis, Alcea rosea, Bombax Ceiba, Abelmoschus esculentus and Bombax ceiba* were collected from different localities of Indore city.

Plant Identification

Plants were identified using Flora of Madhya Pradesh (BSI).

Preparation of Leaf Sample

Fresh leaves of Hibiscus, Hollyhock, Ceiba and Okra were taken and washed properly to remove all dirt and dust, following which they were pat dried using a whatman filter paper.

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CANCER: A CHALLENGE

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Abstract: Cancer is a major cause of death in humans. Cancer is a term used for a group of diseases that cause cells in the body to change and grow out of control. Cells in the body of an individual grow and divide continuously to maintain the organism. These divisions are controlled by a complex system- The cell cycle control system. However, when this cell-cycle regulation is lost, the resulting uncontrolled growth leads to the formation of primary tumor. Cancer cells can detach from the primary tumor and circulate through the blood and the lymphatic system and invade other parts of the body to form a new tumor. In this review literature we are focusing on the breast cancer and its socio impact in the population.

Key Words: Breast cancer, p53, BRC gene.

Introduction:

Breast cancer is the third largest public health problem worldwide. According to Global Cancer Statistics 2011 [Jemal et al., 2011], the breast cancer incidence rate in India is around (17.2%) of all the cancers, and stands second in the number of cancer cases overall. Breast cancer is a complex and heterogeneous disease, with distinct biological features and clinical behavior. It is commonly used to define cancer of the female though it occurs in men too, accounting less than 1% of all the cases of cancer in men [Sharon et al., 2004].

Classification of breast tumors

Breast cancer is a broad term encompassing distinct tumor phenotypes with different gene expressions and outcomes. Generally the breast cancer patients can be grouped into two subtypes:

1. The luminal (A or B)
2. The non-luminal subtype.

The luminal subtype includes those which express estrogen receptors. The non-luminal subtype includes the ones not expressing them.

The non-luminal subtypes can be further sub classified into two groups, those expressing human epithelial growth factor receptor 2(HER-2) and those not expressing either ER or HER-2. This latter group is also called the basal subtype [Pepper corn et al., 2008]. Based on the gene expression microarray data, five subtypes of breast tumors are defined: basal-like, HER2-enriched, luminal A, luminal B, and normal-like tumors [Perou et al., 2000]. The molecular subtypes are believed to partly reflect the cell-type from which the tumor originates and to follow different tumor progression pathways. Indeed, it has been shown that

PERCENT OCCURRENCE OF BIRDS RECORDED IN INDORE CITY OF MADHYA PRADESH

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ABSTRACT

Indore city (Coordinates: 22°43′0″N 75°50′50″E) is situated in Madhya Pradesh and it has several green spaces constructed and maintained by Indore Municipal Corporation. A yearly survey was conducted in 2018 by adopting line transect method in four sites i.e. Meghdoot Garden, Nehru Park, Lalbagh and Pipliyapala Regional Park. The aim of the present study was to estimate the percent occurrence of observed bird species on the basis of their sightings; they were marked as Common, Uncommon, Occasional and Rare. The results showed that very few species were rare because these green spaces provide perfect environment for these species to develop and thrive in these environments.

KEYWORDS

Individuals, Birds, Percent occurrence, Indore and Green-spaces.

INTRODUCTION

Birds are found almost everywhere because they are very dynamic; they can easily be seen and are widely studied for several purposes. Birds can indicate the overall habitat quality and act as a bio indicator of inhabited areas. As we know birds are dependent on different habitat, their population trends can tell us about how well the ecosystem is functioning [1]. The Indian subcontinent is very rich in biodiversity. It is a part of the vast Oriental bio-geographic region. There are approximately more than 9,990 bird species recorded on our planet, out of which, the Indian subcontinent is home to more than 1,300 bird species (over 13%) [2]. the population of

Effect on lipid profile in mice experimentally infected and vaccinated with *Aspicularis tetraptera*

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Abstract
The present study was aimed to find out the effect of *Aspicularis tetraptera* parasite (nematode) on lipid profile level (triglyceride, cholesterol, HDL and LDL) of mice infected and vaccinated with somatic antigen. The mice carrying heavy infection showed decrease in lipid profile values but after vaccination of somatic antigen, lipid profile values became normal.Experimental results reveal that egg somatic antigen are most effective.

Keywords
Aspicularis tetraptera, Triglyceride, Cholesterol, HDL, LDL, Lipid Profile.

Introduction

Helminths are multicellular parasitic organism having medical and economic value. Many human beings and domesticated animals were found infected worldwide by parasite of helminth. Interestingly it was reported that parasite (helminths) survive as adults for 1-2 years [1]. Helminths were key factor of morbidity and mortality, especially in developing countries [2]. The World Health Organisation report indicates that more than 2.5 billion human are found infected with parasitic worm [3]. Intestinal helminths infections are more in children [4]. An estimate indicate that by year 2025, approximate 57% of human population (countries developing) may be infected [5-6] by helminth infection. Helminth borne diseases are primary factor in lowering the productivity of useful animals. This was mainly due to mortality and reduced weight gains etc. [7-8]. This problem is severe in tropical countries where rains are good [9-10].The parasitic oxyurid nematode of the genera *Aspicularis* are detected routinely within rodent families. Despite of control measures the presence of rodent pinworm indicates deficiencies in the diagnostic and eradication process. Due to failures in identification of the presence of parasite, many institutions are not in position to; suggest effective treatment for the eradication of pinworms [11].The oxyurids (Pinworm), *Syphcia muris, Syphcia obvelata* and *Aspicularis tetraptera*, are common parasites which belong to laboratory rodents. The pinworms were seen to affect weight and growth and on one side create various disorders of the intestine on other side [12, 13, 14, 15, 16, 17].The gastrointestinal helminths became resistant to anthelminthic drugs when they were regularly used which create problem in treatment of helminthic diseases [18]. Looking to the importance of problem present study was undertaken to evaluate efficacy of somatic antigen on lipid profile level in infected and vaccinated mice.

RESEARCH ARTICLE

DYE YIELDING PLANTS OF BARWANI DISTRICT, MADHYA PRADESH

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Abstract: Natural dyes are colours obtained from plants, invertebrates or minerals. Vegetable dyes from angiosperm plant sources comprise major part of natural dyes. Further, other biological sources such as fungi and lichens also contribute in the production of natural dyes. Due to the discovery of synthetic dyes in nineteenth century a marked decline in the use of natural dyes was experienced. Now-a-days extraction and use of natural dyes is confined as traditional knowledge (TK) among the rural people of few villages only. Barwani district in Madhya Pradesh has few areas where this TK is still in practice among the villagers. District is situated on the south-west part of Madhya Pradesh and lies between 21°37'N-74°27'E and 22°22'N-75°30'E. In the present communication TK available with the villagers in Barwani district is documented using semi-structured questionnaire. During field survey in the study area, 11 plant species are recorded which are used as a source of natural dyes was experienced. Now-a-days extraction and use of natural dyes in confined as traditional knowledge (TK) among the rural people of few villages only.

Keywords: Natural dyes plant, Indigenous knowledge, Medicinal uses, Angiosperm

REFERENCES

Jain, S. K. and Rao, R.R. (1977). A Handbook of field and Herbarium Methods. Today and Tomorrows Printers and Publishers, New Delhi, India.

Singh, N.P., Khanna, K.K., Mudgal, V. and Dixit, R.D. (2001). Flora of Madhya Pradesh, Vol. III, BSI, Culcutta, India.

Das, P.K. (2010). Ethna - Colour concept Among some Tribals Inhabiting in selected villages of Ganjam District, Odisha, India. Ethnobotanical Leaflet, 14:743-50.

Mohanta, D. and Tiwari, S.C. (2005). Natural dye yielding plants indigenous knowledge on dye preparation in Arunachal Pradesh, Northeast India. Current Science 88 (9) : 1474 - 1490.

Kappor, V.P. and Pushpangada, P. (2002). Natural dye based harbal gulal. Nat Prod. Ra 11(2): 8-14.

Teron, R. and Borthakar, S.K. (2012). Traditional knowledge of Herbal Dyes and Cultural significance of colors among the Karbis Ethnic Tribe in Northeast India. A Journal of ethnobatany Research & Application, 10 : 593 - 603.

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THE COMPARITIVE STUDY OF SEED YIELD IN DESI AND KABULI VARIETIES OF CHICKPEA (*Cicer arietinum L.*)UNDER MOISTURE STRESS AND NON- MOISTURE STRESS ENVIRONMENT.

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ABSTRACT : Seed yield is the most important quantitative trait of any field crop. It is a significant economic trait which is controlled polygenically. The current study was conducted to understand the effect of moisture stress on seed yield among different cultivars of chickpea and it was observed that the influence of environmental fluctuations was exerted on the seed yield at both levels i.e. between the planting environments and within the planting environments.

KEY WORDS : Cultivars, Randomized block design, Polygenic.

INTRODUCTION

India has the largest acreage and production of pulses accounting for 37 percent of area and 27 percent of world production and chickpea is a major grain legume of the country.it is mainly a rainfed crop sown in Rabi when the moisture is still retained in soil. However when the crop is irrigated there is a marked increase in the seed yield of different cultivars within the planting environments and between the planting environments.(kambale, *et al.* 1984). It was also observed that it's a polygenically controlled trait and several other trait contribute towards this trait.

MATERIALS AND METHODOLOGY

The present investigation was undertaken to investigate the comparative seed yield of desi and kabuli types of chickpea varieties *(Cicer arietinum l.)* under irrigated and rainfed environment. The experimental investigation was carried out at Department of Botany, Holkar Science College, Indore during rabi season of 2015-16 and 2016-17. The experimental site was divided separately into two blocks one for rainfed plantings and another for irrigated plantings.

Six well established cultivars of both desi and kabuli varieties of chickpea were sown in complete randomized block (RBD) design with three replications in both rainfed and irrigated planting environment. The number of lines per plot was four and the plant to plant distance was 20 cm and row to row distance was 30 cm. During both the years pre sowing irrigation was provided for both the plantings to ensure proper germination. The basal application of di-ammonium phosphate at rate of 100 kg/ha was applied for healthy crop stand. The other cultural practices were also adopted to ensure normal crop growth and development of crop and to protect it from pests. (Murray and Zalucki,1990).

The irrigation was provided at time of moisture stress in irrigated plantings to avoid any stress to the crop during both the years. Under rainfed planting environment no irrigation was applied during entire crop season and the experimental material was raised under natural moisture stress condition. The crop was harvested at maturity when seventy five percent of crop turned yellow. Observation in both rainfed and irrigated environment were recorded on selective single plant in each replication during both the years and the data was subjected to statistical analysis.

