

RESEARCH CENTRE OF MICROBIOLOGY DEPARTMENT,  
SMT. C.H.M. COLLEGE, ULHASNAGAR  
ORGANISES



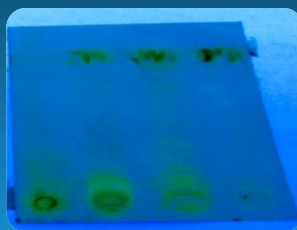
NATIONAL SYMPOSIUM  
ON  
**FRONTIERS IN APPLIED BIOLOGICAL  
&  
CHEMICAL SCIENCES  
(FABCS)**

ON  
10<sup>TH</sup> -11<sup>TH</sup> FEBRUARY 2017

**ABSTRACT BOOK**

EDITOR  
DR. PADMA V. DESHMUKH

PRESIDENT  
I/C. PRINCIPAL DR. MANJU LALWANI PATHAK



## Editorial Message:



### **Dr. Padma V. Deshmukh**

Chief Editor, Convener , FABCS 2017

Head, Department of Microbiology,

Smt. Chandibai Himathmal Mansukhani College

Ulhasnagar-03

Established in 1965 under the aegis of Hyderabad (Sind) National Collegiate Board, Smt. Chandibai Himathmal Mansukhani College is one of the oldest institutions of higher education in University of Mumbai. Smt. C.H.M. College is situated in a lush well maintained Campus in a prime location, opposite Ulhasnagar railway station on 16 acres of land and is one of the biggest campuses of the HSNC board .

It has since then developed into a educational hub, catering to students of Thane , Raigad & Karjat districts and Mumbai city. Smt. CHM College, one of the largest colleges in the University of Mumbai. With Arts, Science Commerce, Media Management & Information Technology faculties. It has Post graduate Research centres with Doctorate Program. The college, which is based in the demographically important suburb of Ulhasnagar, has an enrollment of over eleven thousand students, spread across undergraduate, postgraduate, Ph.D. and professional courses. The college is devoted to excellence in teaching and research. Our objective is to encourage students to explore ideas, challenges, and boundaries, investigate fresh ways of thinking, and stimulate their minds intellectually and creatively.

The **Department of Microbiology** was established in 1971 and is the pioneering Research Department of the College. It offers B.Sc Degree, the M.Sc (by papers and by research) and the PhD degree Courses in Microbiology. The department has 04 laboratories, an Instrumentation room, preparation room, on the second floor with a built up area of 3320 sq ft. The department is well equipped with necessary instruments for practical and research projects. It has a well stacked departmental library with 415 books and 80 journals.

The **Research centre** of the department was established in the year 1977 with 03 students admitted for M.Sc by Research under the founder head Dr Ranjan M. Bhatt. The centre was extended to include Ph.D scholars in 1979. The department has already produced 15 Ph.D and 45 M.Sc Research students since then. Presently, the department is recognized for 20 seats with 4 research guides and has 03 M.Sc and 15 Ph.D scholars registered .

**The National Symposium FRONTIERS IN APPLIED BIOLOGICAL & CHEMICAL SCIENCES (FABCS)** is organized by the research scholars of the Department of Microbiology to help showcase the research activities of the host and other colleges of various universities especially in applied sciences of Microbiology, Chemistry, Botany, Zoology, Life sciences and Pharmacy.

This is a platform for all research scholars including Undergraduate students and faculty members to present and discuss their work. The symposium also intends to bring together a group of experts who will be sharing their expertise and knowledge for the benefit of the students and participants.

The symposium includes a special session on “Scientific writing” by experts in the field of scientific writing who will provide the guidelines and information on publications and projects writing. This is a unique feature of the symposium.

The highlight of the symposium is that the entire organization of the event is the outcome of the efforts taken by the research scholars under the guidance of their supervisors.

This Publication is a compilation of the abstracts, including 69 for poster and 16 for oral, received for presentations at the Symposium. The compilation also includes the abstracts of the Scientific Sessions.

I sincerely hope that the participants attending the Symposium will benefit from their interactions and the vision with which it was organized is realized.

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**Research Centre of Microbiology Department**

**Smt. Chandibai Himathmal Mansukhani College  
Ulhasnagar**

**Organizes**

**National Symposium**

**On**

**“Frontiers in Applied Biological and  
Chemical Sciences”**

**February, 10<sup>th</sup> and 11<sup>th</sup>, 2017**

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## **Panel of Judges**

### **Oral**

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2. Dr. Krishna Iyer

### **Poster**

1. Dr. Saraswati Patel (Chairperson)
2. Dr. Herman Salgado
3. Dr. Chandra Babu

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Research Guides of Dept. Of ZOOLOGY, Smt. C.H.M. College  
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Mr. Shridhar Likhite	Ms. Preeti Gajghate
Ms. Reshma Ramachandran	Ms. Athira nair
Ms. Ruchita Kolhe	Ms. Sanjana Ambre
Ms. Tejal Pathak	Mr. Anuj Dewrukhkar
Mr. Chandan Deosthali	

### **Nonteaching Members**

Ms. Sushma Soni, Mr. Dharmu Dhameja, Mr. Sunil Wadhwa, Mr. Rakesh Sharma, Mr. Akash Jeswani,  
Mr. Naresh Patil, Mr. Naveen Mangwani

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# **SCIENTIFIC PROGRAM**



**Research Centre of Microbiology Department,  
Smt. Chandibai Himathmal Mansukhani College, Ulhasnagar  
Organizes**

**National Symposium  
On  
“Frontiers in Applied Biological and Chemical Sciences”  
February, 10<sup>th</sup> and 11<sup>th</sup>, 2017**

**Technical Schedule**

<b>DAY 1 10-02-2017, FRIDAY</b>		
<b>TIMING</b>	<b>ACTIVITY</b>	<b>VENUE</b>
9.00 AM – 10.00 AM	REGISTRATION AND BREAKFAST	SMT. C.H.M. COLLEGE, EXTENSION BUILDING MAIN ENTRANCE
10.00 AM – 10.45 AM	INAUGURAL PROGRAMME	THM HALL, SMT. C.H.M. COLLEGE, EXTENSION BUILDING
10.45 AM- 11.30 AM	<b>KEYNOTE ADDRESS- DR. SUSAN TITUS</b> HEAD, DEPARTMENT OF MARINE BIOTECHNOLOGY, NAVAL MATERIALS RESEARCH LABORATORY, DEFENSE RESEARCH AND DEVELOPMENT ORGANIZATION, MINISTRY OF DEFENCE, GOVERNMENT OF INDIA	THM HALL, SMT. C.H.M. COLLEGE, EXTENSION BUILDING
11.30 AM – 12.30 PM	<b>SPECIAL SESSION ON SCIENTIFIC WRITING I</b>  • <b>DR. CHANDRA BABU</b> FOUNDER CHANCELLOR, RIGHT ACADEMY AND RESEARCH CENTER (EX- DIRECTOR OF OPERATIONS, PFIZER)  • <b>DR. HERMAN SALGADO</b> GLOBAL CHANGE AGENT, USA	THM HALL, SMT. C.H.M. COLLEGE, EXTENSION BUILDING
12.30 PM- 1.30 PM	<b>SPECIAL SESSION ON SCIENTIFIC WRITING II</b> <b>DR. KRISHNA IYER</b> PROFESSOR OF PHARMACEUTICAL CHEMISTRY BOMBAY COLLEGE OF PHARMACY	THM HALL, SMT. C.H.M. COLLEGE, EXTENSION BUILDING

<b>1.30 PM – 2.30 PM LUNCH</b>		
2.30 PM – 3.15 PM	<b>SCIENTIFIC SESSION I</b> <b>DR. VIJAY MANGOLI,</b> LABORATORY DIRECTOR, FERTILITY CLINIC	THM HALL, SMT. C.H.M. COLLEGE, EXTENSION BUILDING
<b>3.15 PM – 3.30 PM TEA BREAK</b>		
3.30 PM- 5.30 PM	<b>POSTER SESSION</b>	SMT. C.H.M. COLLEGE, EXTENSION BUILDING, BACK GARDEN
<b>DAY 2 11-02-2017, SATURDAY</b>		
<b>TIMING</b>	<b>ACTIVITY</b>	<b>VENUE</b>
<b>9.00 AM – 10.00 AM BREAKFAST</b>		
10.00 AM – 10.45 AM	<b>SCIENTIFIC SESSION II</b> <b>DR. ROSALIND MARITA,</b>  DIRECTOR- RESEARCH, BAYVIEW ADVISORY SERVICES PVT. LTD	THM HALL, SMT. C.H.M. COLLEGE, EXTENSION BUILDING
10.45 AM- 11.30 AM	<b>SCIENTIFIC SESSION III</b> <b>DR. PARAAG GIDE,</b>  PRINCIPAL, DR. L.H. HIRANANDANI COLLEGE OF PHARMACY	THM HALL, SMT. C.H.M. COLLEGE, EXTENSION BUILDING
11.30 AM – 1.00 PM	<b>ORAL PRESENTATION SESSION I</b> <b>OP-01 TO OP-10</b>	THM HALL, SMT. C.H.M. COLLEGE, EXTENSION BUILDING
<b>1.00 PM – 2.00 PM LUNCH</b>		
2.00 PM – 3.15 PM	<b>ORAL PRESENTATION SESSION II</b> <b>OP-11 TO OP-16</b>	THM HALL, SMT. C.H.M. COLLEGE, EXTENSION BUILDING
3.15 PM- 4.00 PM	<b>SCIENTIFIC SESSION IV</b> <b>DR. C.V. ACCHRA,</b>  PRINCIPAL. K M K PHARMACY POLYTECHNIC	THM HALL, SMT. C.H.M. COLLEGE, EXTENSION BUILDING
<b>4.00 PM- 4.15 PM TEA BREAK</b>		
4.15 PM – 5.30 PM	VALEDICTORY PROGRAMME AND PRIZE DISTRIBUTION	THM HALL, SMT. C.H.M. COLLEGE, EXTENSION BUILDING
5.30 PM ONWARDS	CERTIFICATE DISTRIBUTION	SMT. C.H.M. COLLEGE, EXTENSION BUILDING MAIN ENTRANCE

# **INVITED SPEAKERS**



**DR. SUSAN TITUS**

Marine Biotechnology, Naval Materials Research Laboratory,  
DRDO, Min. of Defence, Ambernath 421 506, INDIA

### **Green initiatives for marine applications:**

Seawater is a primordial soup from where life has originated and its rich biodiversity has always attracted the mankind. Naval materials exposed to such a saline environment become vulnerable to various deleterious effects such as corrosion, biofilm formation and biofouling. Marine organisms are often considered responsible for the degradation of underwater naval materials that may lead to failure of components or systems. For sustained performance in such extreme environment many types of materials are developed that includes various types of metals, alloys, composites, ceramics, polymers, chemicals, paints, coatings additives, and sealants. A number of these materials are toxic or release toxic substances that affect biodiversity and ecosystem. It is incumbent upon human race to prevent any hazardous effect on non target organisms and avoid concentration buildup of environmentally stable synthetic substances that are potentially toxic and stop or minimize their unabated use. Further, it is evident that these natural resources can be explored meaningfully to control material deterioration, energy generation, seafood, medicines, and also as a vast natural carbon sink.

The proposed talk is therefore aimed at meaningful exploration of marine and other natural resources through tools of biotechnology to address challenging problems such as remediation of pollutants for a clean marine environment ,create ecofriendly products & technologies , Bio-sensing devices for water quality and Generate cheaper and green energy from marine sediments.



**Dr.A. Rosalind Marita.,**

Bay View Advisory Services Pvt Ltd., Opera House, Mumbai

### **Drug Discovery & Development – Pharma Industry’s Grand Challenge:**

Propagation of human race has often relied on the availability of food, coping with the environmental challenges such as infection, disease and predators. In the past medicines were derived from natural sources including tree barks, roots or leaves. The first chemical drug, aspirin was discovered in the 18th century purely by trial and error when science and technology were at infancy. Today innovation has become the buzz word of drug discovery industry. The cost of launching a novel drug is about \$2 billion. Despite the huge technological advances, Pharma Industry is facing tremendous challenges in bringing medicines for a large number of diseases. Among the various diseases, Oncology is the major focus of drug discovery fuelled by the huge demand. Strangely, recent drug approvals by the US FDA, suggests “diabetes” as the number one indication. In 2015, a total of ten ‘blockbuster drugs’ were approved to treat Diabetes patients.

Drug discovery is a fairly new business for India. It is well known Indian education system is among the best in the world. In life science alone, about 1000 Ph. Ds and 30, 000 post graduates are produced every year. Despite these successes it is intriguing to learn that there are no novel drug approvals from India. In the face of explosive increase in the prevalence of Diabetes and infectious diseases in India, efforts to increase drug discovery research in our country, will go a long way in finding affordable medicines.

During my 16 years’ experience with Pharma industry we were able to discover two innovative drugs for Type-2 Diabetes. These novel molecules, BTS 67582, from Boots Pharmaceuticals and P1736, from Piramal Healthcare Ltd have successfully cleared Phase II clinical trials in Diabetic patients. These molecules have been developed using phenotypic drug screening approach in the early phase of drug discovery. Phenotypic screening has been the method of choice, in drug discovery in the 1970s and 1980s. The anti-diabetic drug, Metformin which has attained celebrity status, has been discovered using phenotypic screen. Phenotypic approach is different from the target-based approach carried out by majority of the pharmaceutical companies. During the talk, I will describe the “pros and cons” of different kinds of drug discovery approaches that exist. Phenotypic screening assays are created to mirror normal human physiology based on the knowledge of biology. Target-based

approach, on the other hand relies on chemistry and chemi-informatics knowledge to begin with. Chemistry knowledge is undoubtedly required to design compounds that could be potential drugs eventually. I believe that life science graduates and post graduates have great opportunity here to contribute to truly innovative drug discovery in India, now than before. Some of the challenges faced by the pharma industry such as failure in Phase II clinical trial could be partly addressed using phenotypic/biology-based screening techniques. Understanding the implications of the grand challenges facing pharma Industry should motivate our life science graduates to take up an exciting career in Pharma in future.

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**DR. C. V. ACHHRA**

Prin. K.M.Kundnani Pharmacy Polytechnic, Ulhasnagar-421003, India

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### **Integrating Patent Regime with Healthcare and Development policy**

This article attempts to contrast the effects of patent law on the generic pharmaceutical industry and its impact on drug prices and accessibility to lifesaving drugs before and after the emergence of the TRIPS text while discussing healthcare scenario in post-independent India. It also justifies the amendments to Indian Patent Act based on flexibilities and provisions available in the TRIPS Agreement, International treaties such as Paris Convention and Doha declaration and patent laws of developed countries related to health care system in order to safeguard Indian patent law from possible abuses by Pharmaceutical MNCs for huge commercial gains. The article simultaneously underlines the need for integration of such Indian patent regime with health care system for public good balanced with innovation in order to plan development policy for affordable healthcare as per directive principles of Indian constitution in discharging its sovereign role towards public welfare by curtailing monopolistic and anti-competitive practices of pharmaceutical MNCs.

*\* The author is Research Scholar at Pacific Academy of Higher education and Research University, P.B.-12, Pacific Hills, Airport Road, Pratap Nagar extension, Debari, Udaipur, Rajasthan-313024, India.*



**Dr. PARAAG GIDE**

Principal, DR. L.H.H. College of Pharmacy, Ulhasnagar.

### **Development and Validation of LC-UV Bioanalytical Methods: A Practical Approach**

The development and validation of chromatographic methods for bioanalytical applications differs significantly from those for other routine applications.

Low analyte concentration, dynamic range of analyte concentrations, 'dirty' nature of samples and potential interference from endo and exogenous interferences, are the challenges faced by a bioanalyst. Furthermore, the validation protocol for bioanalysis has been a subject of debate and various workers in this field have cited concerns of failure of a validated method during application stage.

The present talk will highlight a practical step wise approach to the development and validation of bioanalytical methods for the estimation of analytes from human plasma.

Following aspects of method development will be covered:

- Selection of biofluid
- Preparation of spiked standards and samples
- Selection of chromatographic conditions
- Selection of sample preparation conditions
- Selection of calibration model
- Description of method
- Validation of method as per US-FDA guidance document

Each of the above aspects will be exemplified and illustrated using the results obtained during method development and validation experiments on a model drug.





**Dr Vijay Mangoli, PhD**

## **ART in Human Reproduction**

Conception in humans is by means of sexual reproduction involving male and female gametes. Different hormones control their formation and activities. It takes about nine months from fertilization to formation of a complete human being ready to enter the new world.

Reproduction is a complex set of events with a combination of physiological, biochemical, cytological and nuclear activities involved in it. Generally, in our society, reproduction is taken for granted. Though around 80 % couples trying to conceive achieve their goal without difficulty, remaining 20% population which needs some kind of assistance in reproduction.

**Female reproductive system-** An average menstrual cycle has 28 days. At the beginning of a new cycle, few follicles are recruited to develop. Of which generally one dominant follicle grows which contains an egg or oocyte. As the follicle grows to around 20 mm in size by mid cycle, a mature oocyte or egg as it is known as, is released from the follicle present on the ovary. It travels through the fallopian tube. If it meets with a sperm and is fertilized, it becomes an embryo. The growing embryo then starts descending towards the uterine lining. The uterus simultaneously prepares endometrium for implantation. If there is no fertilization, the egg becomes atretic and the prepared endometrium is shredded out resulting in menstrual bleeding.

**Male reproductive system-** There is a basic difference between male and female reproductive system. In female, she is born with all eggs she will be releasing in her reproductive age from puberty to menopause, whereas male keep on producing sperm cells almost throughout his lifespan. Sperms are produced in the testicles in the seminiferous tubules. They travel through a tube to the penis. During transport, secretions from glands like prostate and seminal vesicle are added constituting semen. At any given time in a reproductively healthy person there is always at least few million sperms present in the semen. One ejaculate of an average person has about 300 million sperms, of which only around 200 sperms reach the fertilization site i.e. fallopian tube, of which only one sperm succeeds in fertilizing the egg.

**Why we need assisted reproductive options?** One in every 5 couples trying to conceive has some kind of difficulty in having a child. It may be due to psychological, physical, immunological or genetic factors. As reproduction is a combined effort, there can be defect in male, in female, or in both.

The technology that assists the conception is known as Assisted Reproductive Technology or ART

Any ART procedure has two distinct parts- clinical and laboratory. Clinical part is managed by clinicians, and laboratory part is managed by Embryologists.

ART involves- Artificial insemination, Intra uterine insemination, In Vitro Fertilization (IVF), Intracytoplasmic Sperm Injection (ICSI), egg donation/ sharing and surrogacy.

**Artificial insemination** - where pathologically tested semen – either from husband or from donor- is directly injected into the vagina near ovulation period.

**Intrauterine insemination** is a procedure where sperms are separated from seminal plasma, debris, dead sperms, leucocytes and pus cells from the semen. Their motility is enhanced using special culture media containing growth factors and then such sperms are deposited near the opening of fallopian tube. This makes it easy for sperm to reach the fertilization site

**In Vitro Fertilization**, popularly known as test tube baby, is an advanced treatment modality where female partner's ovary is stimulated using Follicle Stimulating Hormone (FSH) to initiate production of 12-15 oocytes. When these oocytes attain maturity in the mid cycle, they are aspirated using special needle under ultrasonography guidance. Husband's semen sample is processed to obtain motile and morphologically normal spermatozoa. Mature oocytes are inseminated under aseptic conditions- either by conventional method or through highly skilful technique called Intra Cytoplasmic Sperm Injection (ICSI). After 16-20 hours, oocytes are observed under inverted microscope to confirm fertilization- displaying male and female pronuclei. These zygotes are cultured in controlled environment in the incubators for further embryonic growth for 3-5 days. 2 or 3 selected embryos are then transferred into the uterine cavity using special atraumatic catheter to initiate implantation.

**Egg donation/ sharing-** women who cannot produce their own oocytes, or consistently produce suboptimum oocytes need to take them from another woman. Either the woman donates all her eggs to the recipient or if she herself is undergoing IVF treatment, she can share some eggs with another woman. These eggs are fertilized by their respective husbands and transferred back into their own uterus.

**Surrogacy-** women who can produce healthy oocytes but have defective uterus, need surrogacy. Here, her own eggs are fertilized by her husband's sperm and the resultant embryos are transferred into the uterus of another woman who acts just as a carrier of the baby until delivery and then returns the baby back to the biological parents.

**Cryopreservation** In IVF, as the woman's ovaries are stimulated to get more number of oocytes, many times we get more number of embryos. Generally 2 embryos are transferred back into the uterus to avoid possibility of multiple pregnancies, which can create complications during pregnancy or delivery. So these extra embryos are frozen using sophisticated machinery and liquid nitrogen. Cryopreservation is also useful for preserving sperms, oocytes and ovarian tissues for future use.

**Research aspect-** Truly speaking, embryogenesis is still a poorly understood phenomenon. There are many unanswered questions like- why all oocytes are not implantable, what makes some of them implantable, why majority of the embryos produced In Vitro have aneuploidy (altered chromosomal arrangement), do they have capacity to self-repair, to what extent etc.

In this regards, there is a large scope for research in the field of genetics in embryology. With the knowledge of unravelled DNA structure, it is now possible to understand chromosomal constitution of growing embryos and select most appropriate one to initiate pregnancy avoiding known hereditary diseases. This is achieved through procedures like pre implantation genetic diagnosis.

The most fascinating field related to embryology is stem cells. It appears unbelievable that a bunch of 300+ cells of the inner cell mass of a blastocyst gets differentiated into practically every cell, tissue and organ of the body in a disciplined and systematic manner with such perfection, that every species maintains its own characteristics. If we can separate part of this ICM, which is Totipotent (has ability to differentiate into any type of cell of the body), and if we can direct these cells to differentiate into specific cell type, then it will be theoretically possible to 'Create' tissues and organs in the laboratory for individuals. This will change medical treatment to 'replacement' therapy instead of existing 'repair' one.

**Ethical aspects** - ART has one more perspective to consider which has great social impact. Ethics involved in areas like gamete & embryo donation. Though such options promise higher probability of having a child, they should be offered as the last resort as, such options change the genetic filiation of a family. Surrogacy is another area which can be used both ways- for genuine medical reasons, and for cosmetic reasons. Indian council of medical research and health ministry have taken stringent measures to curb misuse of surrogacy by foreign nationals.

Like any other medical treatment, assisted reproductive technology has its benefits and limitations. However, we cannot ignore the fact that so far more than 5 million babies are born through this innovative, advanced technology which has given incomparable joy to infertile couples who have completely lost the hope of having their own genetic offspring.

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## List of Oral Presentations

Code	Authors & Affiliations	Title	Category
OP 01	Anubha Pathak , ShardaVaidya	Diversity of Slime Molds from C.H.M.College Campus	BS
OP 02	Hareeshma Shiju, Poonia Anita Ashok, Jossy Varghese	Conservation and propagation of vulnerable and highly valued timber species <i>Khaya senegalensis</i> (Desr.) A. Juss. by air layering techniques	BS
OP 03	<u>Patel Alpa K.</u> , Bhalerao S.A.	Ethnobotany, Phytochemical profile of <i>Vernoniaant helmintica</i> (L.)Willd.	BS
OP 04	<u>Patil.S.A</u> and Thakare.D.B	Impact of the fungal carotenoids in feed for <i>Cyprinus carpio</i> fish (Koi karp)	BS
OP 05	Priti Uchgaonkar, Sunita Singh, and <u>Debjani Dasgupta</u>	A Study on the Antimicrobial Metabolite produced by Marine <i>Pseudomonas</i>	BS
OP 06	Renu Jaisinghani, Sweta Makwana, and Ankit Kanojia	Study of properties of ethanol extract of <i>Punica granatum</i> (pomegranate) peel	BS
OP 07	Sachin Lad and Jossy Varghese	Effect of chromium heavy metal on germination and seedling growth of <i>Ricinus communis</i> L.	BS
OP 08	<u>Swapnil Lokegaonkar</u> and Bela Nabar.	Broad spectrum quorum sensing inhibitory and anti-biofilm potential of secondary metabolites of microorganisms isolated from Waldhuni river	BS
OP 09	<u>Ujwala Patil</u> and Meeta Bhoot	Algal diversity of Alibaug coast, Maharashtra (India)	BS
OP 10	Yadnya A. Parvate, and <u>Liji Thayil</u>	Effect of Clove oil on the biochemical profile of the nervous tissue of <i>Achatina fulica</i>	BS
OP 11	<u>Chitrlekha Amin</u>	Physico chemical characterisation and heavy metal content of ayurvedic bhasmas	CES
OP 12	<u>Gholap Dnyneshwar Purushottam</u> , and Aghao Arvind Kharbhari	A convient synthetic route for formyl pyrazolebearing formyl phenoxy moiety	CES
OP 13	<u>Gunwanti Negi</u> , Anita S. Goswami-Giri	Graphite coated barium (II) selective membrane electrode based on dibenzo24-crown-8	CES

<b>OP 14</b>	<u>Payal B. Joshi</u>	Zero-to-minimal liquid discharge as waste water management approach	CES
<b>OP 15</b>	<u>Sonia Varandani</u>	Equilibrium Isotherms and Kinetic Studies of Textile Dyes by Adsorption using Fly ash based Zeolites	CES
<b>OP 16</b>	<u>Kishore Peshori</u> & Ritika Sachdev	Environmental Audit – A Financial Audit Perspective – A Service To The Nation.	CES

**ORAL PRESENTATION:**  
**BIOLOGICAL**  
**SCIENCES**

## OP 01: Diversity of Slime Molds from C.H.M.College Campus

Anubha Pathak and Sharda Vaidya

Department of Botany, Smt. Chandibai Himathmal Mansukhani College, Ulhasanagar-421003

Myxomycetes members or the plasmodial slime molds are unique eukaryotic organisms rarely observed in our local society. They are generally observed in the rainy season 5-6 days after heavy rain. A lot of samples were collected from Matheran, Badlapur, etc. But its presence was never predicted in the C.H.M.College Campus. During rainy season, the campus was frequently visited and many samples were collected from the Campus garden. Most common habitats were the fallen leaves. In this presentation, two samples viz. *Physarinae chinospora* and *Physarum cinereum* are discussed.

## OP 02: Conservation and propagation of vulnerable and highly valued timber species *Khaya senegalensis* (Desr.) A. Juss. by air layering techniques

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*Khaya senegalensis* (Desr.) A. Juss., also known as African mahogany, is a member of the Meliaceae family, which comprises many of world's most highly valued timber species. It is classified as vulnerable on the IUCN 2012 Red list of threatened species because of overexploitation for timber, fodder, and medicine and as a result of habitat loss and degradation. The present study was conducted to standardize air layering as one of the vegetative methods of propagation to facilitate *ex-situ* conservation of this species. Air layering trials, conducted on *K. senegalensis* revealed successful rooting of the air layers by using a root promoting compound. Eighty percent of air layered shoots with approximate age of 2.0-2.5 years and having height of 5-6ft rooted within 4 weeks and all rooted layers survived well while transplanting to soil.

## OP 03: Ethnobotany, Phytochemical profile of *Vernonia anthelmintica* (L.) Willd

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Medicinal plants are the nature's gift to human being to have disease free healthy life. As plants have been one of the important sources of medicines also plays a vital role to preserve our health.

*Vernoniaanthelmintica* (L.) Willd.belongs to the family Asteraceae, commonly called as kalijiriis a potential medicinal plant and the seeds were used for many human ailments. In the Ayurveda, an Indian system of medicine, the seeds were used to cure helminthes parasites, skin diseases, leucoderma and fevers, while in Unani system seeds were used to controlling asthma, renal disorders, itching of eyes and inflammations. Seeds decoction used in dysentery, gonorrhea, gastric troubles and seed paste applied externally to scorpion sting and decoction given orally to control helminthes parasites. This plant has been found to posses various therapeutic properties, like anti-arthritic, anti-inflammatory, anthelmintic, antidiabetic, antioxidant, antibacterial, anticancer, and many more.

### **OP 04: Impact of the fungal carotenoids in feed for *Cyprinus carpio* fish (Koi karp)**

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Carotenoids are a group of widely distributed lipid soluble, poly isoprenoid pigments with colours from red to yellow. The extraction of pigments from plant and animals suffer problems of variation hence microbial pigments are explored. Fish contain large number of carotenoids and they are species specific. Fish cannot synthesize these pigments and thus depend on the exogenous sources. Apart from rendering bright colours, these pigments also have antioxidant, antimicrobial and photo-protection function. Pigmentation in ornamental fish increases the market value. In this study, carotenoid pigments were isolated from *Penicillium purpurogenum*(SR2) and *Talaromyces purpurogenous*(SR4) and used to make top coated fish feed and fed to Golden Koi (*Cyprinus carpio*) fish to check for the enhancement in colour and other properties. For the cytotoxicity testing, the pigment was injected in fish and observation noted. Total carotenoid content was 25.65mg%/gm biomass for SR2 and 41.16mg%/gm biomass for SR4. 96 mg/kg for SR2 and 85 mg/kg for SR4 was used to coat the feed. The enhancement was checked visually and the fish were sampled for studying the fish metabolites. The study indicated that the pigments were not cytotoxic, increased the fish weight and protein content and showed an enhancement in the skin colour when compared to the control (fed the uncoated feed) fish. The High resolution liquid chromatography mass spectrometry (HRLCMS) data showed the presence of asthaxanthin carotenoid in the test fish and this carotenoid was essentially not detected in the control fish. Most studies with fish feed have been done with algal and flower pigments. The study has used fungal carotenoids. The results indicate that fungal carotenoids can be used to enhance the colour and other properties of ornamental fish.



## **OP 05: A Study on the Antimicrobial Metabolite produced by Marine *Pseudomonas***

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Marine environment, a rich source for the vast diversity of flora and fauna, stands unexplored for its enormous potential to produce bioactive compounds. In the present study, marine water and soil samples were collected and screened for microbes exhibiting antibacterial activity. A total of 150 isolates were obtained, out of which 9 isolates were selected based on their potential to produce antimicrobial compound. One of the isolate, S31 exhibited maximum antibacterial activity and hence was further characterized for the amount of antimicrobial produced. This isolate exhibited 93% homology with the reference strain and was identified as *Pseudomonas aeruginosa*. The growth of this isolate in minimal media was studied for the extraction of the antimicrobial compound. The effect of different concentration of a carbon source on the production of antimicrobial compound was also determined with different physiological parameter.

## **OP 06: Study of properties of ethanol extract of *Punica granatum* (Pomegranate) peel**

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Pomegranate is known for its many health benefits. These benefits are due to the biological actives which are present in the pulp as well as in the peel of the pomegranate. The actives from the peel were obtained using cold percolation method using ethanol as solvent. Antibacterial activity of pomegranate peel extract (PPE) was studied on *E.coli*, *E. coli* NCIM 2065, *Salmonella typhi*, *Samonella paratyphiA*, *Samonella paratyphiB*, *Pseudomonas aeruginosa*, *Proteus mirabilis*, *S. aureus*, *S. aureus* NCIM2079, *Shigella.spp*, *Klebseilla pneumonia* by agar well diffusion method. All organisms were sensitive to the extract with inhibitory concentration ranging from 25mg/ml-100mg/ml. Anti-fungal activity of PPE was studied on *A.niger*, *A.fumigatus* and *A.flavus*. *A.flavus* got inhibited while other two organisms were found to be resistant. Antioxidant activity of PPE was found to be 20.84%. To confirm PPE doesn't affect Lactic acid bacteria. *Lactobacilus casei varshirota* growth curve was studied with and without extract. Growth of *L.casei varshirota* was not inhibited and same growth pattern was seen in both test and control.

### **OP 07: Effect of chromium heavy metal on germination and seedling growth of *Ricinus communis* L.**

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Soil and water pollution by industrial waste has become major concern globally. Industrial waste rich in heavy metals causes hazardous effect on human health as well on plants. Many heavy metals like cadmium, lead, chromium etc. accumulate in plants which affects the growth of plants. Some plants can withstand the toxic effect of heavy metal and can accumulate more heavy metal in their tissues thereby become an eco-friendly source of heavy metal removal from polluted soil. In the present study potential of *Ricinus communis* L. as a phytoremediator was investigated. *Ricinus communis* L. seeds were germinated in presence of salt of chromium with and without chelators. Seed germination index, root and shoot growth were examined. Seedlings grown were supplied with solutions of different concentrations of salts of chromium. Plants grown were examined for morphological as well physiological changes. Changes in primary metabolites like carbohydrates, proteins were studied. To study ability of *Ricinus communis* L. to withstand toxic effect of chromium biomass, chlorophyll content, concentrations of total phenols, antioxidant enzymes like catalase, peroxidase and superoxide dismutase were analysed. To study accumulation of chromium in plant tissues analysis by Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) was carried out. It is concluded from the study that *Ricinus communis* L. has a potential as a phytoremediator plant.

### **OP 08: Broad spectrum quorum sensing inhibitory and anti-biofilm potential of secondary metabolites of microorganisms isolated from Waldhuni river**

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Bacterial biofilms due to their antibacterial resistance are causing serious health issues with respect to the control of infection, its prognosis and treatment of disease. The current scenario demands a need of new and alternative antibacterial compounds for treatment of such infections. The present study highlights the use of polluted river, Waldhuni, as a source of potent microorganisms with antibiofilm properties. 186 microorganisms were isolated from Waldhuni river, and tested for quorum sensing inhibitory activity (QSI) against *C. violaceum* MTCC 2656. Seven isolates exhibited QSI activity, out of which 1 isolate PB2 was selected for further study based on its high QSI potential. PB2 displayed broad spectrum antibiofilm activity against eight selected strains of

biofilm forming pathogens. The effective minimum biofilm eradication concentration (MBEC) of crude extract of PB2 secondary metabolite (SME) was found to be 500ppm. Isolate PB2 was also able to reduce exopolysaccharide content (EPS) by 94.16%, viability by 90% and biofilm density by 96% after 6h of treatment. The release of extracellular DNA (eDNA) by *Streptococcus mutans* MTCC497, *Enterococcus faecalis* MTCC 439 and *Pseudomonas aeruginosa* MTCC 2453 was also inhibited by PB2 crude SME. PB2 based on biochemical test analysis was identified to be *Pseudomonas aeruginosa*. Thus, bacteria *Pseudomonas aeruginosa* PB2 with quorum sensing and broad spectrum biofilm inhibitory activity was isolated from highly polluted Waldhuni river.