RESULT AND DISCUSSION

From the experimental field one plant from each replication from both rainfed and irrigated environment was uprooted and the total weight of all seeds obtained from a single plant after threshing was recorded and was analyzed. The variation in seed yield per plant recorded under irrigated and rainfed environments for desi and kabuli varieties of chickpea during 2015-16 and 2016-17 are presented in table 1.

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BIOLOGICAL CONTROL ON MOSQUITO POPULATION BY *BRADINOPGYA GEMINATA*

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ABSTRACT : Insects of order Odonata regarded as "very beneficial insects" as the large sized larvae of dragonflies and damselflies prey upon the smaller sized larvae in aquatic habitats. At the immature stage of mosquitoes, they are easy to capture as prey as they are less mobile and remain concentrated at a place. Damselfly and dragonflies are important predators of many micro invertebrates including mosquito larvae in their larval stages. Here, in this study, I am focusing mainly on the 12th instar of *B.geminata* and its predation on mosquito larvae as prey preference. According to the recorded data, it is clear that *B.geminata* larvae were found to consume mosquito larvae in significant number. One instar of *B.geminata* could consume up to 15 mosquito larvae in one hour from the beginning of the experiment and up to 50 larvae in 48 hours. The main reason of this study is to help to stop the transmission of mosquito borne diseases through bio controlling agents. From the results, it is evident that 12th instar of *B.geminata* can consume enough larvae of *A.culicifacies* and it also needs to be experimented in their natural field conditions.

Key words : *Dragonflies, Bradinopgya Geminata, A.culicifacies, Mosquito Control, Holkar.*

INTRODUCTION

The biological control of mosquitoes in their larval stages with the use of their natural enemies like some efficient predators, pathogens and parasites, is very beneficial in human protections. It can be gained without having any effect on biodiversity and without having ecological problems.

According to Thorp and Covich (2001), Insects of order Odonata regarded as "very beneficial insects" as the large sized larvae of dragonflies and damselflies prey upon the smaller sized larvae in aquatic habitats. Adult dragonflies feed on blackflies, mosquitoes and other kind of blood sucking flies and are important biocontrol agent of these kinds of harmful insects. Many species of order Odanata which inhabits in agro ecosystems exhibit crucial role in controlling pest populations.

At the immature stage of mosquitoes, they are easy to capture as prey as they are less mobile and remain concentrated at a place. Damselfly and dragonflies are important predators of many micro invertebrates including mosquito larvae in their larval stages (Corbet,1980).

The odonate species as *Crocothemis servilia*, *Enallagma civile*, *Sympetrums triolatum*, *Orthemis ferruginea*, *Pantala hymeneae*, *Bradinopyga geminata* and *Ceriagrion coromandelianum*, were already recorded as mosquito larvae predators in earlier studies in different regions. Here, in this study, I am focusing mainly on the 12th instar of *B.geminata* and its predation on mosquito larvae as prey preference.

MATERIAL AND METHODS

Sirpur tank is situated close to the western periphery of the Indore city along the NH 59. It is a grand water reservoir especially acclaimed for its population of numerous migratory birds. During the rainy season of month July,2018, this experiment was carried out at the laboratory of Govt. Holkar Science College, Indore.

This experiment was done to determine the effect of dragonfly on the rate of emergence of mosquito larvae. *B.geminata* larvae collected from Sirpur lake, were used for the experiment to feed upon mosquito larvae. 200 mosquito larvae were used under three separate tests. Three glass jars filled with carbon filtered 500 ml water were taken as 1. Loose *B.geminata* larvae, 2. *B.geminata* larvae in net and 3. No *B.geminata*. All mosquito larvae used in this experiment were *Anopheles culicifacies* cultured in the laboratory. After introducing to the jars, the mosquito larvae were counted at every 5 hours for 3 days. All three separated tests were performed in 10 sets of experiments and each larvae of *B.geminata* was used only once.

Anopheles larvae were preferred in this experiment as larvae of this species are easiest to identify in the fields. These larvae do not have siphon and stay parallel to water surface. They were also cultured in our laboratory of Govt. Holkar Science College, Indore by methods of (Gahan,1966).

RESULTS AND DISCUSSION

The effectiveness predatory potential of *B.geminata* larvae was recorded for 3 days at interval of 5 hours. In the three sets of experiments, the average values were calculated for the three replicates. The results of consumption of mosquito larvae in all three sets are provided in Graph and Fig. According to the recorded data, it is clear that *B.geminata* larvae were found to consume mosquito larvae in significant number. On an average, one instar of *B.geminata* could con-

Study of Sodium Arsenate Induced Haematological Changes in Catfish, *Clarias batrachus*

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ABSTRACT

In the present study haematological parameters of control and sodium arsenate affected Clarias batrachus were observed, and provided an experimental view on arsenic contaminant. The action of sodium arsenate on experimental animal is well known and several studies have shown that chronic exposure to low levels of arsenic can also cause anaemia. The result of present study indicate that the RBC, Hb, Platelets, PCV, MCV and MCH value were decreased, fluctuation in differential leucocytes count and increased in the number of WBC due to exposure of sodium arsenate.

KEYWORDS: *Clarias batrachus*, Hb, Platelets, RBC, Sodium arsenate, Toxicity, WBC.

INTRODUCTION

Environmentally heavy metals are defined as total condition surrounding an organism or group of organism especially, the combination of external and physical conditions that affect and influence the development, growth and survival of the organisms. Heavy metals are largely found in dispersed form in rock formations. Increasing industrialization and urbanization have the anthropogenic contribution of heavy metals in the biosphere and had the largest availability in soil and aquatic ecosystems and to a relatively smaller proportion in the atmosphere as particulates. Its toxicity in animals varies with animal species, specific metal, concentration, chemical form and pH, as many heavy metals are considered to be essential for animal growth. Heavy metals are significant environmental pollutants; their toxicity is a big problem of increasing significance for evolutionary, ecological, environmental and nutritional reasons [1].

Arsenic is a naturally occurring element found widely in the environment. However, on recent days the level of arsenic (arsenic trioxide, arsenic pentaoxide, sodium arsenate, sodium arsenite etc.) in the environment has increased several folds due to its use as

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HISTOPATHOLOGICAL INVESTIGATION OF *FASCIOLA HEPATICA* INFECTED LIVER OF GOATS OF INDORE REGION

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ABSTRACT : Liver fluke disease (fascioliasis) is an important parasitic disease which is responsible for morbidity and mortality in most species of animals, like sheep, goat and cattle, as well as other domestic ruminants. The common causative agents are *Fasciola hepatica* and *F. gigantica*. The study aimed to investigate the gross and microscopic histopathological changes with chronic goat liver Fascioliasis in Indore region.

The histopathological examinations illustrated presence of different lesions in the liver parenchyma including, hepatocytes swelling, fatty changes, accumulation of bile pigment in bile canaliculi, congestion, Lymphocytes, neutrophils and eosinophils infiltration, pericellular fibrosis, extensive fibrosis and liver cirrhosis.

KEY WORDS : Histopathology, liver fluke, Goat and Fasciola *hepatica*

INTRODUCTION

Parasitic diseases are the major obstacle in growth and development of animal health (Aza et *al.,* 2010). Fascioliasis is a disease caused by fluke infestation in the livers and bile ducts of sheep, goat and cattle. The pathogenic effect of this parasite is extended over a large number of these domestic ruminants; like cattle, sheep, goats and buffaloes are mostly affected and drain a substantial economic loss to the country annually. Two highly infective species are identified as *Fasciola hepatica* and *Fasciola gigantica. F. hepatica* survives in a variety of climatic conditions while *F. gigantica* is generally dominant in tropical areas of many countries of the world. Infection with *Fasciola gigantica* is regarded as one of the most common single helminth infection of ruminants in Asia and Africa (Hammond & Sewell, 1990). These flukes mainly attack the liver, where they reside and graze on the mucosa of the bile duct and hepatic parenchyma resulting in massive tissue damage (Mas-Coma *et al.,* 2005). Fascioliasis is distributed almost worldwide and parallels that of endemic animal illness. This disease causes enormous economic losses all over the world and these losses are due to reduction in milk and meat production, condemnation of liver, loss of draught power, reproductive failure and mortality (Diaw *et al.,* 1998). A liver fluke burden can result in deterioration in wool quality, reduced meat and milk production and ill-thrift in young stock. Stock may die from heavy burdens. If flukes are detected in livers at the abattoir, the livers are condemned as unsuitable for human consumption (Talukder *et al.,* 2010; Muirson, 2011)). The gross pathological changes of the liver may have an irregular outline, being pale and firm. The ventral lobe is most commonly affected and reduced in size. The liver pathology of chronic disease is characterized by hepatic fibrosis and hyperplastic cholangitis. Several different types of fibrosis may be present and include post-necrotic scarring, ischemic fibrosis and peribiliary fibrosis. Fluke eggs may sometimes stimulate a granuloma-like reaction with obliteration of the affected bile ducts as a consequence. In bovines calcification of bile ducts, enlargement of the gallbladder and aberrant migration of the flukes is more common (Badr and Nasr, 2009). Recently, worldwide losses in animal productivity due to Fascioliasis were conservatively estimated at over US $ 3.2 billion per annum. In addition, Fascioliasis is now recognized as an emerging human disease. The World Health Organization (WHO, 2006) has estimated that 2.4 million people are infected with *Fasciola hepatica* and a further 180 million are at risk of infection. The study aimed to investigate the gross and microscopic histopathological changes with chronic goat liver Fascioliasis in Indore region.