### **OP 09: Algal diversity of alibaug coast, Maharashtra (India)**

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Algae play an important role in maintaining ecosystem health. Thus algae diversity and its role in understanding the wetland ecosystem dynamics is very important. The present work deals with the study diversity of Phytoplankton in Alibaug coastal area for a one year (March 2013 to February 2014). The study showed the presence of several algae from Bacillariophyceae, Chlorophyceae and Cyanophyceae. The data obtained in the present work may help to provide baseline information to evaluate the algal community in the coastal area of Alibaug. Different species of phytoplankton were observed during the study period, comprising, diatoms, green algae, and blue green algae.

### **OP 10: Effect of Clove oil on the biochemical profile of the nervous tissue of *Achatina fulica***

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*Achatina fulica* is a potent agri-horticultural pest. It causes nuisance across the globe by virtue of its voracious feeding habit and protandrous reproduction. In order to assess the molluscicidal potential of clove oil subacute doses of clove oil were administered to *Achatina fulica* topically, and its effect on the biochemical profile of the nervous tissue was studied. The animals were randomly divided into three groups Control, Vehicle control and Clove oil treated group. The vehicle control group received 1ml of 1% tween 80 solution while those of treated group were subjected to lower and higher subacute doses of clove oil (20% and 60% of LD<sub>50</sub>/24 hr). The level of activity of five vital enzymes namely acetylcholinesterase, protease, lactic dehydrogenase, acid phosphatase and alkaline phosphatase was monitored in all the groups. The non-enzymatic parameters assessed across the groups included total protein content, DNA content, RNA content,

phospholipid content, level of lipid peroxidation and reduced glutathione content. The acetylcholinesterase, protease and lactic dehydrogenase activities were found to be elevated in the treated snails as compared to the control snails. The activities of acid and alkaline phosphatases and the amount of macromolecular components of the cells viz. DNA, RNA, phospholipid and proteins were reduced on treatment with clove oil. Lipid peroxidation levels increased in the treated snails as compared to the control with a concomitant decrease in glutathione content, which is indicative of oxidative stress induced by clove oil. The vehicle treated snails exhibited results comparable to control in almost all the parameters studied. Thus it can be concluded that clove oil affects the nervous system of *Achatina fulica* probably by inducing oxidative stress, thereby hampering its physiological activities and hence can be used in its population control.

**ORAL PRESENTATION:  
CHEMICAL &  
ENVIRONMENTAL  
SCIENCES**

## **OP 11: Physicochemical characterization and heavy metal content of ayurvedic bhasmas**

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Bhasmas are unique ayurvedic metallic/mineral preparations treated with herbal juices or decoction and exposed for certain quantum of heat as per the puta system of Ayurveda. Such formulations are held to be safe, efficacious and when manufactured and used following certain specified classical guidelines do not lead to any untoward effects. The number of people experiencing negative effects caused using traditional medicine has been increasing. The need of the hour is thus to critically analyze these formulations. In the present study, we have carried out qualitative and quantitative assessment of Abharak and Trivanga Bhasmas used in Ayurvedic formulations. Abharak and Trivanga bhasma of three different manufacturers were analyzed by routine physicochemical analysis. The metal content in the samples were determined by Inductive coupled plasma emission spectrometry methods. The samples were also subjected to thermogravimetric analysis. All the three samples of Trivanga bhasma did not conform to the expected Zn: Pb: Sn ratio of 1:1:1. Abharak bhasma samples showed a wide variation in the content of different elements. The bhasmas were found to conform to few of accepted standard specifications. The study underlines the importance of standardization of bhasmas to confirm its identity and to determine the quality and purity.

## **OP 12: A convient synthetic route for formyl pyrazole bearing formyl phenoxy moiety**

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Attempts have been made to accelerate reaction rate of formation of 5-(4-formylphenoxy)-3-methyl-1-phenyl-1H-pyrazole-4-carbaldehyde (3) by varying the reaction conditions. We have tried different bases with different solvent. Best condition was achieved when condensation was carried in potassium iodide, potassium carbonate and dimethyl formamide as solvent.

### **OP 13: Graphite coated barium (II) selective membrane electrode based on dibenzo24-crown-8**

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A graphite coated electrode for the selective determination of barium ion on a PVC matrix using dibenzo-24-crown-8 as ionophore is reported. The sensor illustrated a linear dynamic range of  $1.0 \times 10^{-6}$  to  $1.0 \times 10^{-3}$  M, a Nernstian slope of 30.1 mV/decade, a detection limit of  $6.1 \times 10^{-7}$  M and a response time of <10s. The electrode showed no significant change in potential in the pH range of 4.1 - 9.0. Fabricated electrode exhibited good selectivity with respect to other cations as determined by the matched potential method. The fabricated electrode was used as an indicator electrode in the potentiometric titration of Ba(II) with EDTA.

### **OP 14: Zero-to-minimal liquid discharge as waste water management approach**

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Zero liquid discharge (ZLD) process is a waste water management approach where all industrial waste streams can be reused after recycling without any discharge into natural water bodies. This concept is also extended to municipal waste waters. Strict environmental regulatory norms, water scarcity and growing awareness of environmental issues are the major drivers for adoption of zero liquid discharge (ZLD) technology in industries. Water was always considered an underpriced resource, but with the implementation of zero-to-minimal liquid discharge, there is a shift in focus where industrial polluters need to devise methods to achieve least environmental impact. Complete recycling is a complex chemical and thermodynamic factor that seems virtually impossible; hence industries and small-sector enterprises have adopted minimal liquid discharge (MLD) techniques. The global estimates reveal that total market potential of zero-to-minimal discharge techniques may reach 210 billion by 2020. This article presents concept of zero-to-minimal liquid discharge, processes involved and case study of existing MLD/ZLD treatment plants in textile and electroplating industries in India, challenges, opportunities in application-specific industrial setting.

## OP 15: Equilibrium Isotherms and Kinetic Studies of Textile Dyes by Adsorption using Fly ash based Zeolites

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In India, 73 % power generation capacity is thermal, of which 90% is coal-based generation. Thermal power generation through coal combustion produces a fine, glass-like powder called fly ash. About 125 million tons of fly ash is generated per annum and is expected to increase to about 200 million tons in the near future. Presently, only about (30%) is being utilized, the remaining is being disposed off in ash ponds which are harmful to the environment. Increasing concerns about the environmental consequences of such disposal has led the researchers to utilize this material in a novel way. In this study, fly ash from a thermal power plant in Maharashtra was used for synthesis of zeolites, using hydrothermal technique. The synthesized zeolites were characterized by XRD, SEM, FT-IR spectroscopy and BET surface-area measurements. Analysis showed that one of the products synthesized with Si/Al ratio = 1.1, a surface area of  $9.98 \text{ m}^2 \text{ g}^{-1}$ . The synthesized fly ash based zeolites was used as effective adsorbent for the removal of textile dyes. Equilibrium behaviour of synthesized zeolites was investigated by performing batch adsorption experiment. Various physical parameters such as contact time, initial dye concentration, adsorbent dosage, pH of dye solution were evaluated. Adsorption isotherm models such as Langmuir, Freundlich and Temkin were used to analyze the equilibrium data and the results appear to be well represented by the Freundlich isotherm equation. The analysis also indicate that the novel substrate composite with modified fly ash can be used as an efficient and low cost adsorbent for removal of textile dyes. It is expected that this methodology can be extrapolated for purification of effluents to a level that meet discharge regulations.

## OP 16: Environmental Audit – A Financial Audit Perspective – A Service To The Nation.

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Environment auditing recently has been a buzz word. The nation's progress is determined by the quality of the environment. Our PM Mr. Narendra Modi began his tenure with the clarion call "Swachh Bharat". ICAI – a partner to nation building, initiated environment auditing. To gauge the environment efficacy, environment audit is must. The authors through this paper try to highlight how financial auditors can undertake environment audit. The paper also highlights the limitations / obstacles arising in carrying out environment audits.



The authors further, through a sample study show how environmental audit can be undertaken in a small town. The paper tries to develop a framework / model, in accordance to Environmental Protection Act (EPA) in India, to carry out environmental audit in a city using various audit tools and implement it using Environmental Management Systems(EMS).

### List of Poster Presentations:

Sr. No.	Authors	Title	Category
PP 01	<u>Sanjana Ambre</u> , Amritha Vasu, Anand Maurya, Swapnil Kamble, Sunanda Karandikar and Padma Deshmukh	Antimicrobial and antifungal activity of cold alcoholic extract of Kiwi against gastrointestinal tract pathogens	BS
PP 02	Ann Mmartin, Ashwini Shettigar, Conceetha Sequeira, Jeenal Tailor, Lizelle Fernandes, Aswati Nair and K. Aruna	A comparative study of physicochemical, microbiological analysis of crude and patanjali honey samples and their invitro antibacterial activity against ESBL and MBL uropathogens	BS
PP 03	Deepshikha J. Arya, Raghunath Patil and Maninder Kaur Dhaliwal	Study of Biosurfactant Production From Microorganisms	BS
PP 04	<u>Archana Pundlik Bangar</u> and Renu Jaisinghani	Study of antibacterial and antisolar properties of pineapple peel extract	BS
PP 05	<u>Bhagwat J. R.</u> and B. Nabar	Preliminary screening of Tellurium nanoparticles in control of post-operative wound pathogens	BS
PP 06	<u>Krishna B.</u> and Karekar S. P.	Antimicrobial examination of homeopathic drugs	BS
PP 07	<u>Varsha Bulchandani</u> and Pranali Kale	Optimization for production of red pigment from bacteria using fruit waste	BS
PP 08	<u>Vaeeshnavi Buwa</u> , Shridhar Likhite and Nitinkumar P. Patil	Screening of biosurfactant producing bacteria from petroleum contaminated soil.	BS
PP 09	<u>Chanchula Chimnani</u> , Meeta Badlani, Darshana Patil and Aruna Rai	Pharmacovigilance: the 17- letter word everyone should know	BS
PP 10	Dhiraj Chaudhari and Bela Nabar	Study of consortium of herbal extracts for proliferation of cells and its effect on the prothrombin factor	BS
PP 11	Vishnu Dayare and Renu Jaisinghani	Current trend in food packaging (Edible films )	BS
PP 12	<u>Desai Kishore</u> , Bangde Sonal and Patil Avinash	Gender perspective study of MDR- TB affected population in Thane suburbs	BS
PP 13	<u>Chandan Deosthali</u> , and Nitinkumar P. Patil	Isolation of Phytase producing microorganisms from Poultry, Cattle yard & Farm soil.	BS
PP 14	<u>Nikhita B Dhamanase</u> , Raghunath Patil and Maninder Kaur Dhaliwal	Isolation and Characterization of Thermophilic <i>Actinomycetes</i> from compost	BS
PP 15	<u>Veena R. Dongare</u> and Shashibhal M. Pandey	Use of <i>Daphnia</i> as Model Organism to Study Epigenetic Processes	BS
PP 16	Annika Durve-Gupta, Bharati Devaguptapu and Vijaya Lobo	Isolated bacteria as potential biofertilizer	BS

<b>PP 17</b>	<u>Gandharkar A. N.</u>	Isolation, Identification and characterisation of Bacteriocin-Producing Bacteria and its Antimicrobial Activity	<b>BS</b>
<b>PP 18</b>	Vilasini Gaode and Saraswati Patel	Heavy Metal Tolerance of Moderately Halophilic Bacteria from Wetlands of Western Thane	<b>BS</b>
<b>PP 19</b>	<u>Garude N. R.</u> and Vemula A. N.	Effect of Seed coating with Chitosan for Enhanced Plant Growth under Salt (Abiotic) Stress	<b>BS</b>
<b>PP 20</b>	<u>Vandana Gupta</u> and Harish Sapaliga	Reuse of floral wastes ( <i>Tagetes spp.</i> ) as Biofertilizer for the plant <i>Ocimum tenuiflorum</i>	<b>BS</b>
<b>PP 21</b>	<u>Sharmila Jadhav</u> and Bela Nabar	Efficacy of bacterial metabolite bioformulation in control of mosquito larvae	<b>BS</b>
<b>PP 22</b>	<u>Katkar A.</u> , Zanje P., and Nabar B.	Are we sharing happiness or sickness?	<b>BS</b>
<b>PP 23</b>	Kiran Kedare, and Padma Deshmukh	Antibacterial, Antioxidant and Antifungal Activity of Banana ( <i>Musa paradisiaca</i> ) & Palash ( <i>Butea monosperma</i> ) Leaves on Gastrointestinal Pathogens	<b>BS</b>
<b>PP 24</b>	<u>Harshada A. Lokhande</u> , Maninder Kaur Dhaliwal and Raghunath Patil.	Study of pectinase producing bacteria with polygalacturonase activity	<b>BS</b>
<b>PP 25</b>	<u>Shweta Mahalingam</u> , Jivanti Chandnani, Nikunj Macwana, S. Walwekar	Phytochemicals testing and Antimicrobial analysis of <i>Nelumbo nucifera</i> (Lotus seeds)	<b>BS</b>
<b>PP 26</b>	<u>Nikunj Makwana</u> , S. Walwekar and H. Muthurajan <sup>3</sup>	Morphological study of Silver Nanoparticle synthesized using microwave assisted method and checking its antimicrobial efficiency.	<b>BS</b>
<b>PP 27</b>	<u>Seema Manchanda</u> , Madhuri Sharon and Maheshwar Sharon	Carbon Nanotubes as a vehicle for drug	<b>BS</b>
<b>PP 28</b>	<u>Ria Mathew</u> , Vertika maurya, Darshana Patil and Aruna Rai	Biofabrication	<b>BS</b>
<b>PP 29</b>	<u>Robin P. Mathew</u> and Shashibhal M. Pandey	<i>In Silico</i> analysis of ISWI chromatin remodeling complexes in Chicken	<b>BS</b>
<b>PP 30</b>	<u>Priya More</u> and Nitinkumar. P. Patil	Studies on microbial production of lipases from oil contaminated soils.	<b>BS</b>
<b>PP 31</b>	<u>Rasika Shrikant Mulay</u> , Raghunath Patil and Maninder kaur Dhaliwal	Isolation and characterization of hydrocarbon degrading micro-organisms	<b>BS</b>

<b>PP 32</b>	<u>Varsha D. Patil</u> and Padma V. Deshmukh	Determination of Antioxidant and Antibacterial Activity of Papaya (Carica) fruit Seeds and Peels against (GI) Gastrointestinal pathogens.	<b>BS</b>
<b>PP 33</b>	<u>Lata Patnaik</u> , Raghunath Patil and Maninder Kaur Dhaliwal.	Study of Halophilic Microorganisms Producing Industrially Important Enzymes	<b>BS</b>
<b>PP 34</b>	<u>Kirubha Pauldas</u> and Ashish Jain	Optimization of process parameters for lab-scale production of pectinase enzyme using the isolated pectinolytic yeast with orange peels as a substrate	<b>BS</b>
<b>PP 35</b>	<u>Reshma.R.Pillai</u> and Pranali Shete	Microbes as a source of natural pigments in textile dyeing	<b>BS</b>
<b>PP 36</b>	<u>Chetna Rathod</u> , Maninder Kaur Dhaliwal and Raghunath Patil	Production of cellulase using solid state fermentation	<b>BS</b>
<b>PP 37</b>	<u>R.M.Sagalgie</u> , and V.D.Rasal	Screening and Isolation of Phosphate Solubilizing Microbes from rice field soil	<b>BS</b>
<b>PP 38</b>	<u>Raveena Sajgule</u> , Priti Uchgaonkar and <u>Sunita Singh</u>	Screening For Marine Actinomycetes of Commercial Importance	<b>BS</b>
<b>PP 39</b>	<u>Sanjokta Vasudeo Sambare</u> , Manindar Kaur Dhaliwal and Raghunath Patil	Protease production using solid state fermentation	<b>BS</b>
<b>PP 40</b>	<u>Sanap Sandip Ramnath</u> and Nitinkumar P Patil	Mycorrhiza (VAM) Boon For Tomorrow.	<b>BS</b>
<b>PP 41</b>	<u>Sawant A.</u> , Pathak T., Dalal A., Jadhav M., Kadam K., Maurya A., Kamble S., & Deshmukh P. V.	Study of biodiversity of autotrophic microorganisms of tulsi lake, mumbai	<b>BS</b>
<b>PP 42</b>	<u>Varsha P. Shelke</u> and Dr. Meeta Bhot	Conservation of threatened medicinal plant <i>Asclepias curassavica</i> L. by <i>in-vitro</i> techniques	<b>BS</b>
<b>PP 43</b>	<u>Aditi Hemant Shimpi</u> , Manindar Kaur Dhaliwal and Raghunath Patil	Comparative Studies of Siderophores Production Using Solid State Fermentation and Submerged Fermentation	<b>BS</b>
<b>PP 44</b>	<u>Nilima Shivale</u> , Mugdha Harmalkar, Thankamani Marar and Late Madhusudan Samant	“Marine environment : Potential source of antioxidant producing bacteria”	<b>BS</b>
<b>PP 45</b>	<u>Prarthana Singh</u> , Mansi Bhanushali, Shraddha Mishra, Saisha Karbhari, and Jayaprada Rao Chunduri	Analytical Study and Evaluation of Floral Parts of <i>Musa indica</i>	<b>BS</b>
<b>PP 46</b>	<u>Diksha Sonkamble</u> , Jewrose Johnson , Pratiksha kalambe , Anand Maurya , Swapnil Kamble and Padma Deshmukh	Antibacterial , Antifungal and Antioxiidial activity of Citrus fruit waste	<b>BS</b>
<b>PP 47</b>	<u>Tidar N. P.</u>	Studies on siderophore production by Microbial isolates and its antimicrobial	<b>BS</b>