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नर्मदा नदी में मत्स्य प्रजातियों की विविधता,वर्तमान स्थिति तथा उनका संरक्षण

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शोध सारांश -

जैवविविधता का वास्तविक अर्थ जीवों की शारीरिक,जातिगत एवं पारिस्थितिक तंत्र के अनुरूप पाई जाने वाली विविधता और विशिष्टता से है। यह तीन आधार ही जीवों की समग्रता, जनसंख्या तथा विशिष्ट आनुवंशिक लक्षणों को भी निर्धारित करते है। मत्स्य विविधता में जैविक, अजैविक कारक तथा पारिस्थितिकी तंत्र महत्वपूर्ण भूमिका निभाते है। मध्यप्रदेश की जीवन रेखा कही जाने वाली नर्मदा नदी भारत की पाँचवी सबसे बडी नदी मानी जाती है। इस अध्ययन का मुख्य उद्देश्य नर्मदा नदी में पाई जाने वाली वर्तमान (मार्च २०१५ -फरवरी २०१६) मत्स्य प्रजातियों की उपलब्धता से है। इस अध्ययन में यह पाया गया कि वर्तमान में नर्मदा नदी के धरमपुरी, खलघाट, महेश्वर, मण्डलेश्वर एवं बडवाह क्षेत्र में ६२ मत्स्य प्रजातियां , ४४ वंश (जीनस),१६ कुल (फैमिली) एवं ०७ गण (ऑर्डर) रिकार्ड किये गये है। इसमें मेजर कार्प, माइनर कार्प एवं कैटफिश मुख्य है।

मुख्य शब्द - मत्स्य विविधता, नर्मदा नदी, मत्स्य प्रजाति आदि।

प्रस्तावना -

मछलियां कशेरूकी जन्तुओं का सबसे बड़ा वर्ग है। जो मानव सभ्यता के प्रारम्भ से ही भोजन के रूप में प्रयोग की जा रही है। मछली पानी में घुलित आक्सीजन को गलफड़ो के द्वारा पानी के माध्यम से रूधिर वाहिनियो में अवशोषित करती है। तथा पानी के साथ अपवर्ज्य पदार्थ व कार्बन डाई ऑक्साइड को छोडती है। मत्स्य विविधता का अर्थ मत्स्य प्रजातियों में पाई जाने वाली विभिन्नता से होता है। मत्स्य विविधता विशिष्ट प्रजातियों, उनके निवास स्थान एवं इनके मध्य पारस्परिक क्रिया को इंगित करता है। इसके अंतर्गत स्वच्छ जल पारिस्थितिकी में नदी,झीले, तालाब, जलधाराएँ एवं भूजल आदि को सम्मिलित किया जाता है। नर्मदा नदी भारत की पाँचवी सबसे बडी नदी मानी जाती है।मध्यप्रदेश की जीवन रेखा कही जाने वाली नर्मदा नदी का उद्गम अमरकंटक से होता है। नर्मदा नदी का कुल प्रवाह क्षेत्र १३१२ कि.मी. तथा मध्यप्रदेश में नदी का प्रवाह क्षेत्र १०७७ कि.मी. है। नर्मदा नदी मध्यप्रदेश से प्रवाहित होती हुई महाराष्ट्र तथा उसके बाद गुजरात में पहुँचकर खम्भात की खाड़ी (अरब महासागर) भड़ूच के पास मिलती है।

उपकरण एवं विधि -

नमूना क्षेत्र का परिचय - नर्मदा नदी पर निम्नलिखित क्षेत्र के अन्तर्गत वर्तमान में पाई गई मत्स्य प्रजाति का अध्ययन किया गया है।

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नर्मदा नदी की जलीय गुणवत्ता का अध्ययन

आकाश चौधरी
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शासकीय होलकर विज्ञान महाविद्यालय इन्दौर

आर. आर. कान्हेरे
इंदिरा गांधी राष्ट्रीय मुक्त विश्वविद्यालय नई दिल्ली

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****

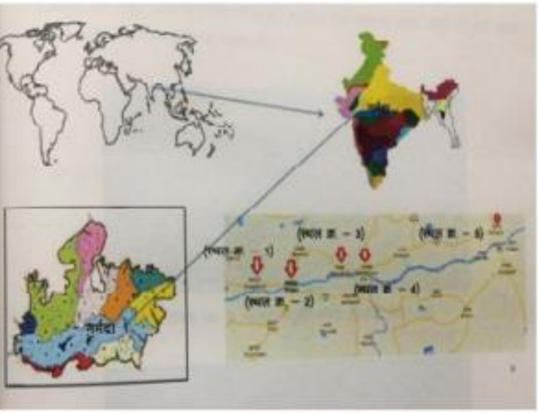
शोध सारांश– नर्मदा नदी भारत की पाँचवी सबसे बड़ी नदी है। इसे मध्यप्रदेश की जीवन रेखा कहा जाता है। इस अध्ययन का मुख्य उद्देश्य नर्मदा नदी की जलीय गुणवत्ता का अध्ययन से है। नर्मदा नदी के धरमपुरी, खलघाट, महेश्वर, मण्डलेश्वर एवं बड़वाह से जल का नमूना (मार्च २०१५ – फरवरी २०१६) लेकर उनका परीक्षण किया गया है। जिसमें वायु तापक्रम, जल तापक्रम, पारदर्शिता, पीएच., बी.ओ. डी., सी.ओ.डी. और डी.ओ. मुख्य मानक है।

मुख्य शब्द – नर्मदा नदी, जलीय गुणवत्ता आदि।

परिचय – जल हमारे लिए एक बहुत ही महत्वपूर्ण प्राकृतिक संसाधन है। पृथ्वी सौरमण्डल का एक मात्र ग्रह है जिस पर जल विद्यमान है। इसके ७०.८७ प्रतिशत भाग पर जल आवरित है जिसका ९७.३९ ... कि.मी. विस्तार मध्यप्रदेश में हैं। जो कुल लंबाई का लगभग ८६ प्रतिशत है। शेष भाग का लगभग १२ प्रतिशत गुजरात में तथा २ प्रतिशत विस्तार महाराष्ट्र में पाया जाता है। नदी के भौतिक गुण में जल का रंग, गंध, तापमान एवं पारदर्शिता महत्वपूर्ण है। उसी प्रकार जल के रासायनिक गुण उसमें घुलित तत्वों की प्रकृति एवं एकल या संयुक्त रूप से उनकी मात्रा पर निर्भर करते है। जल की गुणवत्ता का संबंध अन्य जलीय लक्षणों के सापेक्ष भौतिक और रासायनिक लक्षणों का अध्ययन है। पृथ्वी की सतह पर जल का असामान्य विभाजन और उपयोग में लाए जाने वाले स्वच्छ जल की उपलब्धता में गिरावट जल की गुणवत्ता एवं मात्रा में कमीं के मुख्य कारण है।

उपकरण एवं विधि –

नमूना क्षेत्र का परिचय – नर्मदा नदी पर निम्नलिखित चयनित स्थलों से जल को लिया गया है।



चित्र क्र.– ०१ नर्मदा नदी का नमूना क्षेत्र।

(१) धरमपुरी (स्थल क्र.– १) – नर्मदा के तट पर बसा धरमपुरी नगर जो धार जिले में स्थित है। यह इन्दौर से ९६ कि.मी. दूरी पर स्थित है। यहां का अक्षांश २२° १९' २७" उत्तर तथा देशान्तर ७५° ३१' ५८" पूर्व पर स्थित हैं।

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Original Research Article

Status of serum AMH and lipid profile in polycystic ovarian syndrome

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Abstract

Polycystic ovarian syndrome (PCOS) is the most common causes of chronic an ovulation in young women and affects 5 to 10 % of the female population. Anti-Mullerian Hormone (AMH) level indicate the quantity of the ovarian follicle pool and may be a useful marker of ovarian reserves. Serum AMH level can determine the severity of PCOS women and Its comparison with control subject the present study was planned. Study was carried out in M.G.M. medical college, Govt. Holkar science college and K.R.G's Blessed mom centre from June -2016 to December-2017. The study population consisted of 60 subject among them 30 cases suffering from PCOS aged between 20 to 40 year and 30 age matched healthy women as control. Fasting blood sample were collected from each subject and analyzed for AMH level and Lipid profile by ELISA method and enzymatic method on fully automated biochemistry analyzer. Results Revealed that significant increased serum AMH, Cholesterol, triglycerides, LDL, VLDL levels and decreased HDL level were observed in PCOS cases when compare to control subjects. Study concluded elevated AMH level leads to increases risk of Polycystic Ovarian Syndrome, Hyperlipidemia and associated complications

Key Word: AMH- Anti-Mullerian Hormone, PCOS- Polycystic ovarian syndrome, LDL-Low Density Lipoprotein, HDL-High Density Liporotein, VLDL-Very Low Density Lipoprotein, FSH-follicle Stimulating Hormone

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INTRODUCTION

Polycystic Overian Syndrome(PCOS)is the one of the most common heterogeneous endocrine disorders in women of reproductive age affecting the reproductive, endocrine and metabolic functions[1,2] and its association with menstrual dysfunction and subfertility[3].Prevalence of PCOS is around 5 to 10 % of reproductive age female[4].Anti-MullerianHormone(AMH),also known as Mullerian Inhibiting Substance(MIS), is a homodimeric glycoprotein(5). The AMH belongs to the Transforming Growth Factor beta super family. The gene encoding AMH is located in the short arm of chromosome 19[6]. AMH was produced from 36 weeks of gestation in human granulosa cells and was expressed until menopause[7]. AMH protein expression begins at the primary follicle stage, declines and absent in follicles larger than 8 mm[8]. Important role for AMH in folliculogenesis,[9].During folliculogenesis, AMH play an inhibitory effect on the primordial follicles recruitment as well as on the responsiveness of growing follicles to FSH, suppressing the FSH depending aromatase and also, diminish the LH receptors, thus helping the selection of the dominant follicle or role in follicle recruitment[10] Cessation of AMH production essential for dominant follicle selection[11].The distinctive feature of PCOS is failure of follicular maturation, despite initial recruitment resulting in anovulation and accumulation of preantral and small antralfollicles, which contribute high production of AMH[12,13,14]. Increase AMH may contribute to the development of hyperandrogenism in women with PCOS, and show positive correlation with androgen[15,16]. Hyperandrogenism accelerates pre antral and antral follicular growth in the ovary and increased LH result in premature luteinizationcauring follicular arrest[17], driving increase AMH levels. AMH levels may be related to the severity of PCOS [18], higher concentration of AMH in

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PHYTOCHEMICAL ANALYSIS OF *CARICA PAPAYA LEAVES* & ROOT EXTRACTS AND *CITRUS SINENSIS* LEAVES EXTRACTS.

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ABSTRACT : The leaves and roots of *Carica papaya* and the leaf extract of *Citrus sinesis* were screened for its phytochemical activities. The solvents used for the leaves and root extraction were benzene, acetone, aqueous. Phytochemical properties of leaves and roots of *Carica papaya* and leaf of *Citrus sinesis* obtain from benzene, acetone and aqueous extract were investigated. The result confirmed that the presence of phytochemical in the shade dried extract of *Carica papaya* and *Citrus sinensis*.

KEY WORDS : *Carica papaya* extract, phytochemicals, *Citrus sinensis* extract.