		activity against plant pathogens and its plant growth promotion	
<b>PP 48</b>	<u>N. C. Vadnere</u> and N. B. Mate	Probiotic Solution to Intestinal Pathogens	<b>BS</b>
<b>PP 49</b>	Shivam Vora, Hemakshi Valera, Mihra Tavadia, Heet Vakharia and <u>Shruti Singh</u>	Green synthesis of Copper Nanoparticles from <i>Nerium oleander</i> Leaf aqueous extract and its Antibacterial Activity.	<b>BS</b>
<b>PP 50</b>	<u>S.J. Bhagat</u> , P.V Deshmukh, S.A Kamble, A.S Maurya , V.M. Motghare and S.C. Kollur	Comparative assessment of Air Quality Index (AQI) of two different industrial zones of Dombivali City of Maharashtra, India	<b>CES</b>
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<b>PP 52</b>	<u>Ruchira Vilas Chikode</u> , Raghunath Patil and Manindar Kaur Dhaliwal	Bioremediation of Cadmium from Industrial Effluent	<b>CES</b>
<b>PP 53</b>	<u>Roma S. Dembra</u> and Padma Deshmukh	Correlation of microbial load with presence of pollutants in air (SO <sub>2</sub> & NO <sub>x</sub> )	<b>CES</b>
<b>PP 54</b>	<u>Pranaya P Dhawle</u> and Anita S.Goswami Giri	Ionic Liquid Mediated Esterification Reactions using Different Coupling Reagents	<b>CES</b>
<b>PP 55</b>	<u>Vilas R. Khairnar</u>	Effect of Surface Area on performance of Super capacitor	<b>CES</b>
<b>PP 56</b>	Darshan Lobhi, P. V. Deshmukh, A. S. Maurya, S. A.Kamble, V. S. Motghare, S. C. Kollur	Analysis of Air Quality Index (AQI) of Smt. C.H.M. College Campus, Ulhasnagar	<b>CES</b>
<b>PP 57</b>	<u>Poonam G. Mahajan</u> , Yogini Bambardekar, Nina Anand and Milind Thigle	'Synthesis and Study of Properties of Novel Crosslinked Biopolymer'	<b>CES</b>
<b>PP 58</b>	<u>Soham Mulye</u> , P.V Deshmukh, A.S Maurya, S.A Kamble, V.S Motghare, S.C kollur	Assessment of Air Quality Index(AQI) of vehicular traffic zone of Ulhasnagar city of Maharashtra, India	<b>CES</b>
<b>PP 59</b>	<u>Sonali Zankar Patil</u> and Geetha Unnikrishnan	Application of extracellular polymeric substances producing thermophiles in bioremediation of heavy metals	<b>CES</b>
<b>PP 60</b>	Pratik Patkar , Kiran Suralkar, Yogini Bambardekar, Neena Anand	Comparative study of natural and synthetic indicators in neutralization reactions	<b>CES</b>
<b>PP 61</b>	<u>Vaishali.B.Ranka</u> , Sonali. S.Patil, Vishaya.D. Patil, Shivani.C.Sharma, Shubham. S. Borlikar, Kaushik.S.Inamdar and Suman.K.Satyaram	Bioremediation of Textile Waste water using <i>Bacillus</i> and <i>Pseudomonas</i> spp.	<b>CES</b>
<b>PP 62</b>	Himani Shah, Ritika Shah, Krishna Shah and <u>Shruti Singh</u>	Extraction and Identification of synthetic food colours adulteration in selected food	<b>CES</b>

		items by rapid color test and paper chromatography	
<b>PP 63</b>	<u>Amit Shinde</u> and Bela Nabar	Isolation and screening of Cyclohexylamine (CHA) degrading bacteria from soil and sludge nearby industrial area	<b>CES</b>
<b>PP 64</b>	<u>Singh.A.R</u> , Nair.S.S, Mehetre.S.T	Development of a Laboratory scale Process for Greywater treatment	<b>CES</b>
<b>PP 65</b>	Pooja P. Shete, Chitralekha A Choudhari, Gayatree V Shinde and <u>Prashant B. Thorat</u>	Effect of Industrial Operations on Soil Quality Around Dombivili and Ambarnath Industrial Area, Thane District (Ms)	<b>CES</b>
<b>PP 66</b>	<u>Roshini Tiwari</u> , Darshana Rajput, Dhanshree Deshpande, and Kavita Mhaskar	Quality assessment of well waters from few areas of Dombivli	<b>CES</b>
<b>PP 67</b>	<u>Eunicia.Vaz</u> and Sandhya Mulchandani	Bioremediation of industrial dyes and toxic heavy metal by using microorganism isolated from different polluted sources	<b>CES</b>
<b>PP 68</b>	Gajanan Anant Vekhande and Ashok Kumar Upadhyay	Solventless single spot green synthesis of coumarines and oxidation of cycloalkanol	<b>CES</b>
<b>PP 69</b>	Sunny Vishwakarma* , J. Prajapati Neena Anand and Yogini Bambhardekar	Study of mechanism of neutralization of acidic water using Coconut husk	<b>CES</b>

**POSTER  
PRESENTATION:  
BIOLOGICAL  
SCIENCES**

## **PP 01: Antimicrobial and antifungal activity of cold alcoholic extract of Kiwi against gastrointestinal tract pathogens**

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Kiwi fruit (*Actinidia deliciosa*) is a highly nutritional fruit due to its high level of Vitamin C and its strong antioxidant including carotenoids, leutin, phenolics, flavanoids and chlorophyll. Kiwi fruit is a rich source of Vitamin E, fructose, galactose and minerals. In ancient China, kiwifruits were used for symptom relief of numerous disorders including digestive problems i.e gastrointestinal tract infections. The gastrointestinal tract is subjected to infection by many pathogens which are a major cause of illness, malnutrition, suboptimal performance and death. The common pathogens of the gastrointestinal tract are *Escherichia coli*, *Salmonella typhi*, *Salmonella paratyphi B*, *Shigella* spps, *Vibrio cholerae*, *Enterococcus fecalis* and *Candida albicans*. These infections spread by direct contact or by fecal-oral route. Nowadays, due to overprescription the organisms have evolved to resist traditional drugs. In the present study, the antibacterial and antifungal properties of kiwi fruit were screened. The kiwi fruit were dried and powdered. Cold extracts of kiwi powder were obtained using ethanol and methanol. The primary screening of the powder and extracts was carried out by Agar Ditch Method. The MIC of the extracts was determined by Agar Cup Method. The antioxidant screening of the extract was carried out by DPPH Method.

## **PP 02: A comparative study of physicochemical, microbiological analysis of crude and patanjali honey samples and their invitro antibacterial activity against ESBL and MBL uropathogens.**

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A comparative study of crude honey obtained from Mangalore district of Karnataka state and Patanjali honey sample was performed by carrying out microbiological analysis, antibacterial activity total reducing sugar and protein content. The total reducing sugar of crude honey sample was 78gm% while that of Patanjali honey was 90gm%. The crude honey sample had 9mg/g while the Patanjali honey showed higher protein content of 11mg/g. Both honey samples were checked for the presence of coliforms and the results confirmed their absence. Undiluted and 50% (w/v) of both honey samples were tested for their antibacterial activity against 10 ESBL and 10 MBL antibiotic resistant uropathogens. The results showed that the both honey samples were able to



inhibit 70% of ESBL and MBL cultures as indicated by zone of inhibition. For crude honey sample, ESBL cultures were inhibited with a zone range of 20mm-45mm and MBL cultures were inhibited with zone range of 19mm-48.5mm. the total microbial count of Patanjali honey was found to be  $2.3 \times 10^5$  cfu/g while crude honey can be used as an effective antimicrobial and therapeutic agent against the drug resistant uropathogens emphasizing its importance in medicine.

### **PP 03: Study of Biosurfactant Production From Microorganisms**

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Biosurfactants are a diverse group of surface-active chemical compounds. They are surface active molecules having hydrophilic and hydrophobic moieties as their constituents which allow them to interact at interfaces and reduce the surface tension. Biosurfactant are produced by diverse group of organism belong to bacteria, fungi and actinomycetes etc. It is produced mainly on surfaces of microorganisms or may also secreted extracellularly. In recent years, due to their unique properties like specificity, low toxicity and relative ease of preparation, these surface-active biomolecules have attracted wide interest. In this study the sample were collected from oil spilled surface of different area and enriched. Different isolates were checked for biosurfactant production. Optimization studies of biosurfactant producing organisms will be carried out for higher yield of biosurfactant production. Further extraction of biosurfactant will be carried out and the activity of extracted biosurfactant will be checked. Biosurfactant has many potential applications including enhanced oil recovery, crude oil drilling lubricants, surfactant-aided bioremediation of water-insoluble pollutants, in the health care and food processing industries. Other developing areas of biosurfactant use are in cosmetic and soap formulations, foods and dermal as well as transdermal drug delivery.

### **PP 04: Study of antibacterial and antisolar properties of pineapple peel extract**

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The pineapple peels which are dumped and thrown as waste materials will be useful if exploited for beneficial purpose. If they are not utilized they can cause environmental pollution. It is anticipated that the discarded waste materials can be utilized for further industrial purposes. So the aim of this study was to investigate the various properties of pineapple peel extract. In present study antimicrobial activity of alcohol extract and water extract of sun dried and oven dried pineapple peels were evaluated by using agar well diffusion technique against *E. coli* MTCC 1885,

*S. aureus* MTCC 3160, *S. typhi*, *S. pyogens* and zones of inhibition were measured in mm diameter. The highest zone of inhibition was shown against *S. typhi* by both the extracts. The anti-solar property of pineapple peel extract was studied and absorbance was observed in range of 209.0 nm to 315.0 nm.

### **PP 05: Preliminary screening of Tellurium nanoparticles in control of post-operative wound pathogens**

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Nanotechnology is the emerging field in medical science which involves the particles in range of 1 to 100nm. Nanoparticles can be used for early detection of cancer, early diagnosis of infectious diseases, as antimicrobial agents and to deliver drugs. As per survey, pathogens like *S.aureus*, *E.coli*, *E.fecalis*, *P. aeruginosa* can cause post operative wound infections. These pathogens cause pus formation, bad odour, redness and swelling. These infection can become severe in case of immunocompromised individuals like HIV patients. Infection in initial stages can be treated with antibiotics and antibacterials, but in case of multiple drug resistant microorganisms these infections can be treated using nanoparticles. In present study, halotolerant microorganism was used for preparation of tellurium nanoparticles. Cells were sonicated to release intracellular nanoparticles. These nanoparticles were purified by giving various treatments and were screened for antibacterial activity. Primary screening was done using agar ditch method against *S.aureus*, *E.coli*, *E.fecalis* and *P.aeruginosa* and results were found to be encouraging.

### **PP 06: Antimicrobial examination of homeopathic drugs**

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Among the plethora of systems of medicines in use today, homeopathy bears a unique niche as a complementary system of medicine. This is because the Homeopathic system of medicine, in contrast to allopathic system believes in the power of dilution to enhance clinical effects. As a testament to this, historically, homeopathy has showed therapeutic effectiveness in the cure of chronic and acute diseases. The central tenet of homeopathy is “*like cures like*”, as part of a holistic approach to treatment taking into account the totality of the patient’s symptoms. Potentization theory explains that dilution ( $< \text{Avogadro's Number}, 6.022 \times 10^{-23}$ ) and vigorous shaking of remedies often renders the remedy more potent in terms of clinical response. Modern advocates of homeopathy have suggested that potentiation of the water molecules creates domains of Nano scale dimensions or Nano crystals which remain stable below Avogadro’s limit. Our study is aimed at finding the effect of homeopathic drug/s on microorganisms. The antimicrobial activity of Jaborandi, Lachesis and Spongia T were evaluated against *Staphylococcus aureus* and *Escherichia coli* using basic experiments on lines similar to Antibiotic Sensitivity Assay (AST) and Growth

Curve Kinetics. Protein profiling of the same was done under different conditions. Preliminary results of AST suggest that the drugs tested are able to inhibit growth of microorganisms tested. Comparing Growth Kinetics also indicates marginal decrease in growth rates. The future direction is to study the changes in physicochemical properties of the media and/or the biochemical alterations within the microbial cells due to homeopathic drugs.

### **PP 07: Optimization for production of red pigment from bacteria using fruit waste**

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Synthetic pigments which have replaced natural pigments many years ago suffer from drawbacks like toxicity, accumulation and non degradability. Natural pigments from plants and microbes are good alternative to suppress the side effects associated from synthetic ones. These natural pigments can be safely used in different fields like textile, printing, medicines, food colorant etc. Microorganisms are known to produce a range of pigments which could be promising source of food colorants. The only problem associated with microbial pigments is low yield and high production cost. Here we try to improve the yield using fruit peels which are discarded as waste, and which contains many nutritive properties. This can help in production of pigment from bacteria in an economically feasible way. Soil samples were used of around Kalyan region to isolate red pigment producers, as red colour ranks second in demand after indigo. The isolate PB04 was identified as *Serratia marcescens* using 16s rRNA gene sequencing. The pigment was extracted using 99.9% Methanol. The maximum absorbance was found at 505nm using a colorimeter. The ability of isolate PB04 to produce pigment on fruit peels of orange, sweet lime, watermelon, banana, musk melon, custard apple, guava was determined. It was found that the isolate produces pigment on fruit peel substrate of orange, sweet lime, custard apple and guava.

### **PP 08 : Screening of biosurfactant producing bacteria from petroleum contaminated soil.**

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Biosurfactants are biologically synthesized surface active agents. Microbial active agents or biological surfactants are mainly produced by hydrocarbons utilizing microorganisms during growth on insoluble substrates or produced on water soluble compounds. Biosurfactant producing microorganisms are ubiquitous. Petroleum derived hydrocarbons are among the most persistent soil contaminants, and some hydrocarbons degrading microorganism can produce biosurfactant to increase bioavailability and degradation. Soil samples were collected from petrol pump near

Kalyan . After enrichment of soil samples in Mineral Salt Media (MSM) 20 different type of isolates were obtained. After screening among these 20 isolates 10 isolates were found to be potent which were tested by Oil Displacement Method and Drop Collapse Method. Further Gram staining and Haemolytic pattern of all 10 isolates were checked. Emulsification index , Methylene Blue Oxidation Test , B Oil Agar Plate Method was done and growth pattern of all 10 isolates were studied.

### **PP 09: Pharmacovigilance: the 17- letter word everyone should know**

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The safety concern of any drug is now gaining priority. Thalidomide tragedy in Canada in 1960's opened the eyes of concerned Government body and regulators of drug to ensure the safety of drug. Previously these issues were in shadow. Pharmacovigilance is one way to safeguard the health of public. It is instrumental in helping to ensure patient's safety for both newly released drugs and those that are well established in market. Hence, Pharmacovigilance is monitoring and evaluation of Adverse Drug Reactions (ADR's). Every drug is associated with beneficial as well as undesirable or adverse effects and our knowledge of a drug's reactions can be increased by various means, including spontaneous reporting, intense monitoring and database studies. The main aim is to ensure that the risk of drug use should not outweigh the benefit. Therefore the objective of the present review is to create awareness amongst healthcare professionals as well as common man about the importance of ADR reported worldwide are very few legal authorities and regulatory bodies concerned about the drug safety.

### **PP 10: Study of consortium of herbal extracts for proliferation of cells and its effect on the prothrombin factor**

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Infections are the major problem in healing of the wounds and uncontrolled infections leads to increase in the morbidity and mortality rate in patients. In the present study, 42 bacterial strains were isolated from the burn wounds and out of these, 14 isolates were identified as broad spectrum antibiotics resistant strains. These species comprises of *Pseudomonas spp*, *Escherichia coli*, *Klebsiella pneumoniae* and *Enterococci spp*. The antimicrobial activity of combination of hot water extract of *curcuma longa* (turmeric), *Allium sativum* (garlic), *Vitex negundo* (nirgudi) was determined by agar ditch method. It was effective against 3 out of 14 broad spectrum antibiotics resistant strains. The kill time study of the extract was carried out. 1% of the combination extract showed bactericidal activity within 2 hours against *Enterococcus*. Extract was then evaluated to find the anticancer activity, cytotoxicity and anticoagulating activity. However, the extract didn't

show any significant anticancer activity. The extract showed good anti coagulating activity and enhanced the proliferation of verocells indicating it will be a promising agent for wound healing.

### **PP 11: Current trend in food packaging ( edible films )**

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Most of the food consumed comes directly from nature and many of them eaten immediately as possible after harvesting from source. Transportation takes long time to reach food on table of consumer from farmhouse field. This time consumption leads to dehydration, deterioration and loss of appearance, flavor and nutrition of food. Edible film is a coating or wrapping food to extend its shelf life that may be eaten with or without further removal. A film or coating provide surface sterility and prevent loss of other important components. Edible films can provide either clear or milky (opaque) coatings, but consumers generally prefer invisible, clear coatings. A film or coatings are obtained in various ways (1) by dipping the product into, or by brushing or spraying it with solution containing film ingredients, so as to deposit the film directly on food surface or (2) by creating stand alone film from solution or through thermo formation for subsequent covering of food surface. Edible films produced from material having film forming ability. During manufacturing, film materials must dispersed and dissolved in a solvent. Components used for the preparation of edible films can be classified into three categories: hydrocolloids (such as proteins, polysaccharides, and alginate), lipids (such as fatty acids, acylglycerol, waxes) and composites. Fats are used to reduce water transmission; polysaccharides are used to control oxygen and other gas transmission, while protein films provide mechanical stability. Some medicinal plant extract added in film material give antimicrobial properties to film. Addition of antioxidant agent into film extend food shelf life Edible films or coatings acting as protective barriers and extending foods shelf life. The addition of antioxidant, antimicrobial compounds to edible films or coatings can increase food safety and quality by inhibiting deterioration reactions of the food materials.