I. INTRODUCTION

Medicinal plants have been identified and used throughout human history. Plants have the ability to synthesize a wide variety of chemical compounds that are used to perform important biological functions, and to defend against attack from predators such as insects, fungi and herbivorous mammals. At least 12,000 such compounds have been isolated so far; a number estimated to be less than 10% of the total Tapsell *et al.* (2006). Chemical compounds in plants mediate their effects on the human body through processes identical to those already well understood for the chemical compounds in conventional drugs; thus herbal medicines do not differ greatly from conventional drugs in terms of how they work. This enables herbal medicines to be as effective as conventional medicines, but also gives them the same potential to cause harmful side effects Lai *et al.* (2004).

Carica papaya is one of the medicinal plants available on the earth; *Carica papaya* belonging to family *caricaceae* is commonly known as papaya in English, papita in Hindi and in Sanskrit. Anonymous, Ayurvedic Pharmacopoeia of India, part 1and Chaudhari *et al.* (1999). Papaya is a powerhouse of nutrients and is available throughout the year. It is a rich source of threes powerful antioxidant vitamin C, vitamin A and vitamin E; the minerals, magnesium and potassium; the B vitamin pantothenic acid and folate and fiber. In addition to all this, it contains a digestive enzyme papaintha effectively treats causes of trauma, allergies and sports injuries. All the nutrients of papaya as a whole improve cardiovascular system, protect against heart diseases, heartattacks, strokes and prevent colon cancer. The fruit is an excellent source of beta carotene that prevents damage caused by free radicals that may cause some forms of cancer. It is reported that it helps in the prevention of diabetic heart disease. Papaya lowers high cholesterol levels as it is a good source of fiber. Aravind *et al.* (2013).

Citrus sinensis belongs to *Rutaceae* family and it is commonly known as sweet orange, Bakshi *et al.* (1999). It is the most commonly grown tree fruit in the world, Maimi *et al.* (1987). The sweet orange is an evergreen flowering tree generally growing to 9 – 10m in height. Its fruit is strengthening, cardiotonic, Laxative, anthelmintic and removes fatigue, Kirtikar *et al.* (1984). It possesses anti inflammatory, antibacterial and antioxidant properties, Ramachandran *et al.* (2002). Its leaves are shiny and leathery, arranged alternatively. Oranges are said to lower cholesterol and aid in the digestion of fatty foods, Cesar *et al.* (2010). The vitamin C in Oranges is concentrated mainly in the peel and the white layer just under the peel. The peel contains citral, an aldehyde that antagonizes the action of vitamin A. Therefore, anyone eating quantities of orange peel should make certain that their dietary intake of vitamin A is sufficient. Audrey *et al.* (1983).

...ESEARCH JOURNAL FOR INTERDISCIPLINARY STUDIES

...Y OF BENTHIC MACROINVERTEBRATE IN SAMALDA ...

...I DHAR) MADHYA PRADESH

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... Science College, Indore, Madhya Pradesh, India

Abstract

...invertebrates are the best bio indicators of the stress ... the diversity of macroinvertebrates in the Samalda ... this area. During the present investigation total ... one year (October 2017 to September 2018). 11 species belongs to ... Division of Annelids and 18 species belongs to Phylum Arthropoda

...Benthic Macroinvertebrates, Samalda reservoir, Diversity and Species

...CTION: Benthic Macroinvertebrates are organisms that lack ... with the naked eye. Macroinvertebrates include (Annelids, ... fish, snails, clams and insects. Many aquatic insects live as ... the water, and become flying insects as adults. ... brate must be able to navigate moving water ... 1993). Freshwater benthic macro-invertebrate ... Mollusca and worms. They are an essential ... feeds and consuming algae and aquatic vegetation. ... ebrates is based on geographical structure of reservoir. ... in reservoir chemistry and physical habitat. Benthic ... ment within reservoir ecosystems such as productivity, ... decomposition (Reice & Wohlenberg, 1993). Benthic ... primary producers, detrital deposits and higher trophic levels in ... Therefore, any changes in lakes environment, such as ... ...y changes in the structure of the benthic invertebrate ... Benthic invertebrates may indicate eutrophication ... tion may also occur.

...AL AND METHOD: The present investigations were ... ...2018 in the Samalda reservoir. Benthic Macroinvertebrate ... ...ions using a Vanveen grab of 0.6 m^2 surface area. ... ...these bags, labelled and brought to the laboratory ... ...ent groups and preserved in 4% phosphate buffered ... ...identified by a stereoscope microscope using the guides of ... ...O and WHO (1978).

...AND DISCUSSION

...Showing Macroinvertebrates in the Samalda reservoir ... 2017 to September 2018).

Phylum	Class	Order	Family
Mollusca	Gastropoda	Mesogastropoda	...
			...

Evaluation of Antimicrobial Potential of Silver Nanoparticles Using *Osmium Sanctum Ficus Bengalensis* against Two Pathogenic Bacteria

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Abstract: This study was aimed to synthesizing AgNP from *Osmium sanctum* and *Ficus benghalenis* plants and investigates its antibacterial activity against different bacteria in the present study. AgNP was synthesized by Herbal method. The characterization of nanoparticles was done by XRD and FTIR method. Antibacterial activity was determined by disc diffusion and well diffusion method. It was found that AgNPs showed antibacterial activity in the form of zone of inhibition. Silver nanoparticles (AgNPs) were dissolved in two different solvent like Water and 70% ethanol. Both solvent with silver nanoparticles showed the zone of inhibition against bacteria like *E. coli* and *S. aureus*. Maximum zone of inhibition 1.9 cm was observed at 0.4 gm concentration of *Osmium sanctum* AgNPs + 70 % Ethanol against *S. aureus* with well diffusion method. Minimum zone of inhibition observed at 0.1 gm concentration of *Ficus benghalenis* AgNPs + water against *E. coli* with disk diffusion method. *Osmium sanctum* AgNPs have become an important approach for applications in nanobiotechnology in the development of antibiotic treatment of different bacterial infections.

Keywords: AgNPs nanoparticles, antibacterial activity, *E. coli, and S. aureus.*

INTRODUCTION

Indian vegetation is the main inexpensive source medicinal plants and plant product. From in ancient year, these medicinal plant playing key role in Ayurveda. Nanomaterials have properties that enable both chemical reduction and catalysis to remediate the pollutants of concern. It also has potential to decrease the time (required for remediation) and cost (Agrawal, 2005).

The nanoparticles synthesized many methods which are time consuming, expensive and aconites for environment. The substantial prescript such as lithography and laser ablation (Pallab *et al.,* 2008) and the chemical methods start with silver salt precursor (disorganized in solvent) that is diminished in a chemical response and the nanoparticles are formed through nucleation and growth (Amendola, *et al.,* 2007). The development of environment neighborly and sustainable techniques for the manufacture of silver nanoparticles (AgNPS) to be used in medical zone is a big defiance. Reports exhibit that it can be synthesized by bacteria (Tolaymat, *et al.,* 2010), fungi (Nanda *et al.,* 2009) and plant (Bhainsa *et al.,* 2006). Earlier this decennary, the

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APPLICATION OF MULTIVARIATE STATISTICAL METHOD (CLUSTER ANALYSIS) TO PHYSICO-CHEMICAL PARAMETERS OF MUNJ SAGAR TALAB, DHAR (MADHYA PRADESH, INDIA)

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ABSTRACT : Clustering technique has received attention in many areas including engineering, medicine, biology and data mining. The purpose of clustering is to group together data points, which are close to one another. In the present study, cluster analysis is applied to physico-chemical parameters of Munj Sagar Talab (water body in Dhar, M.P, India).

Cluster Analysis (CA) was used for analyzing physico-chemical data obtained from Munj Sagar Talab. Eighteen parameters were measured. Samples were collected from three sampling locations. This paper illustrates the usefulness of using statistical techniques in analyzing environmental data for better understanding of the behavior of different parameters.

KEY WORDS : Physico-chemical, Cluster Analysis (CA), Dendrogram, Hierarchical Cluster, Cophenetic correlation coefficient.

INTRODUCTION

Cluster Analysis (CA) is a multivariate statistical technique used to obtain the cluster and to classify the objects based on their similarity and it is one of the most widely used multivariate statistical technique to evaluate the surface water quality. Hierarchical agglomerative clustering that is the most common technique which provides the similarity relationships between any one sample and the entire data set. Dendrogram provides visual summarization of the clustering process .Cluster analysis with dendrograph was reported by Prakash & Dagaonkar (2011); Emad *et al.*(2012); Yerel & Ankara (2012); Tokatlı *et al.* (2014); Hamzah *et al.* (2016).

MATERIAL AND METHODS

The water samples from three site of Munj Sagar Talab were collected. The physico chemical analysis of these water samples was performed as per the procedures describe in the Standard Methods (APHA, 1980). Parameters selected for analysis were temperature, pH, dissolved oxygen, free carbon dioxide, calcium, Magnesium, Total Hardness, nitrates, chloride, alkalinity bicarbonate alkalinity, phosphate, silicates, BOD depth, transparency and conductivity.

The two year data (Nov2006- Oct 2008) of the physico- chemical parameters were subject to statistical analysis of Hierachical cluster analysis.

Steps to conduct a Cluster Analysis

A common approach to conduct a cluster analysis is to create a table of relative similarities between all objects and to use this information to combine the objects into groups.

The table of relative similarities is called a distance matrix. The method of combining objects into groups is called a clustering strategy. The focus is to combine objects that are similar to one another.

Data matrix

Cluster analysis starts with a data matrix, where objects are rows, and observations are columns. The table constructed thereof gives a measure of similarities or differences between the observations.

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MATING STRATEGIES OF SOLIFUGAE *GALEODES OLIVIER* 1791, (ARACHNIDA: GALEODIDAE) IN LABORATORY CONDITIONS

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ABSTRACT

In all cases of mature *Galeodes fatalis,* mating was forcefully and painful. Sexually cannibalism is more common in Solifugae. The mating rituals can be said to be unique in Solifugae. The benefit of mating and cannibalism requirement of nutritional value for the forming eggs was high in virgin female of Solifugae other than mated female. Virgin female doesn't attack to male first as mated female attack first; it means mated female does not have multiple mating. Virgin female of Solifugae choose male for both as sperm transfer and nutritive values. Therefore females have high reproductive rate. Their courtship and copulation orientation was successful. Mature females showed positive responses with mature male. Their chances of participation in mating rituals were decided by female.

Keywords: *Galeodes Fatalis*, Mating, Arachnida, Alirajpur.