### **PP 12: Gender perspective study of MDR- TB affected population in Thane suburbs**

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**Background:** Tuberculosis (TB) is the leading cause of death due to infectious disease in women worldwide. WHO estimated that in 2015, 3.5 million women suffered with tuberculosis. Tuberculosis is one of the five killers of women among the reproductive age group. Social stigma and discrimination can be the reason for delay in seeking treatment for this disease. **Objective:** Demographic analysis to study effect of Multiple Drug Resistant pulmonary tuberculosis on women in Thane suburbs. **Methods:** Retrospective cohort study of 100 positive cases of pulmonary and extra pulmonary tuberculosis was done by using BACTEC-MGIT 960. Drug sensitivity was studied for first line drugs to detect MDR-TB. Female vignette was studied in detail

for mono-resistance, Poly-resistance and MDR-TB. **Results:** (1) Pulmonary tuberculosis : Extra Pulmonary Tuberculosis = 63 : 37 (2) Pulmonary Tuberculosis positive : Male : Female = 51 : 49 (3) Alarming sign as male- female ratio is 1:1, indicating status of women health. (4) 80 % tuberculosis positive cases of females in young and reproductive age group of 15-29 years. (5) 60% tuberculosis positive cases of females have MDR- TB. **Conclusion:** (1) MDR-TB resistant strains are prevalent amongst pulmonary and extra pulmonary infections. (2) Tuberculosis affects men and women equally. (3) Since women are at highest risk , health of family and children are at utmost risk. (4) Increasing percentage of women patients may be due to social stigma, gender discrimination, and poor access to resources. (5) Findings of this study may be used to develop new strategies for policy makers, it also underlines that women have less community support, limited access to treatment. The study also emphasizes efforts to enhance gender sensitivity, to carry out more in depth studies on demography and socio-economy to promote awareness of this disease .

### **PP 13: Isolation of Phytase producing microorganisms from Poultry, Cattle yard & Farm soil.**

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Phytic acid or myo-inositol hexakisphosphate is an anhydrous & indigestible storage form of phosphate accounting for more than 80% of total phosphorous in cereals and legumes. Phytic acid forms insoluble complexes with minerals such as Ca,Mg,Fe,Zn,etc. thus preventing their absorption in monogastric animals. Phytase is an enzyme that results in dephosphorylation of phytic acid which leads to liberation of minerals and make them available for absorption. Phytase enzyme has immense application in swine and poultry industry as it is added in feed of these animals. It has also shown its potential in human nutrition. For detection of phytase activity samples were collected from rhizosphere soil of rice field, cattle yard, poultry of Vaijanath,Karjat. Isolation of phytase producers from soil samples was carried out by enrichment and adaptation technique. Potent phytase producers from the isolates were further screened by observing zone of clearance on Wheat Bran Extract Agar plate. Finally in order to explore enzyme for use in veterinary food supplement & other application, hemolytic activity of screened potent phytase producing isolates was tested. All four screened phytase producing isolates showed conversion of organic phosphate to inorganic phosphorous.

### **PP 14: Isolation and Characterization of Thermophilic *Actinomycetes* from compost**

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The *actinomycetes* is a genus of class Actinobacteria. They are all gram positive organisms. The thermophilic *actinomycetes* are found in habitats where decomposition of organic material takes place at elevated temperatures, where thermophilic *actinomycetes* play an important role. The *Actinomycetes* are important members of the soil microflora because of their physiological activities than their qualitative occurrence. In this study the isolation of thermophilic *actinomycetes* from different composting sites was done. Characterization of thermophilic *actinomycetes* was done by colony morphology and microscopic examination. Optimization of enzymes will be done at different parameters. *Actinomycetes*-mediated chemistry has many advantages for the synthesis of gold and silver nanoparticles. Thermophilic *actinomycete* is used for production of plant growth hormone (indole-3-acetic acid) *Actinomycete* have an extended tradition in the analysis of bioactive compounds. Thermophilic *actinomycetes* used in bioremediation, biocorrosion, as a source of agroactive compounds and it produces many antibiotics that are most valuable. Thermophilic *actinomycetes* are abundant in soil and are responsible for most of the digestion of resistant carbohydrates such as chitin and cellulose. Enzymes produced from thermophilic *actinomycetes* are useful in industry.

### **PP 15: Use of *Daphnia* as Model Organism to Study Epigenetic Processes**

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*Daphnia* offer a variety of benefits for the study of epigenetics. *Daphnia*'s parthenogenetic life cycle allows the study of epigenetic effects in the absence of confounding genetic differences. Sex determination is likewise environmentally controlled; males are produced in response to suitable environmental cues. Additionally, *Daphnia* exhibit a range of spectacular polyphenisms, phenotypic alternations including helmet formation, in response to predators and also the color change according to the environmental stress. This makes *Daphnia* an excellent candidate for studying environmental influences on epigenetic developmental programs. Most importantly in the context of epigenetics, clonal lines are genetically identical yet consist of phenotypically divergent individuals. The attractiveness of *Daphnia* as a potential epigenetic model organism is further enhanced by the fact that they are easy and inexpensive to maintain and have a rapid life cycle. Thus, *Daphnia* is an ecologically important organism well-studied in the context of evolution, ecology, ecotoxicology, predator-induced polyphenisms, and genomics and offers unparalleled opportunities to study epigenetics in these biologically important processes. Under hypoxic conditions *Daphnia* becomes red as a result of expression of hemoglobin. Genomic sequence data revealed that it contains many hemoglobin genes. Therefore in order to create firsthand information on comparative account on hemoglobin gene sequence in different species *Daphnia* and *Homo sapiens* will be crucial for elucidating the process of hemoglobin gene regulation in *Daphnia*. Here we present an in silico investigation so as to see the similarities &

differences between Daphnia and Human hemoglobin genes, which can be used as a foundation for other epigenetic studies.

### **PP 16 : Isolated bacteria as potential biofertilizer**

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During the last few years, agriculture development has taken a leap which has resulted in the use chemical fertilizers. The constant use of these chemicals has resulted in the decrease in the land fertility and chemical toxicity increasing. Biofertilizers are important components of integrated nutrients management. These potential biological fertilizers would play key role in productivity and sustainability of soil and also protect the environment as ecofriendly and cost effective inputs for the farmers. They are cost effective, ecofriendly and renewable source of plant nutrients to supplement chemical fertilizers in sustainable agricultural system. Bacterial isolates were isolated from garden soil from the college campus in Kalyan, Dist Thane, and were evaluated to check their potential as biofertilizers. Seven morphologically distinguished bacterial isolates (ASH1, SOB1, SOB2, SOB3, SOB4, PS1 and PS2) were isolated. These isolates were studied for their colony characteristics and were found to be Gram negative in nature. These isolates were able to grow at a broad temperature range, tolerate high concentrations of salt and survive in varying pH concentrations. The isolates were checked for their ability to produce IAA, sulphate ions, organic acids, siderophores, nitrites and solubilise phosphates. Isolate SOB3 was found to produce maximum amount of IAA, nitrites and showed higher sulphate oxidising potential. These isolates if used as biofertilizers can restore the soil's natural nutrient cycle and build soil organic matter, thus providing nutrients to the growing plants.

### **PP 17: Isolation, Identification and characterisation of Bacteriocin-Producing Bacteria and its Antimicrobial Activity**

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Technologies on processing and preservation of food products, which help in maintaining its nutritional values besides ensuring safety issues, are the area of current food research. Numerous strains of lactic acid bacteria (LAB) associated with food systems produce bacteriocin defined as proteinaceous substance that exhibit antibacterial activity against closely related organisms. Lactic



acid bacteria (LAB) and *Bifidobacteria* are the most common types of microbes used as probiotics. Probiotics are commonly consumed as part of fermented foods with specially added active live cultures; such as in yogurt, soy yogurt, or as dietary supplements. The use of non-pathogenic microorganisms and/ or their metabolites to improve microbiological safety and extend the shelf life of foods is defined as bio preservation. They have a long history of application in fermented foods because of their beneficial influence on nutritional, organoleptic, and shelf-life characteristics. The present research work investigated on isolation, identification and characterization of bacteriocin producing bacteria from raw milk and curd sample. They were evaluated for antimicrobial activity against food poison causing bacteria. A total of two lactic acid bacterial isolates were obtained from raw milk and curd sample on deMan, Rogosa, and Sharpe (MRS) medium. Isolates exhibited significant acid tolerance (up to pH 3 and pH 2), heat tolerance (up to 40°C) of raw milk and curd respectively. Presence of protein in isolates was estimated by Folin-Lowry method. Antimicrobial activity of isolates was determined by agar cup method against standard organisms such as *Escherichia coli*, *Pseudomonas aeruginosa*, *Candida albicans*, *Staphylococcus aureus*, *Bacillus subtilis*, *Salmonella typhi* and *Proteus vulgaris*. Food preservation using bacteriocins is still under investigation.

### **PP 18: Heavy Metal Tolerance of Moderately Halophilic Bacteria from Wetlands of Western Thane**

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Heavy metal contamination of environment is a result of industrialization and technological advances. Hypersaline wetlands too are subject to such contamination. The toxicity of these metals poses a serious health problem to human as well as aquatic life. Halophilic bacteria tolerant to heavy metals can be used in bioremediation of such environments or highly saline industrial waste effluents. They can also be used as indicator organisms to detect pollution. Despite of this, very little information is currently available regarding the distribution and abundance of these bacteria in local hypersaline environments. Thus an attempt was made to isolate moderate halophiles from hypersaline wetlands like salt pans and marshes on the west coast of Thane district and study their tolerance to heavy metal salts. Seventy isolates obtained from 45 different sampling sites were characterized and checked for their tolerance to salts of chromium, copper, cobalt and zinc (0.3125 mM to 10 mM).. All of them were found to be fairly resistant to chromium, moderately resistant to cobalt and zinc and sensitive to copper. The chromium tolerant isolates were checked for their ability to reduce chromium. Four isolates showed resistance to higher concentrations of the metal salts and were capable of reducing chromium levels. Thus these isolates can be promising candidates for bioremediation.

## PP 19: Effect of Seed coating with Chitosan for Enhanced Plant Growth under Salt (Abiotic) Stress

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Chitosan is a polysaccharide biopolymer derived from Deacetylation of chitin using microbes. Chitosan not only stimulates growth and increases the crop yields but also alleviates the harmful effect of abiotic stress on plant growth as well as preserves enzymatic activity of the seeds. The objective of this study was to investigate the effects of chitosan coated seeds on germination, seed vigor index, root and shoot length of rice seeds using mangrove soil. The chitosan was dissolved in 0.5% and 1% acetic acid and subjected to seed priming. The parameters measured after seed priming is as follows:

Isolate	Seed Vigor Index		Shoot Length (cm)		Root Length (cm)		Germination Index		Germination Percentage	
	0.5%	1.0%	0.5%	1.0%	0.5%	1.0%	0.5%	1.0%	0.5%	1.0%
IS 5	3610	3420	16.1	14.03	17	18.03	5.5	6.1	79.2	87
IS 12	3145	3240	12.8	16.3	15.1	16.4	5.6	6.1	80	87

From the above result, the seeds coated with chitosan obtained from IS 5 were found to be efficient in enhancing the seed vigor and germination of the coated seeds. The IS 5 will be subjected to 16s rRNA sequencing for identification. Hence, from this investigation was proved that chitosan coating enhances the seed germination, preserves the enzyme activity and protects the seed from salt stress.

## **PP 20 : Reuse of floral wastes (*Tagetes spp.*) as Biofertilizer for the plant *Ocimum tenuiflorum***

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With the increasing population, the problem of solid wastes has also increased. To minimize these problems, the concept of 3R's (i.e. Reduce, Reuse, Recycle) is the need of the day. In India, floral offerings during worshipping is a normal practice. Lots of floral wastes generated from temples, households, etc. are either dumped in the open dumps along with other wastes or it is thrown in the waterbodies. The latter leads to serious water pollution like Eutrophication, whereby the aquatic flora and fauna become victim of such organic pollutants. The present work deals with reusing of Marigold flower (discarded as floral wastes) generated from households as biofertilizer for the commonly grown Tulsi plant (*Ocimum tenuiflorum*). A comparative study was conducted on the Tulsi plant by using floral waste directly and in powdered form as biofertilizers. Untreated Tulsi plant was kept as control plant. The plant growth was observed for 90 days. The plant parameters (height, leaf count and chlorophyll content) and soil parameters (pH, conductivity, organic matter and NPK values) were calculated and compared with the untreated control plant. The plant provided with powdered floral wastes showed good growth as compared to that of the control plant. Hence, the present work can be an ecofriendly alternative and cost effective method for use of household generated floral waste as biofertilizer for potted plants at houses itself, instead of using other biofertilizers and chemical fertilizers available in the market. This reuse of floral waste will in turn reduce its discharge in the water bodies and will reduce water pollution due to anthropogenic activities to some extent.

## **PP 21: Efficacy of bacterial metabolite bioformulation in control of mosquito larvae**

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Mosquitoes are vectors for a large number of life-threatening diseases such as dengue, yellow fever, malaria, chikungunya, encephalitis, filariasis etc. According to a recent survey, malaria kills more than 420,000 people each year. Multidrug resistant malaria superbugs can beat off the best current treatments of artemisinin and piperaquine. Extensive use of chemical insecticide has also resulted in undesirable effects on non-target organisms and fostered environment and human health concern. In the present study a bacterial isolate was isolated from soil sample from hilly regions of Maharashtra. The secondary metabolite was extracted from the bacteria and it showed larvicidal activity against *Aedes*, *Culex* mosquito larvae. The LC<sub>50</sub> value of the secondary metabolite was 500ppm. Bioformulation of the secondary metabolite extracted from bacterial

isolate was prepared by sand impregnation method. Larvicidal activity of the bioformulation was tested at 1000ppm and 500ppm against *Aedes*, *Culex* larvae and it showed promising results. The bacterial isolate was identified by 16S rRNA sequencing and it was identified to be *Bacillus cereus*.

## PP 22: Are we sharing happiness or sickness?

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In India the ritual to share happiness is by distributing sweets to kith and kin. But the manufacturers for their economic benefits compromise on the quality of the product, by adding adulterants and using low quality raw materials. Hence a survey of sweets viz 'Pedhas' available in the market was conducted. Pedhas have a short shelf life and are in huge demand in the market. The quality control measures put forward by the Bureau of Indian standards are always flouted, leading to cases of food poisoning. Thus the present study is involved in Physical, Chemical & Microbiological analysis of Pedha samples collected from Thane and Raigad districts as per BIS. Totally 11 pedha samples were collected from sweets shops situated in Thane and Raigad districts. It was concluded after analysis that the different samples were adulterated. 36.36% of the samples showed presence of urea and 27.27% of the samples showed presence of coal tar dyes. While microbiological analysis showed that out of 11 samples, 45.45% showed presence of *Shigella*, 27.27% showed presence of *Escherichia coli* and 18.18% showed presence of *Klebsiella pneumoniae*. The microorganisms are causative agent of dysentery, gastrointestinal infections and respiratory infections respectively. Thus concluding that the Pedha samples are unfit for consumption. Several parameters such as unhygienic practices, selection of quality of raw materials and storage conditions leading to decrease in shelf life of sweets has made the Pedhas unsafe and unsuitable for human consumption. Thus the project intends to highlight the quality control measures are needed to be strictly followed by the manufacturers

## PP 23: Antibacterial, Antioxidant and Antifungal Activity of Banana (*Musa paradisiaca*) & Palash (*Buteamonosperma*) Leaves on Gastrointestinal Pathogens

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Gastrointestinal Infections are Viral, Bacterial or Parasitic Infection which cause many intestinal disorders such as Vomiting, Diarrhea & Dysentery. Bacteria causing disease in intestinal tract include *E. coli*, *Pseudomonas aeruginosa*, *Salmonella* & *Shigella* and *Vibrio cholerae*. *Musa paradisiaca* and *Buteamonosperma* are often used for serving food among various tribes congregations. Review of these plants indicate that they possess Antibacterial activity and other

pharmacological activities. Since they are used for serving food, it was thought that their antimicrobial activity potential be screened. The present study therefore indicates screening of cold and hot water extract and methanolic extract of *Musa paradisiaca* & *Butea monosperma* leaves against GI tract pathogens. Antibacterial activity is determined by Agar Diffusion method. These plants are also screened for their Antioxidant properties by DPPH method. MIC of the extract determined by Agar Cup bore method. The Results obtained are significant.

#### **PP 24: Study of pectinase producing bacteria with polygalacturonase activity**

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Pectinases are group of enzymes that hydrolyze pectin and with trans-elimination as well as by de-esterification reactions. Pectinase is an enzyme which can be found in the pith of citrus fruits and it functions to hydrolyze pectin into polygalacturonic acids and finally to galacturonic acid. Pectinases are extensively used in the feed and drink industries, chiefly in fruit juice clarification. Therefore, it is important to discover new pectinase producing microbes and optimize their enzyme production conditions in order to meet the increasing demand. Different pectinolytic bacterial species can be isolated from natural resources such as rotten potatoes, orange fruit peels, banana peels etc. Bacterial isolates can then be identified for their polygalacturonase activity. Extracted enzyme may be characterized further by U.V. spectrophotometer.