INTRODUCTION

The mating of Solifugae was first observed in *Galeodes caspius* Birula by Heymons (1902). After it has been described in *Galeodes granti* Pocock by Clousley-Thompson (1961), in *Galeodes sulfuripes* Roewer by Amitai *et al.* (1962), and mating behavior in two sexually cannibalistic species *Galeodes Capsicus subfuscus* (Galeodidae) and *Gluvia dorsalis* (Desiidae) were studied by Hruskova-Martisova *et al.* (2010). Mating are some unique aspect of Solifugae, mating have courtship and direct and indirect sperm transfer process. In the Solifugae its own family has different mating strategies. Solifugae are cannibalistic by behavior. *G. fatalis* has coercive copulation. Mating strategies of male and female of *fatalis* were observed. Its main steps are A. pre copulation that includes courtship; B. copulation that includes attack phase and contact phase; C. post copulation it has cannibalized or release phase. Courtships in males are increasing risk of cannibalism. Mature female mated with mature male. Females have mating selection, their responses were observed respect to male, coercive copulation was common spermatophore into genital with his chelicerae described by Heymons (1902). The pedipalp organ was being a receptor for airborne odours stated by Bernard (1896) and Lichtenstein (1797). The present study was aimed to investigate mating strategies of *G. olivier* in laboratory conditions.

MATERIALS AND METHODS

Study Area

Alirajpur district in Madhya Pradesh has rich diversity of Galeodidae family has studied by Pandram and Sharma (2015). Solifugae were collected from Bhabhra town coordinates $22^0$31'48"N $74^0$19'28"E from Alirajpur district, Madhya Pradesh.

Sampling Methods

Solifugae were collected during day time by turning stones, bottle traps were used for collection. Five females (three

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A Study of Avian Fauna at Ralamandal Wildlife Sanctuary, Ralamandal, Dist. Indore (M.P.)

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Abstract:

A total of 76 species of birds have been identified and recorded at the Ralamandal wildlife sanctuary. These species belonged to 13 orders and 39 families. Further it has been observed that, Egyptian vulture was found to be in the (EN) Endangered category and Alexandrine parakeet was found to be in the (NT) Near Threatened category of IUCN. Out of 76 species, 64 species were found to be resident and 12 species were winter visitors. Order Passeriformes was found to be dominant with 46 species of birds. Interestingly, 9 species of raptors were recorded at the sanctuary, which is sign of balanced forest ecosystem.

Keywords: Ralamandal, wildlife, Sanctuary, Avian Diversity and Raptors.

Introduction:

Protected areas in the form of National Parks, Sanctuaries and Biosphere reserves play a crucial role in protecting the biodiversity of any country. In Wildlife sanctuaries, though limited physical alteration by human activities is allowed, but they conserves the flora and fauna of that area (Singh, 2009). Avian fauna reflects the health of any ecosystem. Hence, they are the bioindicators of any sanctuary (Chowdhury *et al.*, 2014 and Khan and Pant, 2017). Birds are the most diverse group of organism. They are found in all types of habitat, as they are highly adaptable. Presently 517 species and sub-species of birds belonging to 69 families are reported from Madhya Pradesh and Chhattisgarh, out of which 488 species and sub-species are known from Madhya Pradesh (Chandra and Singh, 2004). Ralamandal wildlife sanctuary does not have any permanent water source, so only terrestrial and arboreal species of birds are found in abundance. As per the review of previous literature, no major research work related to avian fauna has been conducted at the sanctuary. The main aim of our present study was to prepare a checklist of avian fauna, and also to record the winter migratory species of birds visiting the sanctuary. The anthropogenic stress on avian fauna has also been studied.

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MICROBIAL CONTAMINATION ON SURFACES OF SOME FRUITS AND VEGETABLES FROM INDORE

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ABSTRACT : This study was aimed at investigating bacteria contaminants on surfaces of some edible fruits sold in local mandi, Indore. Ten (10) samples each of fresh fruit and vegetables type namely: Apple, Mango, Papaya, Lemon, Spinach, Tomato, Onion, Chili, Cucumber and Potato were collected from local mandi, Indore. Fruits samples were analysed by using swab collection for bigger samples and the smaller ones were washed in sterile diluant. Pure cultures of bacteria isolates were identified by gram staining technique and biochemical characterization. For determining the microbial load, total viable counts of bacteria and fungi were calculated.

Results showed that papaya, mango, potato and spinach samples recorded the highest volume of bacteria and fungi. Tomato and cucumber also showed high level of contaminants. Cultural and biochemical characterization of bacteria isolated from all the fruits revealed the presence of eight (8) species of bacteria, namely:

***Staphylococcus aureus*, *Escherichia coli*, *Klebsiella* spp, *Pseudomonas aeruginosa*, *Streptococcus* spp, *Salmonella* spp, *Lactobacillus* spp. In their percentage of occurrence, *S. aureus and Corynebacterium* was the highest (45%). *Klebsiella*, *P. aeruginosa*, *Streptococcus*, *Salmonella* and *Micrococcus* had 40% each.**

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Extraction studies of Metal Complexes of Azo Dyes

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ABSTRACT : The research covers preparation, structural characterization, physical properties and extraction studies of complexes based on transition metal ions (d-block) and azo dyes Sudan (I-IV). As such the work is interdisciplinary and covers many aspects of supramolecular, organic, inorganic and co-ordination chemistry.

KEYWORDS : Metal complexes, Azodyes, Extracation

INTRODUCTION

A review of research reveals that several workers have studied complexation, extraction, isolation, liquid-liquid membrane transportation, spectroscopic, kinetic and thermodynamic properties of natural and synthetic dyes.[1-5]

Recently, several studies have been published on the synthesis and spectral properties of azo dyes[6,7,8].

Liquid membrane systems have much more importance as models for cation transport across biomembranes. They are helpful in understanding complex behaviour in extraction technique that is widely used for preconcentration and separation of various metal ions from an interfering matrix[9].

Furthermore, with the help of these studies industrial waste water can be treated and dyes can be reused as mordent dyes for industrial applications. Solvent also reused for different synthetic applications.

MATERIAL AND METHODOLOGY

Reagents

Ionophores Sudan-I-IV were of Sd fine-chem., Distilled ethanol and methanol were used as a solvent prepared in distilled water. EDTA were used for titration using different indicators for different metal ions. For Zn^{2+} Eriochrom (EBT) Black-T, for Cu^{2+} Fast Sulfone Black (FSB) and for Co^{2+} and Ni^{2+} Murexide were used as indicator.

Effect of metal ion and ionophore concentration variation:

The metal salts concentrations were varied from 0.5×10^{-1} M to 0.5×10^{-3} M and ionophores (S-I, S-III and S-IV) concentration was varied from 0.5×10^{-3}M to 0.5×10^{-4}M. From Table 1 it is observed that optimum concentration of ionophore S-I and S-III is found to be 0.5×10^{-4}M for extraction of Ni^{2+}, Co^{2+}, Cu^{2+} and Zn^{2+} ions (Table 1).

In case of S-IV the optimum concentration of ionophore S-IV is found to be 0.5×10^{-4}Mfor extraction of metal cation Ni^{2+}, Co^{2+} and Cu^{2+} while for Zn^{2+} it is found to be 0.5×10^{-3}M. (Table 1).

Extraction Studies:

Extraction studies were conducted to ascertain the occurrence of complexation between MX salts and ligand in solution state[7]. The studies were focused on the capacity of the various ionophores to extract metal

English as a Global Language.

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Abstract:

English is a global and well on its way to becoming the dominant global language. Is this a good thing? Yes, in fields such as science where a common language brings efficiency gains. But the global dominance of the English language is bad news for world literature, according to CEPR Because English is so widely spoken, it has often been referred to as a "world language", the lingua franca of the modern era, and while it is not an official language in most countries, it is currently the language most often taught as a foreign language. It is, by international treaty, the official language for aeronautical and maritime communications. English is an official language of the United Nations and many other international organizations, including the International Olympic Committee English is the language most often studied as a foreign language in the European Union, by 89% of schoolchildren, ahead of French at 32%, while the perception of the usefulness of foreign languages among Europeans is 68% in favor of English ahead of 25% for French. Among some non English speaking EU countries, a large percentage of the adult population claims to be able to converse in English in particular: 85% in Sweden, 83% in Denmark, 79% in the Netherlands, 66% in Luxembourg and over 50% in Finland, Slovenia, Austria, Belgium, and Germany.

Books, magazines, and newspapers written in English are available in many countries around the world, and English is the most commonly used language in the sciences

with Science Citation Index reporting as early as 1997 that 95% of its articles were written in English, even though only half of them came from authors in English speaking countries. This increasing use of the English language globally has had a large impact on many other languages, leading to language shift and even language death and to claims of linguistic imperialism. English itself has become more open to language shift

as multiple regional varieties feed back into the language as a whole. In this article the author wants to introduce the importance of English language on Global platform.

FREE AND OPEN SOURCE GIS SOFTWARE FOR HYDROLOGY AND WATER RESOURCE MANAGEMENT

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ABSTRACT

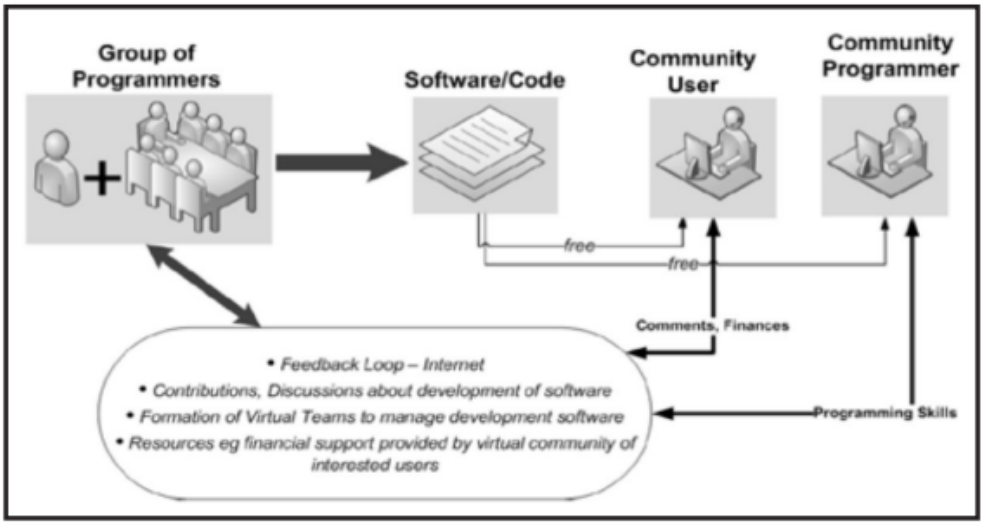
This paper summarises important open source GIS software for hydrology. The FOSS (Free and Open Source Software) concept has become the new and most advance form of learning found on the web today. FOSS communities collaborate to provide quality software. *GIS is the technology and science for handling the questions related to location and for making intelligent decisions, based on location and space. A GIS basically consists of components like Hardware, Software, data and users. Earlier these components were joined together in one computer at one place. Now with the development of Web based GIS these components are now separated farther distances. Now GIS users can access the GIS application and data lying on server from any part of globe. Data dissemination and data collection has become very easy using the web-based GIS applications.* ***GIS can play fundamental role in the application of spatially distributed data to hydrological models. Many GIS software plugins and tools are available to integrate the hydrological data useful for hydrological studies.***

KEYWORDS : FOSS, GIS, Hydrogeology, Watershed delineation, Hydrological Modelling.

INTRODUCTION

Free and Open Source Software (FOSS) is rapidly growing. FOSS is freely licensed to use, copy, study, and change the software in any way, and the source code is openly shared so that people are encouraged to voluntarily improve the design of the software. FOSS concept has become the new and most advance form of learning found on the web today. FOSS communities collaborate to provide and distribute quality software in the most sustainable manner. The process of development of FOSS is shown in Fig.1. This is in contrast to proprietary software, where the software is under restrictive copyright and the source code is usually hidden from the users.

Fig.1 Development of Free and Open Source Software



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CONSERVATION & MANAGEMENT OF WATER RESOURCES

WATER MANAGEMENT, CHALLENGES AND SOLUTIONS, VISION – 2050

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ABSTRACT

Water is a vital natural resource and fundamental to life. India has more than 17 percent of the world's population but has only 4% of world's renewable water resources with 2.6% of world land area. India receives an average annual precipitation of about 4000 Billion Cubic Meter (BCM). Out of this, after considering the natural evaporation and transpiration, only about 1869 BCM water is average annual natural flow through rivers and aquifers. Due to spatial and temporal variation an estimated 690 BCM of surface water and 432 BCM of groundwater is utilizable. This is especially true for monsoon climates where 70–90% of the annual rain falls in just 3–4 months. This leads to too much water and often floods in the wet season, and too little water and often droughts in the dry season. At times, enough water may be available but the quality may be so poor that it is of no use without treatment.

The available water is generally used for agriculture, industrial production and domestic purposes. Water is also required for fishery, hydro-power generation, transportation and maintaining biodiversity and ecological balance. The proportion of water used for agriculture and industries varies from country to country depending on the way of life, extent of industrial growth and water use competence.

Sustainable water management in India poses abundant challenges: bridging the increasing gap between demand and supply, providing enough water for production of food, balancing the uses between competing demands, meeting the growing demands of big cities, treatment of wastewater, sharing of water with the neighboring countries and among the co-basin states.

Due to over exploitation of groundwater resources in certain areas the groundwater levels have been declined to alarming limits. In order to the groundwater development there should be conjuctive use of surface water and groundwater. Groundwater recharge should be encouraged by recharging tanks or water bodies made on the main rivers and tributaries by constructing check Dams at number of places.

Globally, about 14% of all water use is for domestic needs (drinking, cooking, washing, etc.). Each day, a person drinks 2–4 litres of water and uses 10–15 litres for other essential needs. Every day, an individual consumes food that requires 2000–5000 litres of water to produce. Hence, producing food for an additicnal 20 crore people in India, which may be added in next 30 years (the current population is 130 crores), will be a big challenge and there is urgent need for technological and innovative ideas for the management of water resources.

KEYWORDS : Water Management, Conjuctive use, Groundwater Recharging.

INTRODUCTION

General Facts of World Water Resources

World oceans cover about three fourth of earth's surface. According to the UN estimates, the total amount of water on earth is about 1400 million cubic kilometres which is enough to cover the earth with a layer of 3000 metres depth. However, 97.5% of this water being sea water, it is salty. Fresh water availability is only2.5%. Out of the total fresh water, 68.7% is frozen in ice caps, 30% is stored underground and only 0.3% water is available on the surface of the earth. Out of the surface water, 87% is stored in lakes, 11% in swamp and 2% in rivers. As all the sweet water is not extractable, only 1% of the total water can be used by human beings **(Anon. 2006).**

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CONSERVATION & MANAGEMENT OF WATER RESOURCES

WATERSHED – ITS DEVELOPMENT, MANAGEMENT AND ROLE OF GEOLOGIST

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ABSTRACT

The watershed is the area of land that drains or sheds water into a specific receiving water body, such as a lake or a river. Integrated use of surface water and ground water is the most efficient method of water conservation, which allows optimal use of the total available water resources, eliminating the process of the adverse impact on ecology and environment due to either of these sources when used in isolation. Monitoring, assessment and social impacts are the chief constituents of watershed development programs. Water harvesting structures or methods may be planned and implemented as part of integrated watershed development and management. Several watershed development programs have demonstrated favourable impacts such as enhanced soil productivity, increase in the ground water table, improvement in biodiversity and ecosystem. Geology fully deals with rock types and associated structures, soil cover, drainage pattern, environment and deals with the study of occurrence, distribution and movement of surface and underground water. Hence, geologist can play a pivotal role in various aspects of watershed development and management.

KEYWORDS : Watershed, Water harvesting, Aquifer, Geologist.

INTRODUCTION

Water is life because plants and animals cannot live without this precious natural resource. Water a free gift of nature. It has no colour, no odour, no taste, no shape, and no bias or bears, no prejudice for any region or people. Water is needed to ensure food security, feed livestock, maintain organic life and take up industrial development, to conserve the biodiversity and environment. Earth is the only planet, so far known to have water and this makes it fit for human living. However, with reckless abuse and increasing demand, due to growing population and unsustainable lifestyle, many countries are facing severe water crisis and related challenges. In the absence of suitable corrective measures, many developing countries including India will have to face crisis of food and water security in the near future[1,2]. A meagre 2.53% of world's water is fresh water and about 96.5% is salty in oceans[3]. India with its population of 1.27 billion, shares only 4% of the global fresh water reserves. Thus, only a small percentage of fresh water is available for drinking and food production, which too is diminishing over time with spiralling growth of population. In 1947, the per capita availability of fresh water in India was 5000 m^3/year, in 2011 it was 1545 m^3/year, and is likely to fall below 1000 m^3/year by 2050, reaching the threshold value for water scarcity[4]. Conjunctive use of surface water and ground water increasing total available water for use, ensuring optimal use of water and its better management. Rainwater harvesting augmenting groundwater resources utilizing surface runoff, which is otherwise lost to the sea. Runoff management structures help in infiltration of surface water into subsurface. Water is a great catalyst in rural development also. Therefore, watershed development is a preliminary to any programme of economic regeneration of rural areas.

MANAGEMENT OF WATER

Management of water is in practice since ancient times, which mainly included construction of ponds, kunds, tanks, johads, bawadi to capture water and store rainwater catering to the needs mainly of drinking and limited irrigation for food production. These simple water harvesting structures became defunct in course of time due to sheer

(11)

Dial-20

A Systematic Review on Fuzzy Logic

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Abstract—The aim of this study is to discuss Fuzzy Logic, mathematically. In 1965, Fuzzy Logic was introduced by Lotfi Zadeh, a professor at the University of California at Berkley. Fuzzy logic is a logic epitomize "degree of truth", where the value exists between 0 and 1, means applicable for the situation where the event may or may not happen. It established itself as a one of the best tool to deal with uncertainty. It is a dynamic research area, entices many researchers from computer software developers and researchers, mathematicians, natural scientists (biology, chemistry, earth science, and physics), medical researchers, social scientists (economics, management, political science, and psychology), public policy analysts, business analysts, engineers (electrical, mechanical, civil, chemical, aerospace, agricultural, biomedical, computer, environmental, geological etc. In this paper, first section discusses about Fuzzy Logic and its research & development, second section explore its some key concepts, third section describes Fuzzy Set and fourth section is about its real-life applications.

Key Words—Fuzzy Logic, Fuzzy Set, Membership Function.

1. INTRODUCTION

word Fuzzy Logic, is the combination of two words fuzzy and logic, where fuzzy means "not clear" and logic s "reasoning". But it never means Fuzzy Logic is fuzzy or is confusing or not clear or full of ambiguity. ffically, fuzzy logic is a precise logic of imprecision and approximate reasoning [3]. In simple words, we can say that fuzzy logic allows us to define and argue uncertainty. Fuzzy logic mimic as the human mind, because fuzzy systems suggest a mathematical approach to deal with uncertain situation to predict possibilities like human. Therefore, Fuzzy logic is an approach where the truth value may range between completely true or completely false i.e. calculating based on "degree of truth". To implement alternative way of thinking fuzzy logic is one of most powerful methodology to solve real time problems based on multi-valued logic. Easily incorporates with many technologies of computer science, hardware and software individually or both, engineering, medical, philosophy, environmental studies, decision making system, control system, robotics, pattern recognition, expert system etc., Fuzzy Logic was introduced by Lotfi Zadeh in 1965, a professor at the University of California at Berkley [1]. Fuzzy logic provides a method for representing the meaning of both nonfuzzy and fuzzy predicate-modifiers exemplified by "not," "very," "more or less," "extremely," "slightly," "much," "a little," and so on. This, in turn, leads to a system for computing with linguistic variable that is, variables whose values are words or sentences in a natural or synthetic language. For example, "Age" is a linguistic variable when its values are assumed to be "young," "old," "very young," "not very old," and so forth [2]. Thousands of researchers are working with fuzzy logic and producing patents and research papers. According to Zadeh's report on the impact of fuzzy logic as of March 4, 2013, there are 26 research journals on theory or applications of fuzzy logic, there are 89,365 publications on theory or applications of fuzzy logic in the INSPEC database, there are 22,657 publications on theory or applications of fuzzy logic in the MathSciNet database, there are 16,898 patent applications and patents issued related to fuzzy logic in the USA, and there are 7149 patent applications and patents issued related to fuzzy logic in Japan. The number of research contributions is growing daily and is growing at an increasing rate. Zadeh started the Berkeley Initiative in Soft Computing (BISC), a famous research laboratory at University of California, Berkeley, to advance theory and applications of fuzzy logic and soft computing [11].

2. WHY FUZZY LOGIC?

Fuzzy Logic proposed concepts like linguistic variables and fuzzy if-then rules, FL-generalization, the concepts of precisiation and cointension, NL-Computation, computing with words (CW) and precisiated natural language (PNL), possibility theory and probability theory etc., ensures its requirement to the real world.

A. Linguistic variables and fuzzy if-then rules.

Linguistic variables are the mathematical variables mostly similar to human natural language words or statements. This concept enables fuzzy logic behave like human. This concept is most popular among real

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IMPORTANT WOODY PLANT SPECIES, THEIR MANAGEMENT AND CONSERVATION STATUS IN DHAR, ALIRAJPUR AND JHABUA DISTRICTS OF M.P.