#### **PP 25: Phytochemicals testing and Antimicrobial analysis of *Nelumbo nucifera* (Lotus seeds)**

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Traditionally Indian lotus seeds or *Nelumbo nucifera* have been used for its various medicinal properties. The study and analysis of these properties are available in the literature. In our project we attempt to analyse the antimicrobial, hepatoprotective, antidermatophytic and antidiarrheal properties. We also analyse the nutritive value which reveals it can be a source of protein and calcium. It provides an overview of phytochemical, nutritive and therapeutic values of lotus seeds.

## **PP 26: Morphological study of Silver Nanoparticle synthesized using microwave assisted method and checking its antimicrobial efficiency.**

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Colloidal silver nanoparticles being utilized for centuries in various field. Currently this optical-electronics properties have been researched and utilized in various high end technology applications like organic photovoltaics, sensory probes, therapeutic agents, drug delivery in biology. In modern day technology the use of silver nanoparticle has many potential applications in fields of medical sciences viz. drug delivery, antimicrobial activity, and cancer therapy. The morphological properties of Silver nanoparticles such as size, shape, surface chemistry or aggregation can be tuned by changing the different synthesis methods where different reducing agent, stabilizer, surfactant, changing pH of reducing agent. The biological and environmental safety is being evaluated to explore the application of silver nanoparticles. We used tryptophan to synthesize AgNPs under microwave irradiation. The method is simple, less time consuming, green process, which yields approximately, 16 nm Silver nanoparticles of uniform morphology. Synthesis of colloidal AgNPs was monitored by UV-Visible spectroscopy by taking UV spectra in between 230 nm to 700 nm. The antibacterial efficiency of synthesized AgNPs was studied against standard culture of *Escherichia coli*, and *S. aureus*.

## **PP 27: Carbon Nanotubes as a vehicle for drug**

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The application of nanotechnology has tremendous potential in healthcare, particularly for the development of better pharmaceuticals. Size of Nano tubes is an important criterion for selecting suitable nano material. Smaller sized nano material with more surface area is preferred. The surface area of Carbon Nano Tubes (CNT) was measured by Methylene blue method. The size of Carbon Nanotubes was reduced using ball milling The presented work is a prelude in the direction of using Carbon Nano material as a vehicle for drug delivery to the desired sites. Analysis of CNT by TEM and SEM shows reduction of CNT in uneven sizes.

## PP 28: Biofabrication

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The objective of 3D Bio-printing is to design and create functional 3D tissues or organs *in situ* for *in vivo* applications. The most exciting part, though, doesn't have anything to do with printing cars and fancy furniture, but in producing human tissue, otherwise known as "Bioprinting". The creation of vascularized tissue constructs has remained a principle challenge till date. The present review is structured as introducing the scope of bioprinting in tissue engineering applications. Its future is bright and will eventually results in some major advantages for society. The modern world mainly at urban areas has generated a high number of patients waiting for organs because of diseases, congenital problems and accidents. The number of available organs for transplantation is not enough causing a shortage of organ. The time is too short. The patient may not wait very long. The shortage is also impacted by the compatibility tissue. Even when there is an organ available, it may not be compatible for certain patient. Almost 30 years ago, 3D printing technique appeared. Tissue-engineering started to look at 3D printing as a partner. Bio-printing is an emerging technology to fabricate and design specific tissue constructs due to its ability to create complex hetero-cellular structures with anatomical precision, which holds a great promise in fabrication of vascular or vascularized tissue for transplantation.

## PP 29: *In Silico* analysis of ISWI chromatin remodeling complexes in Chicken

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In order to accommodate extensively large size of genome it must be wrapped, coiled, looped and condensed around nucleosomes - basic unit of chromatin. Hence, DNA processes require precise mechanisms to decondense and recondense its chromosomes which cause recruitment of chromatin remodelers – either covalent histone modifying complexes or ATP dependant chromatin remodeling complexes. Currently, four different classes of remodeling complexes can be recognized: SWI/SNF, ISWI, Mi-2 and Ino80. The focus of present study is Imitation SWItch (ISWI) class of chromatin remodeling complex. It performs various functions like – nucleosome spacing, DNA damage repair, Transcription and replication. DNA damage is the major cause of both cancer and aging. Organisms are equipped with diverse mechanisms of DNA repair and associated DNA damage signaling pathway, collectively called DNA damage repair (DDR). Most DDR pathways

are known in detail but how they function within chromatin and how chromatin configuration and reconfiguration facilitates the DDR has obtained wider attention. Deregulation of chromatin remodeling causes loss of transcriptional regulation at critical checkpoints required for proper cellular functions: causing different diseases including Cancer. The ISWI gene is conserved in many higher and lower eukaryotes. This gene (ISWI gene) has been extensively studied in Yeast, Drosophila and mammalian models, however an avian model for ISWI remain unexplored. It will be interesting to study compositional heterogeneity in avian ISWI chromatin remodeling complex. It will also provide an opportunity to compare the avian and mammalian model in the context of ISWI. Finally it may lead to finding of fundamental and novel regulatory mechanisms of chromatin remodeling in different systems. Here we present *in silico* comparative analysis of chicken ISWI chromatin remodeling complexes.

### **PP 30: Studies on microbial production of lipases from oil contaminated soils.**

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Lipase is an enzyme that catalyses the hydrolysis of fats. The enzyme performs essential roles in the digestion, transport and processing of dietary lipids. Lipase is a significant enzyme and has an important role in various industrial sectors. Lipolytic organisms were collected from various oil contaminated soils. Isolation of lipase enzyme producers has been carried out by enrichment and adaptation. The isolated 12 cultures were qualitatively tested for lipase enzyme producing capacity on Tributyrin agar plate. Potent 3 isolates after screening were tested quantitatively for lipase production using titrimetric method. Further optimisation of production parameters was carried out for the isolate which was found to be potent for lipase production in qualitative as well as quantitative method. The isolate was found to give maximum enzyme activity at Room temperature (RT) , pH 6 and 30 minutes of reaction time. The potent isolate was non haemolytic therefore can be explored for different industrial applications.



### **PP 31: Isolation and characterization of hydrocarbon degrading micro-organisms**

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Oil spillage has become environmental problem. Natural Bioremediation is the only eco-friendly solution to resist its devastating environmental and economic damage. In this study, hydrocarbon tolerant and degrading bacteria were isolated from different oil contaminated soil samples. Mineral salt media supplemented with Petrol, diesel and glycerol as a sole carbon sources was used for the enrichment of bacteria capable of degrading hydrocarbons. The media supplemented with petrol, diesel and glycerol as a sole carbon sources as used for isolation of bacteria capable of degrading hydrocarbons. The bacterial strains were isolated capable of degrading hydrocarbons. Oil degrading activity of microbes shown that culture have properties to degrade oil. The isolates will be identified and further optimization study will be carried out to check the growth enhancement of different microbes by different criteria such as pH, temperature, carbon and nitrogen sources. Hydrocarbons are the world's most commonly used primary energy and fuel resources, due to energy they produce. Hydrocarbon degradation by microorganism has been shown to produce non-toxic products such as water and carbon dioxide. Hydrocarbon utilizing microorganisms naturally degrade contaminating hydrocarbons and cleans the oceans of oil pollutants. Micro-organisms play major role in PAHs removal from contaminated environments because of some advantages such as cost effectiveness and more complete clean-up.

### **PP 32: Determination of Antioxidant and Antibacterial Activity of Papaya (Carica) fruit Seeds and Peels against (GI) Gastrointestinal pathogens.**

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Gastrointestinal infections are caused by many types of microbes including bacteria, viruses, protozoa, and helminthes, including *Escherichia coli*, *Vibrio cholerae*, *Shigella*, *Salmonella typhi*, *Salmonella paratyphi A*, *Salmonella paratyphi B*, *Pseudomonas*, *Enterococcus fecalis*. Papaya plant is important due to the specific enzyme present in it like papain. It is used to treat infections by defibrinating wounds and treatment of edemas. The present study is done to check whether the papaya (peels and seeds) can be used to treat the Gastrointestinal infections also. Methanolic, Petroleum ether and Water extract of the plant parts were studied for their antibacterial and antioxidant activities. Primary screening was done using Agar Ditch Method. The MIC determination was carried out using Plate Dilution Method. The antioxidant potential of the papaya extract was carried out by using DPPH method.

### **PP 33: Study of Halophilic Microorganisms Producing Industrially Important Enzymes**

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Halophiles are extremophiles that include a diverse group with ability to survive in highly saline conditions. Halophiles are characterized in major life domains including *Archaea* as well as Bacteria. *Archaea* represents halophiles with heterotrophic, chemotrophic aerobes and anaerobes. A large number of members from these domains are found growing in diverse habitats including both thalassohaline and athalassohaline environment. Well-developed strategies of adaptation allow halophiles to sustain their survival in saline extremes. Certain important biotechnological and ecological features are grabbing the attention of scientists to study halophilic biology more deeply. In the present study halophilic microorganisms were screened for the production of industrially important enzymes. Amylase and lipase enzymes were produced and estimated. Optimization of enzyme production based on temperature, pH, NaCl concentration will be done. In the industry halophilic bacteria may be most valuable in the production of gums, enzymes and possible applications in the laundry industry, pharmaceutical industry and in oil recovery. Various extracellular enzymes including cellulase, hemicellulase, dextranase, chitinase, lipase, yeast cell wall lytic enzymes, proteolytic enzymes and nucleases that function in saline environments would have great value.

### **PP 34: Optimization of process parameters for lab-scale production of pectinase enzyme using the isolated pectinolytic yeast with orange peels as a substrate**

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Pectinases are enzymes that break down pectins into simpler molecules like galacturonic acid. Pectinase finds a wide range of applications in Pharmaceutical, food, Agricultural industry and is one of the important enzymes used in fruit juice industry. Pectinases are commercially produced using bacteria and molds, but the production of pectinase using yeast strain is not much explored. In this study, 18 soil samples from market places were collected and a total of 28 isolates were screened to be pectinolytic after enrichment on pectin medium. The isolates were qualitatively and semi-quantitatively tested by Congo red overlay method. The potent 4 isolates were screened quantitatively and the isolate 13B showed maximum enzymatic activity in crude enzyme extract and it was employed for lab-scale fermentation. The potent isolate 13B was identified as a yeast

strain by microscopic and cultural characters. The fermentation parameters for enzyme production were optimized to be 37° C, pH 5.5 and incubation period of 4 days. The lab scale production of the enzyme was carried out at the optimized parameters using pectin-rich orange peel waste. The enzymatic yield obtained with 1% orange peel powder was similar to that of 1% Pectin and therefore it can be employed as a cheap alternative for large scale production of pectinase.

## **PP 35: MICROBES AS A SOURCE OF NATURAL PIGMENTS IN TEXTILE DYEING**

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The textile industry is one of the rapidly growing industries worldwide, which utilizes enormous amounts of synthetic dyes. Human and animals who come in contact and those involved in production of synthetic dyes experience toxic effect associated with them. Some of the chemicals found in synthetic dyes are mercury, lead, chromium, copper, sodium chloride, toluene, and benzene. Prolonged exposure to large doses of these substances can be toxic and can have severe effects in the human body which include skin cancer neurological disorder, and allergic reactions. Water pollution can also result from manufacturing synthetic dyes when untreated dye effluent is dumped directly in water bodies and if the same water is used for agriculture can have drastic effects on plants and their consumers. Hence, natural pigments have drawn the attention of industry as a safe alternative. Microorganisms are known to produce a huge repertoire of natural pigments, which may also have nutritive value like carotenoids. In the present study an attempt was made to isolate suitable pigments that can be used for the production of natural dyes. Bacteria producing pigment were isolated using soil samples. Pigment was extracted using methanol and was evaluated for application as a dye in the textile industry. The pigment was tested on different fabrics. The pigments were tested for antimicrobial property. The colour was observed to be stable after wash performance studies.

## **PP 36: Production of cellulase using solid state fermentation**

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In energy deficient world, cellulases play a major role for production of alternative energy resources using lignocellulosic waste materials. Cellulases have found a wide range of applications in coffee processing, textile industry, pulp and paper industry etc. The high demand of cellulase has increased their prices to a large extent and the major reason is the cost of substrate and fermentation procedure. It is the need of the time to search for cheaper or low cost substrates and reduced fermentation cost. Since it is a highly useful enzyme its production needs to be optimized.

The study aims to search for substrates with low cost using solid state fermentation. In this study an attempt to optimize solid state fermentation parameters to increase the yield of enzyme cellulase and to decrease the cost of production will also be made.

### **PP 37: Screening and Isolation of Phosphate Solubilizing Microbes from rice field soil**

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The phosphate-solubilizing potential of the microorganisms in rice field was demonstrated when enriched soil sample plated on sterile NBRIP media supplemented with insoluble, tribasic calcium phosphate. The clear zones of solubilization were recorded. In the present study, 05 phosphate-solubilizing bacteria were isolated from the rice field soil sample. Isolates further partially identified by studying its cultural and biochemical characteristics and it was revealed that, the isolates resemble with *Bacillus*, *Pseudomonas*, *Azotobacter* and *Rhizobia*. The phosphate-solubilizing ability of the isolates was first qualitatively evaluated by the formation of clear zones around the colonies growing on solid medium containing tribasic calcium phosphate as a main source of phosphorus. The isolates exhibited the solubilization index ranging from 2 to 5. Indole acetic acid production by isolates was also determined and it was found that, isolates produces 3.22 to 35.48 µg/ml of IAA. The use of rice straw as a carrier in biofertilizer preparations from isolates was proposed and to confirm the biofertilizing ability of isolates, pot assay was performed. This bare that, average root length of rice plants reached to 9.75 – 14.60cm and shoot length to 20.75-23.80cm after 21 days of incubation; while for control (seeds sown without bacterial isolates) root length and shoot length were found as 6.15cm and 19.40cm respectively. This justified that, isolates have increased root growth by ~58-100% while shoot growth by ~7-18%.

### **PP 38: Screening For Marine Actinomycetes of Commercial Importance**

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Mangroves are tidal forests existing of intertidal zones having sheltered shores, creeks, lagoon, and marshes of tropical and subtropical regions of the world. The mangrove ecosystem of India stands extensively unexplored for the vast diversity of microbes. Among these actinomycetes form a dominant group of soil population together with bacteria and fungi. Actinomycetes gain special

importance due to their ability to produce potent antibiotics and many other bioactive compounds. Hence, the present study was undertaken to screen actinomycetes of marine origin and explore their potential for the production of different compounds of commercial importance. In the current study a total of fifty eight isolates were screened for the production of these compounds. These isolates were obtained from mangrove soil collected from different areas of Thane creek. These isolates were grown on selective media like Actinomycetes isolation agar medium, Starch-Casein media and Glycerol yeast extract media. Out of these fifty eight isolates, four isolates exhibited antimicrobial activity against Gram positive bacteria like *Corneybacterium diptheriae*, *Sarcina lutea* and Gram negative bacteria like *Escherichia coli*, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*. These isolates were further screened for production of L-asparaginase enzyme and also for production of various others bioactive compounds having industrial application.

### **PP 39: Protease production using solid state fermentation**

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Proteases are enzymes that break down protein molecules through peptide bond hydrolysis. Microbial proteases are the most important industrial enzymes with considerable applications in food, medicines and pharmacy. They are extracellular enzymes that can be produced by both submerged and solid state fermentation (SSF). Protease production under solid state fermentation will be studied using *Aspergillus niger* ATCC 16404. Different agroindustrial waste products will be evaluated to check possibility of potential utilization of substrates in SSF. The initial results obtained showed that the wheat bran is more suitable substrate for protease production than rice bran. These results may vary with change in physico-chemical parameters of fermentation, though the confirmation is required by repetition.

### **PP 40: Mycorrhiza (VAM) Boon For Tomorrow.**

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Vesicular Arbuscular Mycorrhizal (VAM) is a fungus which has the ability to dissolve the phosphates found in abundance in the soil. VAM will be active only near the roots of the plants. It can be used by applying on the roots, through nursery grow bags or by mixing in compost. VAM stays with mutual co-operation inside the roots of the plants. Mycorrhiza increases the amount of phosphorus and trace elements in the soil. It also assures water availability. Mycorrhiza (VAM fungi) when used as Biofertilizers enhance uptake of P, Zn, S and water, leading to uniform crop growth and increased yield and also enhance resistance to root diseases and improve hardiness of transplant stock.

### **PP 41: Study of biodiversity of autotrophic microorganisms of tulsi lake, mumbai**

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Tulsi lake (19°11'N, 72°55'E) is a freshwater lake, which is second largest lake in Mumbai and supplies part of city's potable water needs. The algal flocs found in waters of Tulsi Lake were studied as they cause problems during purification of water. These algae are oxygenic, phototrophic, eukaryotic organisms. Total 30 samples were collected from different locations of Tulsi Lake in the month of December. All 30 samples were checked for pH, sulphates, nitrates and phosphates content. The samples were enriched in media lacking organic carbon source. The growth of algae was observed after incubation of three days. The enriched samples were then streaked on solid media for isolation. Algal and bacterial colonies were obtained. Algae were identified using light microscope and phase contrast microscope. The bacterial colonies isolated from solid media were found to be chemoautotrophs which showed characteristic pigmentation. Chemoautotrophs were further subcultured and checked with various biochemicals for identification using Bergey's Manual of Determinative Bacteriology (Ninth Edition). The detailed results of all the tests are shown in the poster.

### **PP 42: Conservation of threatened medicinal plant *Asclepias curassavica* L. by *in-vitro* techniques**

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Biotechnology provides opportunities for multiplication & conservation of plant biodiversity using *in-vitro* techniques. Medicinal plants are most important resource of life saving drugs. These valuable plant resources are being exploited by human intervention. Therefore there is immediate need of conserving these plant genetic resources. Tissue culture techniques help rapid multiplication of plant and production of secondary metabolites. *Asclepias curassavica* L. is a threatened ethno medicinal plant having anti- inflammatory, cardiogenic, anticancer, anthelmintic properties. In the present study an efficient protocol for callus culture of *Asclepias curassavica* L. is standardized. Surface sterilized leaves, stem and seed explants were inoculated in MS (Murashig & Skoog) medium with different concentrations of auxins and cytokinins. *In-Vitro* grown plantlets were used for production of callus.

### **PP 43: Comparative Studies of Siderophores Production Using Solid State Fermentation and Submerged Fermentation**

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Iron is one of the most common growth limiting trace elements in nature which is essential for the growth and metabolism of almost all living organisms. Deficiency of iron is primarily due to its poor solubility. Bacteria secrete iron chelating molecules known as siderophores to absorb iron, which promotes plant growth. The role of siderophores is to scavenge iron from the environment and to make the mineral, which is almost always essential, available to the microbial cell. In the present study, the isolate producing highest number of siderophores previously screened by Chrome Azurol Sulphate assay will be selected. A comparative study of both fermentation methods - solid state fermentation and submerged fermentation will be carried for the selected siderophore producing rhizobacteria. The nutritional parameters such as carbon, nitrogen, and phosphate sources using natural substrate will be studied. Determination of optimum pH and optimum temperature will also be done for production of siderophores by selected isolate in order to optimize the process. A rapid spectrophotometric screening semi-quantitative method will be used for evaluating the siderophores produced through both fermentations. This investigation may provide an efficient, cost effective and higher yield of siderophore production.

### **PP 44: “Marine environment : Potential source of antioxidant producing bacteria”**

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Marine environment is considered as the good natural source for isolating microorganisms producing variety of biometabolites. Hence in the current study varied marine soil samples were used for isolating the antioxidant producing microorganisms. Total 156 isolates were obtained and screened for selecting the potent antioxidant producers. Of the antioxidant producers obtained, only the pigment producing isolates were selected for further studies. HP-TLC studies on the extracts of seven pigmented organisms revealed the presence of a varied band pattern of antioxidants in two isolates viz 8-1 and 6-3 which were chosen for further studies.

**PP 45 : Analytical Study and Evaluation of Floral Parts of *Musa indica***

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*Musa indica* is considered to be an auspicious perennial plant. It is widely distributed in Central Asia. The plant parts are used in culinary preparations including stem, flower, fruits, and considered to be of medicinal and nutritional value due to high concentration of proteins, carbohydrates and fibres. However little research has been done on floral parts viz. spathe meant for pollination and protection of floral parts. A study has been carried out to assess the qualitative and quantitative composition of phytochemical constituents and carbohydrates of the floral parts. Antimicrobial and antioxidant properties were also studied. Tannins, phenols and alkaloids, etc. are found out to be present.

**PP 46: Antibacterial , Antifungal and Antioxidial activity of Citrus fruit waste**

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Emerging population and unhygienic conditions are causing the outburst of G.I. tract infections on higher extent . As well of the problem of resistance of micro organisms' to antimicrobial drugs are the worlds current challenges . Hence in this era of emerging emphasize on the antimicrobial compounds . Thus the scientific interest has been diverted towards the use of natural compounds which are biocompatible safer i.e. devoid of any side effect associated with synthetic antimicrobials . Considering all these aspects this study investigated the antimicrobial and antifungal activity of citrus fruit waste which include the peel , pulp , seeds of Orange (*Citrus sinensis* ) , Lemon (*Citrus lemon*) , Sweet lime (*Citrus limetta*) against Gastrointestinal tract pathogens . Fruit waste was collected , dried and powdered . Powdered materials are used for preparation of cold alcoholic extracts . Both dried powder and extract were studied for antibacterial , antifungal and antioxidant activity . The preliminary screening for antibacterial and antifungal activity was done by Agar ditch method . MIC of the powder and extracts was studied by Agar cup method . The MIC of powdered was found to be 15mg/ml of concentration while for extract it was 1mg/ml. Antioxidant activity of the powder and extract was studied by DPPH method .



## **PP 47: Studies on siderophore production by Microbial isolates and its antimicrobial activity against plant pathogens and its plant growth promotion**

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The ferric ion chelating agent synthesized under low ionic stress condition by bacteria is called siderophores. Siderophores can make iron available to the plants. Salinity, excessive use of chemical fertilizers, and water logged problems can limit the bioavailability of iron to the plants. Thus the present study focus on isolation of siderophore producing bacteria and its use as a biofertilizer for promoting enhance growth of plants. Such siderophore producing bacteria was enriched in iron free succinate medium, incubated at 27°C for 24hrs with constant shaking. Enriched samples were isolated on sterile SM agar plates. CAS liquid assay was performed to confirm the presence of siderophore production. Out of 10 isolates, isolate S2, P2 & R1 produce maximum siderophore units 81.25%, 84.4% & 87.5% respectively. Tetrazolium test was performed for characterization of siderophores, isolates G2, P3, R1, R2 & R4 showed hydroxamate type of siderophore. The optimum pH and temperature was found to be 7.0 and 27°C respectively. By subjecting efficient isolates with different concentration of salts, all the isolates showed tolerance of salt upto 4%. Purified siderophores from isolates P2 & R1 showed maximum antibacterial activity against plant pathogen. By performing germination study, germination of seeds with 4% salt and isolates was found to be better than the control. Pot assay was performed by using Vigna radiate (moong) seeds. It was found that out of 10 isolates, isolate G1, R2 & R3 showed increased shoot length and hence can be used as a biofertilizers.

## **PP 48: Probiotic Solution to Intestinal Pathogens**

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Probiotics are live bacteria that alter intestinal environment and improve host health. The most extensively used probiotic microorganisms are lactic acid bacteria because of their fermentative ability as well as health and nutritional benefits. Probiotics are being considered as an alternative to antibiotics. The present research work investigated isolation of probiotic microbe with anti-intestinal pathogen activity from infant fecal sample. Such probiotics can be used as an alternative to antibiotics against pathogens causing intestinal diseases. A total 6 lactic acid bacterial isolates were obtained from infant fecal sample on MRS medium. All isolates exhibited significant acid tolerance (upto pH 2.5), bile salt tolerance (upto 1%), and adhesion to hexadecane. Isolate 5 and 6 were found to be non-hemolytic. Isolate 5 exhibited significant antagonistic effect against

intestinal pathogens such as *E. coli*, *S. aureus*, *S. paratyphi* A. Isolate 5 exhibited resistance to antibiotic Amoxicillin, Ampicillin, Ticarcillin, Erythromycin, Penicillin G and Tetracycline and was sensitive to Chloramphenicol and Vancomycin.

**PP 49: Green synthesis of Copper Nanoparticles from *Nerium oleander* Leaf aqueous extract and its Antibacterial Activity.**

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The advancement of Nanotechnology, the biogenic synthesis of Nanoparticles has an emerging application towards the Medical field nowadays. Copper metal ions and their derivatives have been used for different Medical purposes; Example: to prevent infections, leg ulcers etc. In the present study, the copper Nanoparticles are synthesised due to the reduction of Copper Sulphate in which the aqueous leaf extract of *Nerium oleander* act as a reducing agent. Water-soluble cupric oxide nanoparticles are stable over a wide range of pH and temperature. This excellent stability in the form of aqueous colloidal suspensions makes the application of the water-soluble CuO nanoparticles easier in aqueous systems. The synthesized Nanoparticles are characterized through the UV-Vis Spectrophotometer. Further, the antibacterial activity of copper nanoparticles was evaluated against bacterial pathogens like *Escherichia coli*, *Staphylococcus aureus* which showed that the nanoparticles have moderate antibacterial activity against both Gram positive and Gram negative pathogenic bacterial strains and retains potential application in pharmaceutical and biomedical industries. The important outcome of the study will be the development of value added products from medicinal plants for biomedical and nanotechnology based industries.

**POSTER  
PRESENTATION:  
CHEMICAL &  
ENVIRONMENTAL  
SCIENCES**

## **PP 50: Comparative assessment of Air Quality Index (AQI) of two different industrial zones of Dombivali City of Maharashtra, India**

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One of the most serious problem, faced by both developing and developed countries is Air Pollution. Due to urbanization and lack of implementation of environmental regulations, the air quality of most of the Indian cities continues to deteriorate. Also, the urbanization of the cities and the residents demand increase in number of vehicles used, adding to the amount of air pollutants released in the atmosphere. Dombivali is one of the fast growing city of Maharashtra. The present study focuses on the assessment of ambient air quality with respect to RSPM (Respirable Suspended Particulate Matter), SPM (Suspended Particulate Matter), Oxides of nitrogen (NO<sub>x</sub>) and Sulphur dioxide (SO<sub>2</sub>) of two different zones of Dombivali MIDC area . The levels of all the above mentioned pollutants were measured and recorded weekly. The readings show variations at different sections throughout the year. The Air Quality Index (AQI) for each pollutant was also calculated based on the above mentioned observations. The results for both the zones were observed and compared using statistical methods.

## **PP 51: Chemical Analysis and Bioactivity Studies of Edible Alga *Ulva lactula***

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Antibiotic resistance continues to expand for a multitude of reasons, including over-prescription of antibiotics by physicians, non-completion of prescribed antibiotic treatments by patients, increased international travel, and poor hospital hygiene. *Ulva lactula*, a gracious food source for humans frequently eaten raw in salads or cooked in soups is known for it's widespread therapeutic uses. In the present study, an attempt was made to explore antimicrobial and antifungal properties of methanolic extract of *Ulva lactula* against resistant strains of human pathogenic bacteria and fungal species viz. *E.coli*, *P. aeruginosa*, *S. aureus*, *A. fumigates*, *Rhodotorula sp.* and *C. albicans* by using Kirby-Bauer method for antimicrobial susceptibility testing. We characterized methanolic crude extract of *U. lactula* using Thin Layer Chromatography, UV Spectroscopy, FTIR Spectroscopy and Mass Spectroscopy. Results confirmed that methanolic crude extract of *U. lactula* is a potent antimicrobial and antifungal agent against resistant strains. This study envisages a detailed investigation for extraction of all the active bio ingredients from *Ulva* and syntheses of their chemical analogues for their future use as potent antimicrobial agents.

## **PP 52: Bioremediation of Cadmium from Industrial Effluent**

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Heavy metals are considered one of the most common and hazardous pollutants in industrial effluents that might cause serious problems to the sewage network pipelines. Cadmium is the most dangerous metal ion characterized by high stability and toxicity. It is not degradable in nature and will thus, once released to the environment, stay in circulation. Cadmium affects many organs like kidney, respiratory system. In this study, bacteria were isolated from different industrial effluent samples of industries producing dyes, pigments etc. Cadmium resistant bacteria have been isolated using media supplemented with cadmium. The heavy metal resistant microorganisms have significant role in wastewater treatment system. Cadmium is a common pollutant introduced into aquatic ecosystems through discharges from many industries. Removal of metal from aquatic ecosystems is important for the protection of the environment and human health.

## **PP 53: Correlation of microbial load with presence of pollutants in air (SO<sub>2</sub>& NO<sub>x</sub>)**

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Rapid industrialization & urbanization has resulted in the emergence of industrial centers that results in increase in pollution level of the air. In India, pollution has become a great topic of debate at all levels and especially the air pollution because of the enhanced anthropogenic activities. Among the harmful chemical compounds, of fossils fuels burning puts into the atmosphere, are carbon dioxide (CO<sub>2</sub>), Carbon monoxide (CO), Nitrogen oxide (NO<sub>x</sub>), Sulfur Dioxide (SO<sub>2</sub>) and tiny solid particles –including lead from gasoline additive called particulate. Some substances come from natural sources while others are caused by human activities also vehicular emissions are responsible for higher level of air pollutants like SPM, RSPM, SO<sub>2</sub>, and NO<sub>x</sub>. The current study deals with the assessment of ambient air quality with respect to NO<sub>x</sub> and SO<sub>2</sub> of two different zones (Industrial and Residential area). Monthly and Seasonal variation of these pollutants have been observed and recorded. Results indicated that the concentrations of the pollutants during winter especially during the month of February are high in comparison to that in the monsoon seasons, also the microbial load was minimum in the month of February in the residential area and it was maximum during the same month in the industrial area.

## **PP 54: Ionic Liquid Mediated Esterification Reactions using Different Coupling Reagents**

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The key step in the chemical synthesis of Antiviral drug Valganciclovir HCl is esterification reaction, which involves ester bond formation between Ganciclovir and carbobenzyloxy-L-valine. The methods employing conventional ester bond-forming techniques did not realize its potential use. The effective approach based on highly specific and efficient coupling reagent in Ionic liquid as a reaction media, play crucial role in the synthesis of Valganciclovir. The corresponding esterification reaction tried by using coupling reagents like Dicyclohexylcarbodiimide (DCC), ethyl-(N',N'-dimethylamino)propylcarbodiimide hydrochloride (EDC), 1-hydroxybenzotriazole (HOBt) and Carbonyl diimidazole (CDI). Among that Dicyclohexylcarbodiimide (DCC) in Choline Chloride –Urea DES found great importance in the said esterification reaction with respect to Yield, purity, appearance, impurity profile etc. The reaction also involves use of *N,N*-Dimethylpyridin-4-amine (DMAP) as a catalyst which enhance overall rate of reaction.

## **PP 55: Effect of Surface Area on performance of Super capacitor**

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Synthesis of Micro porous carbon and Carbon nanotubes (CNTs) were carried out by chemical vapour deposition (CVD) technique. Pyrolysis of Casor seeds and Castor oil was carried out separately at high temperature for getting porous carbon and CNTs respectively. CNTs were synthesized over finely dispersed Ni-Co alloy catalyst. Scanning electron microscope (SEM) image reveals that the carbon material formed with micro and nano porous material respectively. CNTs formed around 30 nm in diameter. Purified carbon materials used as electrode material for Supercapacitor. Performances for Specific capacitance were tested by cyclic voltammetry study. This study was carried in 2M KOH electrolyte using three electrode system. It was found that specific capacitance increases with increase in surface area.

## PP 56: Analysis of Air Quality Index (AQI) of Smt. C.H.M. College Campus, Ulhasnagar

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Air pollution is the introduction of chemicals, particulate matter or biological materials that directly or indirectly causes harm to living organisms and natural environment, into the atmosphere. Now-a-days, it is one of the major growing problems the world is facing. Air pollution is still one of the leading causes of death in India. There is a relation between urbanization and air pollution. Due to urbanization, poor management and lack of practice of environmental regulations, the air quality of the most of the Indian cities continues to go downhill. Ulhasnagar is one of the fast growing cities of Maharashtra. The main focus of the present study is the analysis of ambient air quality with respect to RSPM, SPM, NO<sub>x</sub> and SO<sub>2</sub> of the Smt. C.H.M. College Campus area of the Ulhasnagar city which is center of education for around 12000 students. The study was carried in the year 2015. The levels of all the above mentioned pollutants were recorded and analyzed weekly. The readings thus obtained show variations at different sections throughout the year. Based on the observations, the Air Quality Index (AQI) was calculated using statistical method.

## PP 57: 'Synthesis and Study of Properties of Novel Crosslinked Biopolymer'

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Starch as a natural biopolymer is extensively used in paper, food, adhesive, medicines, nano films and many other industries. Biopolymers are sustainable, carbon neutrals and are always renewable. Starch is the second most abundant natural biopolymer on the earth. In order to improve the performance of starch, crosslinking is often carried out either in the processes of starch modification or during the application processes. By controlling the degree of crosslinking, the water retention capacity of starch-based hydrogel can be well controlled. In addition, the adsorptivity and binding strength of starch on a substrate can be significantly improved. Chemically modified biopolymers can be used as selective metal chelators. They have applications in waste water management. In the present study chemical crosslinking of starch using Ethanedial (glyoxal) was carried out to judge its adsorptivity towards Nickel. The novel crosslinked biopolymer is characterized by IR, NMR, XRD and surface chemistry of metal-biopolymer was studied using SEM.

### **PP 58: Assessment of Air Quality Index(AQI) of vehicular traffic zone of Ulhasnagar city of Maharashtra, India**

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The present day atmosphere is quite different from, the natural atmosphere that existed before industrial Revolution in terms of chemical composition. Anthropogenic emissions into the air can be called air pollution. The major concern of air pollution is vehicular emission to a large extent. It results in acceleration in levels of some pollutants like  $SO_2$ ,  $NO_x$ ,  $RSPM$ ,  $SPM$ . Due to lack of implementation of laws by pollution control boards our environment is degrading day by day. The current study emphasizes on the analysis of *Ambient Air Quality* with respect four major air pollutants  $SO_2$ ,  $NO_x$ ,  $RSPM$ , and  $SPM$  of high traffic zone of Ulhasnagar city. The level of pollutants were measured and recorded weekly. The study was carried throughout the year 2016. *Air Quality Index* with respect to each pollutant was calculated from the average of the observed data obtained. The results showed the moderate quality of air in post and pre-monsoon months, while during monsoon the quality of air was found to be of good quality.