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ABSTRACT : Woody plant species are threatened in many places in India. In order to conserve these species there is need to generate information that may be used to design proper management plans. This study was conducted in dhar, alirajpur and jhabua districts of M.P. Data were generated through guided questionnaire and interviews. District Alirajpur has the distinction of having 13 species which do not occur in the remaining 2 districts of the study area. This is followed by Dhar (9 species) and Jhabua, 2 species. Both these species of Jhabua are members of Arecaceae. Moreover, Alirajpur is unique in harbouring Dillenia pentagyna, which does not occur in the remaining 2 districts. In addition to this, *Dalbergia volubilis, Oroxylum indicum, Radermachera xylocarpa*, 2 species of *Stereospermum* and *Wrightia arborea* also occur in this district, which are very rare or absent in the remaining districts of Indore forest circle. It is on this account that establishing a Wild Life Sanctuary (WLS) or Conservation Reserve is proposed in this study, in the Aamkhut-Kattiwada belt. The most frequently harvested products are edible fruits, firewood and timber. Some of the species are becoming scarce. The main factors leading to the scarcity of these species include over-harvesting, destructive harvesting, pests, poor planting of trees by farmers, and droughts.

Key words: Woody species, conservation, Polypetalae, Gamopetalae family

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CARBON SEQUISTRATION IN 15 WOODY PLANTS FOUND IN DHAR, ALIRAJPUR AND JHABUA DISTRICTS OF M.P.

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ABSTRACT : Forests, like other ecosystems, are affected by climate change. The impacts due to climate change may be negative in some areas, and positive in others. However, forests also influence climate and the climate-change process mainly by effecting the changes in the quantum of carbon dioxide in the atmosphere. They absorb CO_2 from atmosphere, and store carbon in wood, leaves, litter, roots and soil by acting as "carbon sinks". Carbon is released back into the atmosphere when forests are cleared or burned. Forests by acting as sinks are considered to moderate the global climate. With the object of knowing the percentage of carbon present in the woody plants, the loss on ignition method was used to estimate biomass of carbon stock. Percentage of Carbon present in vegetative samples of different woody plants have been estimated in the present study. As different tree species have different biomass at maturity, the percentage of carbon per plant basis will be huge, which in turn will decide the selection of tree species in urban and forest areas.

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Adsorption of Crystal Violet Dye from Wastewater by Zeolite Synthesized from Coal Fly Ash

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ABSTRACT

When highly colored effluents are discharged into natural water bodies it impeded light penetration, thus upsetting biological processes within stream and required treatment before discharging into a water body. In our study, fly ash generated from coal based thermal power station has been converted into zeolite and characterized by SEM, XRD and FTIR. It was used as low cost adsorbent for the removal of crystal violet dye from wastewater of textile industry. Batch studies were carried out to study the effect of pH, adsorbent doses, adsorbate concentration, and temperature and contact time. The results of batch studies revealed that the adsorption of Crystal violet was strongly pH dependent and maximum crystal violet removal was observed at equilibrium pH of 5.0. Optimum adsorbent dose and contact time were found to be 05 g/l and 120 minutes respectively. Kinetic studies have been were performed to have an idea of the mechanistic aspects and to obtain the thermodynamic parameters of the process. The results also show that adsorption increases with increase in temperature thereby showing the process endothermic in nature. Adsorption data have also been correlated with both Langmuir and Freundlich isotherm models.

KEYWORDS: crystal violet; fly ash; zeolite; adsorption

I. INTRODUCTION

Coal fly ash is a waste material from thermal power plants that is found in abundance in the world. As a matter of fact, the disposal of fly ash will soon be too costly if not forbidden. Throughout the world, much research is being conducted on the use of waste materials in order to either avert an increasing toxic threat to the environment or to streamline present waste disposal techniques by making them more affordable. It, therefore, follows logically that an economically viable solution to this problem should include utilization of waste materials in new products for other applications rather than disposal in a landfill. One of the promising areas in this context is synthesis of zeolites from the coal fly ash. The aluminosilicate glass in coal fly ash is a readily available source of Si and Al for zeolite synthesis so as to obtain high value industrial products with environmental utilization [1,2].

Dyes are used in almost every industry from textile to food industries to colour their products. Dyes or colouring substances are considered as one of the significant pollutants and they are stated as 'visible pollutant'. Most of dyes are toxic, mutagenic and carcinogenic which poses hazard to aquatic life as well as other living organisms [3]. Disposal of dyeing industry wastewater pose one of the major problems, because such effluents contain number of contaminants, and odour, and colour.

The crystal violet (CV) dye is a synthetic cationic dye and transmits violet color in aqueous solution. It is also known as Basic Violet 3, gentian violet and methyl violet 10B, belonging to the group of triarylmethane. This dye is used extensively in the textile industries for dying cotton, wool, silk nylon, in manufacture of printing inks and also the biological stain, a dermatological agent in veterinary medicine. The CV is toxic and may be absorbed through the skin causing irritation and is harmful by inhalation and

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QSAR Study of Some Anti-Hepatitis B Virus Agents Comprising 4-Aryl-6-Chloro-Quinolin-2-Ones and 5-Aryl-7-Chloro-1,4- Benzodiazepines

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ABSTRACT

QSAR analysis on a set of synthesized 4-Aryl-6-chloro-quinolin-2-ones and 5-Aryl-7-Chloro-1, 4-benzodiazepines analogues tested fir growth inhibitory antiviral activity was performed by using MLR procedure. The activity contributions of these compounds were determined from regression equation and the validation procedures to analyze the predictive ability of QSAR models were described. The results are discussed on the basis of statistical data. High agreements between experimental and predicted antiviral activity inhibitory values are obtained. The results of this study indicate that the substitution of electron withdrawing group, aromatic ring , polarizability etc. parameters has significant effect on antiviral activity of this class of compounds thus simplifying design of new biological active molecule.

KEY WORDS

QSAR, MLR, Antiviral Activity

INTRODUCTION

Hepatitis B virus (HBV), a member of the hepadnavirus (hepatotropic DNA virus) family, has caused a global health crisis as the ninth leading cause of death in the world by chronically infecting more than 400 million people according to the World Health Organization (WHO).HBV is a fatal disease epidemic in Southeast Asia, Africa and China, where approximately 10% of the populations are chronic carriers. People infected with HBV are at risk of chronic hepatitis, liver failure, cirrhosis, and hepatocellular carcinoma leading to significant mortality and serious long-term morbidity, which are 10 times more numerous than HIV (human immunodeficiency virus) patients. No effective therapy against HBV infection has been fully developed so far and the molecular mechanisms of HBV-mediated hepatocarcinogenesis are still poorly understood. Therefore, continued progress for the effective therapy of chronic HBV infection is still an urgent demand worldwide. Treatment of chronic HBV infection is aimed at suppressing viral replication to the lowest possible level, and thereby to halt the progression of liver disease and prevent the onset of complications. The licensed vaccine against HBV is an effective mean to prevent infection.

A successful example is the national hepatitis B vaccination program in Taiwan of China. But vaccine is not an effective therapeutic strategy to treat established chronic infections when used alone. Two categories of anti-viral drugs have been approved for the treatment of hepatitis B:1,9,12,15 interferon-α (IFN-α) and nucleoside analogues such as lamivudine (3TC), adefovir dipivoxil and entecavir (ETV). However, unresolved critical issues make the current treatment regimens far from satisfactoriness. Relatively low cure rate, dose-dependent side effects and quick accumulation of drug resistant mutants have limited their extensive application.

USE OF EFFECTIVE HERBAL PLANTS AGAINST TICK REMOVAL IN MHOW REGION (M.P.)

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ABSTRACT : The present study was done to know the effective herbal plant extracts against ticks to estimate the acaricidal activity. Two herbal plant i.e. *Azadirachta indica* (Neem) and *Allium sativum* (Garlic) were used as an extract for removal of different species of ticks (*Hyalomma anatolicum, Boophilus microplus* and *Rhiphicephalus*) which were highly reactive to ticks mortality. In the present study, when Allium sativum plant extracts were used it showed mortality in ticks within 43 minutes, while *Azadirachta indica* showed mortality in ticks within 30 minutes The combination of both the plant extracts showed 100 % tick mortality within 20 minutes. This showed the syngeric effect of combined extract.

KEYWORDS: Extract, *Azadirachta indica, Allium sativum* and ticks etc.

INTRODUCTION

The effects of ticks include inflammation, itching and swelling at the bite site, anaemia, irritation and tick worry leading to reduced feed intake, emaciation and development of wounds that may serve as sites for secondary infection (Sanelson, 1975). Ticks damage the skin and reducing hide quality and creating scope for the secondary source of infection (Latif and Jongejan, 2002) Immunological responses in ticks infected goats in Mhow region (M.P.) observed by Sahu *et al.* (2016). Herbal remedies for parasite infestations are just part of a holistic program to keep livestock healthy. The application of acaricides by the use of dipping tanks, spray races, hand-spraying and hand-dressing is probably the most effective method to control ticks and the diseases they transmit. Despite their widespread use, acaricides have some deleterious effects. Development of acaricide resistance in ticks is reported worldwide, wherever acaricides are in use (Regassa, 1993). Unwanted effects of acaricides on the environment can never be overlooked. Some acaricides tend to accumulate in livestock products and pose health hazards to the consumer (Palmer, 1977). The use of tickicide for control of tick populations is serious problem which causes environmental pollution and disturbs the non-targeted species (Boeke *et al.,* 2004). This condition creates the need for alternative tick control methods with lesser problems to the environment. One of the commonly cited advantages that may result from the use of Herbal for tick control is their biodegradability (Liang *et al.,* 2003). Herbal pesticides are eco-friendly, economic, target-specific and biodegradable. Their greatest strength is their specificity as most are essentially nontoxic and non-pathogenic to animals and humans. Herbal insecticides such as Azadirachtin are often effective alternatives to organophosphates or other neurotoxins for pest control due to multiple modes of action. These include toxicity, antifeedant and anti-oviposition effects (Sutherland *et al.,* 2002).

MATERIALS AND METHODS

Study area: Mhow (Indore region) was selected for the present study. Following Mhow villages were include for present study: Bhatiyakhera, Ahilyapur, Ambapur, Bai and Amada.

Experimental plants: following plants were used

1. *Azadirachta indica* (Neem) - Leaves,
2. *Allium sativum* (Garlic) - Bulbs.