### **PP 59: Application of extracellular polymeric substances producing thermophiles in bioremediation of heavy metals**

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Most of the thermophiles are able to produce extracellular polymeric substances (EPS) mainly of polysaccharidic nature comprising polysaccharides, proteins, nucleic acids, etc; which are responsible to reduce heavy metals from the environment. Therefore, it is urged to develop a simple model system which will provide an insight into the basic mechanism(s) of EPS-metal binding, highlight the functional group of each EPS component and justify the interaction(s) amongst the components thereof. In the present study effects of different heavy metals like  $Cd^{2+}$ ,  $Cr^{2+}$ ,  $Cu^{2+}$ ,  $Fe^{2+}$  and  $Zn^{2+}$  on EPS production was evaluated. And comparisons of EPS production from control and isolates treated with standard and test were studied qualitatively and quantitatively by biochemical method and by FTIR analysis. The studies on interactions between metals and EPS produced by thermophiles have established the central role played by EPS in mechanism of bioremediation of toxic heavy metal. Study has identified the basic mechanism(s) of EPS-metal binding, highlight the specific role of each EPS component including proteins and carbohydrates and justify the interaction(s) amongst the components thereof. The study will aid in engineering the extracellular polymeric substances with enhanced characteristics of metal sorption for effective bioremediation of heavy metals of environmental concern.



## **PP 60: Comparative study of natural and synthetic indicators in neutralization reactions**

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Indicators are selective chemicals, they bring change the colour of the solution with change in pH by addition of acid or alkali. Jamun (*syzygiumcumini*) fruit is naturally very acidic with neutral pH and contains large amounts of acid. Environmental conditions cause some variation in composition of fruit. The extract of this fruit shows variation in colour in different pH medium. This property makes it applicable to act as an effective indicator. Present study of natural indicator in comparison with synthetic indicator shows high degree of selectivity & precision

## **PP 61 : Bioremediation of Textile Waste water using *Bacillus* and *Pseudomonas spp.***

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There are many industries that use synthetic dyes for the textile, leather tanning, paper as well as in food industry. Synthetic dyes frequently employed on industrial scale; Azo dyes, Anthraquinones, Triarylmethanes are most widespread. Textile dyes represents a serious environmental concerns because of their chemical inertness. Thus, a remedy for this problem is Bioremediation. Microbial degradation of textile wastewater contaminated with dye has achieved more attention as it is cost effective, environmentally friendly and cleaner. The current study is to explore the usability of micro-organisms i.e., bacteria for the bioremediation of textile waste water and for the removal of the dyes. Samples were collected from five different Textile Industries from MIDC, Dombivli. And tested for Dye degradation assay, color degradation assay and physicochemical properties like pH, BOD, COD, TSS, TDS. Standard Laboratory cultures *Bacillus* and *Pseudomonas* were used to check bioremediation. Dye degradation assay was performed for industrial dyes Reactive Black B and Crystal Violet. Color Degradation assay was performed for the samples. The physicochemical properties such as pH, BOD, COD, TSS and TDS were determined before inoculation and at specific time after inoculation. Results showed that these two bacterial strains degrade the dyes as well as samples with high % efficiency. The *Bacillus* species is more efficient than the *Pseudomonas spp.* There is a prominent decrease in BOD, COD, TSS, TDS of samples. Therefore, these bacteria have tremendous strain for decolorization of textile dye effluent and it can be used as a practical alternative in the treatment of textile wastewater.

**PP 62: Extraction and Identification of synthetic food colours adulteration in selected food items by rapid color test and paper chromatography.**

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Synthetic food colors are widely used in different types of food stuffs in India as well as all over the world. The “Synthetic food colors” are used in a variety of instant and processed foods to increase their visual appeal. In the present study an attempt has been made to extract and identify synthetic food color adulteration by rapid color test and paper chromatography. The tests were carried out by chemical analysis in a majority of products and through visual inspection of products. Both branded as well as unbranded samples were selected for the study to determine the adulteration levels and the qualitative difference between them. The procedures/tests to check adulterants were taken from well-known and widely accepted publications like FSSAI, ISI, AGMARK, BIS etc. After the tests, the products containing adulterants were identified. This study attempts to spread awareness on the subject of food adulteration and the various simple methods available to detect it. A short term effect of food additives is hyperactivity in some children; believed to be a form of an allergic response. In the long term some of these foods colors are believed to be carcinogenic while some, mostly reds, have been banned from food use. It is not the purpose of this experiment to explore the controversy surrounding food colors but rather to see how they can be extracted from foods and identified.

**PP 63: Isolation and screening of Cyclohexylamine (CHA) degrading bacteria from soil and sludge nearby industrial area.**

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Cyclohexylamine (CHA) is an organic compound used in rubber chemical industry for the preparation of vulcanization accelerator CBS. Other application include manufacturing of artificial sweeteners (cyclamates), use in water treatment industry and specialty chemicals. Industries synthesizing rubber chemicals release small, yet significant amount of above chemicals through their effluents. Cyclohexylamine vapours irritate or burn the skin and mucous membranes. Absorption through the skin can cause vomiting and damage of the nervous system; it can bring about skin allergy. Various procedures are employed to remove organic pollutants, most of which are chemical methods. Chemical methods are expensive, thus require to be replaced by biological remedial procedures. Microorganisms are found to play a key role in Bio-remediation. In the current study soil samples were collected from CETP regions of Dombivli, Thane, Boisar, Badlapur and Koperkhairne Industrial areas. Microorganisms were isolated from the soil samples and were further studied for their ability to tolerate Cyclohexylamine (CHA). Microorganisms on the basis of its tolerance were selected for the biodegradation of Cyclohexylamines (CHA). The

bioremediation was confirmed by performing the Physico-Chemical methods such as COD, BOD, TDS, TSS, TS and CHA content analysis by titration method. From the collected soil samples 20 isolates were obtained. Out of these eight (08) isolates were found to tolerate Cyclohexylamine in concentration range of 0.1% to 1.0 %. Significant reduction of COD, BOD, TS and CHA content was observed after the biological treatment of the sample for three days. Efficient isolates were identified using Bergey's manual of determinative bacteriology. Isolates belonged to the following genera *Micrococcus*, *Pseudomonas*, *Bacillus* and *Enterobacteriaceae*.

## PP 64: Development of a Laboratory scale Process for Greywater treatment

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Greywater can be defined as household wastewater generated from sources like kitchen, showers & laundry with the exception of wastewater generated from toilets. It accounts for nearly 75% of the total wastewater generated. In the current era, population explosion has put forth before the civic authorities a humongous challenge of providing clean water for the population. WHO states that around 1.1 billion people today are water stressed & the numbers keep on escalating. Greywater recycling can ease this situation by substituting drinking water usage for activities like toilet flush, gardening etc., with treated greywater. Microorganisms have been exploited to degrade organic & inorganic pollutants in STP's & CETP's globally. The present study deals with the development of a Lab scale Process to treat college canteen kitchen greywater and make it suitable for reuse. Initially a bacterial consortium comprising of 6 isolates was developed and used as Bacterial seed. The Process developed was a batch process constituting of upstream processing steps like Inoculum development, Designing of the pilot-plant treatment set up, Optimization of parameters, the actual treatment, and finally downstream processing steps like Filtration, Disinfection etc each aimed at improving the quality of the treated greywater. The lab scale batch process was run at a capacity of 5 liters of greywater /batch within 20 hours. The Process designed was able to treat greywater successfully and achieve 90 -95 % BOD removal, 75% TSS removal and Coliform reduction to less than 2 per 100 ml, which met the guidelines for reuse of treated greywater both nationally & internationally. The treated greywater by this process is fit for applications like toilet flush, gardening etc. This process design can be scaled up and promises to have a huge potential for large scale greywater treatment processes that can recycle greywater for non-potable reuse within communities.

### **PP 65: Effect of Industrial Operations on Soil Quality Around Dombivili and Ambarnath Industrial Area, Thane District (Ms)**

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Today, various health organizations are more concerned with pollutants in the air or in water contributing which affect good health. Various measures are being taken to control air pollution and water pollution. However, the effects of soil pollution on our health haven't been studied much. Recently soil pollution is gaining a lot of attention by the world's scientific community, such as soil sealing, erosion and contamination. Various industrial operations cause adverse effects on soil and soil organic matter resulting in its pollution. The real cause of attention is the presence of heavy metals and toxic residues in industrial wastes contaminating soil texture. To study the adverse effect of these operations, physicochemical analysis is needed to be done and also to find out the effect of industrial pollution on soil micro and macronutrients. This report gives the study of soil pollution near industries situated at Dombivili and Ambarnath in the Mumbai suburb. Efforts are made to study the effect of industrial operation on the soils.

### **PP 66: Quality assessment of well waters from few areas of Dombivili**

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Water scarcity is a serious problem in the city of Dombivili. Due to this reason, people are shifting towards using ground water resources of which one of the prominent resource is well water. Well water is used for housing and domestic purposes. Hence it is necessary to test the quality of water prior to its use. In the present study water samples taken from wells of areas like Kopergaon (19.2114°N, 73.0754°E), Shastrinagar (19.2201°N, 73.0811°E) and Gandhinagar (19.2041° N, 73.0944° E) of Dombivili were analysed for its quality. Different physicochemical parameters viz. pH, temperature, TSS, TDS, BOD, COD, alkalinity, acidity, conductance and trace element detection were carried out. To check its potability, Most Probable Number Assay (MPN assay) was done. Water samples from Kopergaon and Shastrinagar wells were found to be heavily loaded with microorganisms as well as showed presence of heavy metals like Aluminium and Nickel and are non-potable whereas sample from Gandhinagar well was found to be safe for drinking purpose.

## **PP 67: Bioremediation of industrial dyes and toxic heavy metal by using microorganism isolated from different polluted sources.**

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The release of various dyes like triphenylmethane dyes and heavy metals like hexavalent chromium causes increasing concern due to toxicity, mutagenicity, carcinogenicity to the environment. Chemical degradation and decolourisation leads to their breakdown products which can be mutagenic to living organisms. Bioremediation with the use of potential microorganisms which are able to degrade toxic compounds is an environment friendly method as their by-products are harmless. So it is a better alternative to chemical decomposition. Nine samples were collected from various industrially polluted sites and dumping site soil sample was used for isolation of dye & hexavalent chromium tolerant micro-organisms by using a specific media. 18 isolates of dye decolorizing organisms were screened for their ability to decolorize various dyes. Out of them 4 best isolated organisms were checked individually to decolorize 4 dyes, i.e. malachite green, methylene blue, congo red, crystal violet. The isolate 2MG1 showed best ability to decolorize mixed dyes at concentration 0.02%. Thus this isolate can be useful in testing for treatment of industrial dye containing effluents. Also 11 chromium resistant isolates were chosen and quantitative screening was done. Diphenylcarbazide method was carried out. Minimum inhibitory concentration of hexavalent chromium for 2 best isolates was determined. Degradation of hexavalent chromium at three different concentration was checked in specific broth media- 0.01%, 0.05%, 0.1%. The isolate Blue1 gave good results. These isolated organisms can be further tested for their ability to bioremediate industrially polluted waterbody sample and contribute in ecofriendly bioremediation.

## **PP 68: Solventless single spot green synthesis of coumarines and oxidation of cycloalkanol**

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The synthesis of coumarins have been reported through pechmann condensation and other procedures including sethna's method which employ hazardous lewis acid catalysts, involve long hours of heating and afford low yield. It was therefore, decided to undertake the studies of solvent free green synthesis of coumarin derivatives 4-methylcoumarin, 7-hydroxy-4-methyl-coumarin, 5,7-dihydroxy-4-methylcoumarin, 6,7-dihydroxy-4-methylcoumarin, 7,8-dihydroxy-4-methylcoumarin and 6-methylcoumarin by reacting phenolic substrate with acetoacetic ester, employing phase transfer catalyst (PTC) Under microwave irradiation. The methodology so far has been reported in literature. Afforded 97-99% coumarin derivatives. The present work also incorporates the study of oxidation reaction of

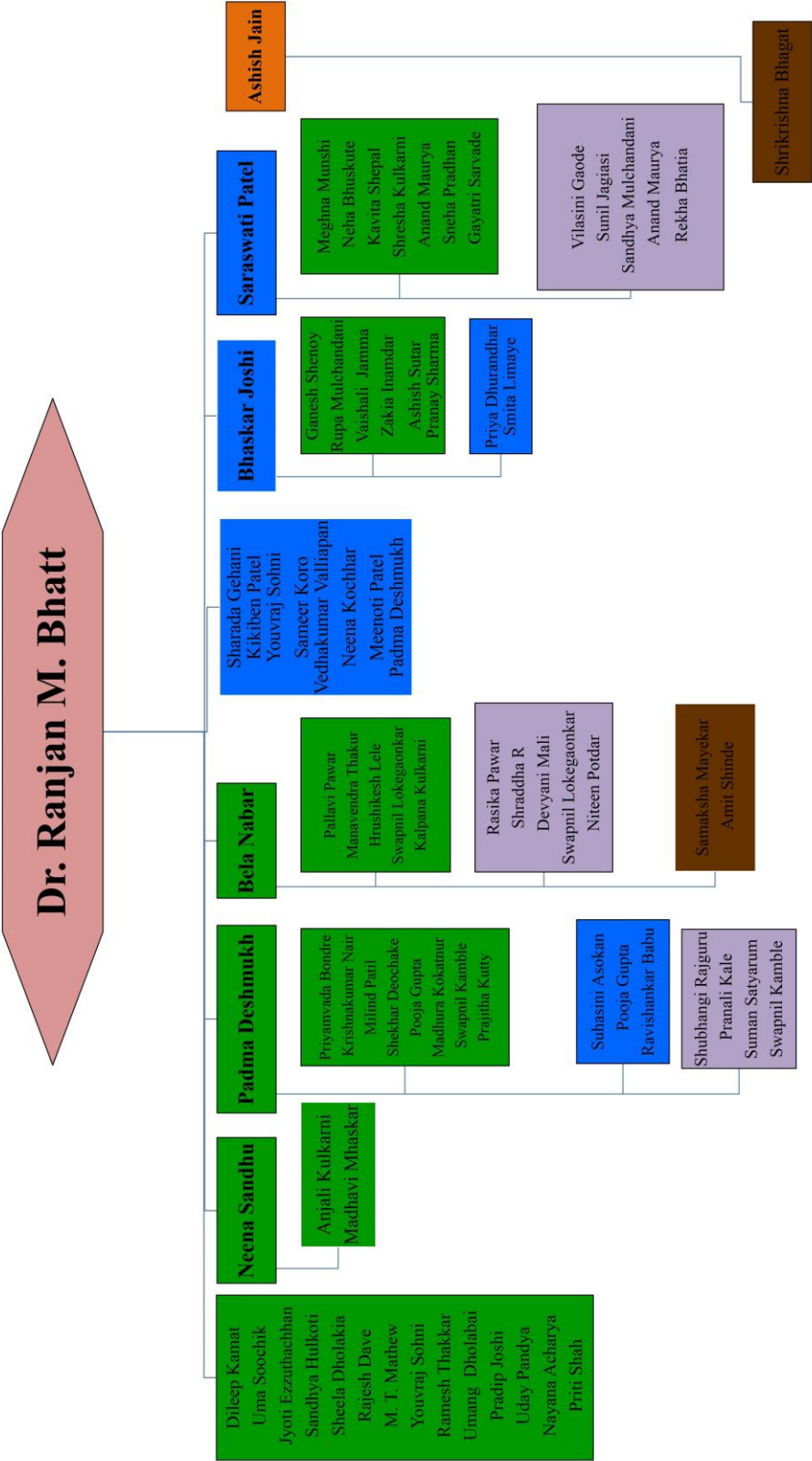
cyclopentanol ,cyclohexanol cyclooctanol, methanol and borneol. The reaction were carried out using potassium permanganate in cyclooctanol of phase transfer catalyst ,18-crown-6 under microwave irradiation and comparative study was carried out with the reaction in the absence of phase transfer catalyst. This procedure worked efficiently and gave a high degree of chemo selectivity in presence of other oxidizable moieties and allowed an easy ,convenient and high yielding method for oxidation alicyclic alcohols to mono and bicyclic hydroxyl terpenes.

### **PP 69: Study of mechanism of neutralization of acidic water using Coconut husk.**

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Acidity of water is a major cause of corrosion in supply pipes .The known methods of treatment of acidity in water are chemical in nature . This leads to hardness of water and other disposal problems . The problem has been efficiently addressed by using treated agricultural waste for neutralizing the water .Charred coconut husk( *Cocos Nucifera linn*) was found to be the most efficient natural agent . We have attempted to study the mechanism of neutralization involved in the procedure, through spectroscopic studies. Spectroscopic analysis has shown that the procedure is not a purely physical phenomena of adsorption . It involves a physico – chemical mechanism , that exhibits selectivity to acidity in water . It finds no application for treatment of alkalinity.

RESEARCH RUBIES -MICROBIOLOGY



M.Sc Research Completed

Ph.D Completed

M.Sc Research Ongoing

Ph.D Ongoing