Collection of medicinal plant : Selected plant materials i.e. leaves of *Azadirchta indica* were collected from the botanical garden of Govt. Holkar Science College in poly bags and brought to lab and their botanical identity were confirmed. Bulbs of *Allium sativum* were brought from market and their identity were confirmed at the Department

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HUNTING BEHAVIOR AND STENOPHAGOUS DIET OF SPIDER MYRMACOPHAGE *AMYCIAEA FORTICEPS*

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ABSTRACT : Life history and prey capture strategies of myrmecophaghic and stenophagic *Amyciaea forticeps* was studied in laboratory and natural habitat in Indore. Genus *Amyciaea* is not only living near ants' territory but the sub adults and adults are stenophagus too as they only feed on arboreal red weaver ant *Oecophylla smaragdina.* Predation strategies of 7 female *A. forticeps* was observed in the plastic bottles in laboratory as well as in nature and pictures were recorded with mobile. It was found that the neck of the spider's prey *O. smaragdina* was the most preferred biting site of them.

KEYWORDS : ***Amyciaea forticeps, Oecophylla smaragdina,*****,myrmecomorphy,myrmecophagy.**

INTRODUCTION

Oecophylla smaragdina, (Fabricious) the weaver ant of family formicidea and sub-family formicinae, is widely spread in different parts of india. In Indore district of state Madhya pradesh myrmecomorphy is commonly seen (Sharma, 2012). O. smaragdina is commonly found in the gardens of Holkar Science College with its mimics. These ants have visible and recognizable body due to their reddish brown color and dreadful appearance. As the ants are dangerous in appearance they also have their mimics in nature nearby their colonies. Most spiders refrain from ant predation as ants are generally aggressive, some are venomous and noxious in nature (Hollodobler, 1970). Myrmecomorphy is term commonly used to show the morphological and behavioral resemblance to ants.

Amyciaea forticeps from family Thomisidae show morphological and behavioral resemblance to weaver ant *O. smaragdina*. They also exhibit "antennal illusion" as they wave their first pair of legs in the air to mimic the locomotory movements of ants. This spider has black spots on its abdomen to resemble ant's compound eyes on its head. Sometimes because of these combinations of mimicry ant's colony members approach to help this spider as they perceive as one of their conspecifics in distress (Mathew, 1954, McIver and Stonedahl, 1993).

A.forticeps also exhibit myrmecophagy as they feed on ants (Leong *et al.,* 2012). Myrmecophagic spiders can be euryphagic or stenophagic in predation (Husseynov 2008). *A. forticeps* is stenophagic in nature as they only feed upon weaver ants. Among all the spiders in the world, some are regarded as food specialists (Jackson and Hallas, 1986.; Jackson and Whitehouse, 1986; Platnick, 2002). Usually ants are very aggressive in nature and have various ways to resist attacks, like bititng, stinging and using toxic chemicals, that is why myrmecophagy is an obvious high risk tactic for most of the spiders (Cushing, 2012). While hunting *A. forticeps* is observed to have specialized prey capture techniques and defense mechanism to avoid the counter attacks from prey. These techniques in *A.forticeps* are different from other myrmecomorphic spiders. Usually myrmecomorphic salticids hunts for their prey by lunging at and tapping (Jackson and Pollard, 1996; Cecccarelli, 2008). For studying their behavior, these spiders were observed in their natural habitat and brought to the laboratory also.

MATERIALS AND METHODS

Predatory behavior of *A. forticeps* was studied in field and spiders and ants were also collected in vials for laboratory experiments. Video clips were recorded from the mobile camera at both the places. In the field searchings for the individuals exhibiting predatory behavior were made.

Experiments carried out in laboratory in day light. Temperature and light parameters were maintained. In a glass chamber all the tests were performed. Three species of ants were collected from the field and put together with

TIME RELATED EXPULSION OF *HELIGMOSOMIDES POLYGYRUS* IN MICE VACCINATED WITH ADULT SOMATIC ANTIGENS.

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ABSTRACT : Mucosal mast cells are known as a distinct subset of mast cells. Mast cells are important for protective immunity to intestinal helminth infections and as mediators of allergic disease. In our experiment Mast cell response was found to be negative (indicating down regulation of MMC response in H. polygyrus infection) up to 5th day post infection in INVC 2 group, after which the number of mast cells started to increase from day 13th pi. (3.4) reaching to a peak level (13.4) on day 20th pi. After which the number of mast cells started to decrease gradually showing no response on day 30th pi. Mast cell response was altogether positive and higher when treated with increasing concentrations of adult somatic antigens. When 100µg of antigens were used mast cell number on 1st day pi. was 6.2, increased to 400.8 on day 20th pi., about 65 times as compared to 1st day value. Moreover downregulation of mucosal mastocytosis implicated adult H. polygyrus as the source of the immunodepressive effect.

KEY WORDS : Nematode, Mast cells, *Heligmosomoides polygyrus*, Somatic antigens.

INTRODUCTION

The last two and half decades witnessed significant progress in the efforts of parasitologists to elucidate the nature and role of the host mucosal defense mechanisms against intestinal nematode parasites. Aided by recent advances in basic immunology with the consequent development of well defined laboratory models of infection, parasitologists can more precisely analyze and define the different immune components and pin point their precise role during the infection (Onah and Nawa, 2000). This has resulted in a great improvement in our current knowledge and understanding of protective immunity against gastrointestinal (GI) nematode parasites. Host immune responses limit, and in some instances, eliminate nematode infections. The expulsion of some intestinal nematodes occurs spontaneously a few weeks after a primary infection. In rodents, expulsion of GI nematodes from the host has been associated with inflammation of the mast cells in the gut mucosa (Woodbury, *et al.,* (1984); Askenase, 2003; Deborah *et al.,* 2004; Miller, 1984). Mucosal mast cell involvement in worm expulsion is believed to be one of several components of the overall response leading to worm expulsion Rothwell, 1972; Nawa and Miller, 1979.

H. polygyrus is an intestinal nematode parasite that is used in experimental rodent models to study immunological mechanisms associated with parasite infection (Finkelman *et al.,* (1997), (1999), (2000); Monroy and Enriquea, (1992). This third-stage larvae are ingested by the host and invade the gastric and intestinal mucosa within 24 h. *H. polygyrus* larvae develop into mature adults that enter the gut lumen 8 days later and reside in the proximal third of the small intestine, surviving and laying eggs for months in immunocompetent hosts. The excretory/secretory (ES) proteins of adult worms and soluble extracts from lysates of both adult (AWH) and larval (LWH) *N. dubius* were used in an immuno-precipitation of mucosal mast cells Monroy and Dobson (1997). An understanding of how such immune expulsion responses are regulated by *H. polygyrus* may lead to a better understanding of immunoregulatory mechanism used by parasitic nematodes.

MATERIALS AND METHODS

Animals

The Swiss albino mouse, *Mus musculus albinus* was selected as an experimental animal for the present investigations. The mice were obtained from the College of Veterinary Science and Animal Husbandry, Mhow (M. P.) and were kept in the animal house under local conditions of light, temperature,

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नर्मदा नदी के भौतिक–रासायनिक मानको का मूल्यांकन

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शोध सारांश– नर्मदा नदी भारत की पाँचवी सबसे बड़ी नदी है। इसे मध्य प्रदेश की जीवन रेखा कहा जाता हैं। इस अध्ययन का मुख्य उद्देश्य नर्मदा नदी के भौतिक–रासायनिक मानकों में होने वाले परिवर्तन का मूल्यांकन से है। नर्मदा नदी के धरमपुरी, खलघाट, महेश्वर, मण्डलेश्वर एवं बड़वाह से जल का नमूना (मार्च २०१६– फरवरी २०१७) लेकर उनका परीक्षण किया गया है। जिसमें वायु तापक्रम, जल तापक्रम, पारदर्षिता, पी.एच., बी.ओ.डी., सी.ओ. डी. और डी.ओ. मुख्य मानक है।

शब्द कोश:–नर्मदा नदी,भौतिक–रासायनिक मानक आदि।

परिचय–

जल हमारे लिए एक बहुत ही महत्वपूर्ण प्राकृतिक संसाधन है। पृथ्वी सौरमंडल का एक मात्र ग्रह है जिस पर जल विद्यमान है। इसके ७०.८७ प्रतिशत भाग पर जल आवरित है जिसका ९७.३९ प्रतिशत महासागरों में है। मध्य प्रदेश में वर्षाधारित अनेक नदियाँ है, जिसमें नर्मदा सबसे प्रमख है। पर्व से नर्मदा नदी की कुल लम्बाई १३१२ कि.मी. है। नर्मदा नदी मध्य प्रदेश से बहती हुई महाराष्ट्र तथा उसके बाद गुजरात मे पहुँचकर खम्भात की खाड़ी भड़ूच के पास मिलती है। भौतिक तथा रासायनिक मापदंड़ के अर्न्तगत अजैविक घटकों का अध्ययन व्यक्तिगत या सामूहिक रूप से किया जाता है। भौतिक और रासायनिक पर्यावरण में कोई भी परिवर्तन जैविक समूहो पर सीधा प्रभाव डालता है। जिसके कारण पादप एवं जन्तुओं की विभिन्न प्रजातियों में असामानताएं व्याप्त होती है। पृथ्वी की सतह पर जल का असामान्य विभाजन और उपयोग में लाए जाने वाले स्वच्छ जल की उपलब्धता में गिरावट जल की गुणवत्ता एवं मात्रा में कमी के मुख्य कारण है।

उपकरण एवं विधि–

नमूना क्षेत्र का परिचय– नर्मदा नदी पर निम्नलिखित चयनित स्थानों से जल को लिया गया है।

चित्र क्र. ०१ नर्मदा नदी का नमूना क्षेत्र

क्र.	स्थान	जिला	दूरी (इन्दौर से)	अक्षांश	देशांतर
1	धरमपुरी	धार	96 कि.मी.	22°19'27''	75°31'58''
2	खलघाट	धार	88 कि.मी.	22°10'0''	75°27'0''
3	महेश्वर	खरगोन	91 कि.मी.	22°10'60''	75°34'60''
4	मण्डलेश्वर	खरगोन	99 कि.मी.	22°10'60''	70°40'0''
5	बड़वाह	खरगोन	68 कि.मी.	22°16'0''	76°3'0''

विधि–

नदी के चयनित स्थानो पर सुबह ७ से ११ बजे के बीच पहुचँ कर भौतिक तथा रासायनिक मानक वायु तापक्रम, जल तापक्रम, पारदर्शिता तथा पी.एच. का वही पर आकड़ो को नोट किया गया तथा इसके पश्चात् चयनित स्थानों से जल का नमूना (१ लीटर) लेकर उसे प्रयोगशाला लाया गया। जहॉ पर जल में