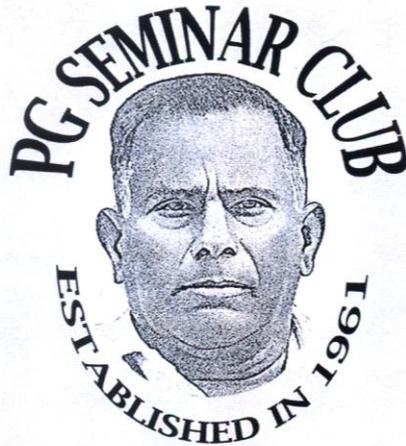


**PG Seminar Club**

Department of Plant Biology and Plant Biotechnology



**UGC SPONSORED**

**STUDENTS SEMINAR**

**27<sup>TH</sup> AND 28<sup>TH</sup> FEBRUARY, 2012**



**Madras Christian College (Autonomous)**

**Tambaram, Chennai - 600 059**

**2011 - 2012**

## **FROM THE DESK OF THE PRESIDENT**

Botany club, which is presently known as PG Seminar club, was started in the academic year 1960-61 when the Master's degree was introduced under the leadership of the then Head, Dr. K. R. VenkataSubban.

The Botany club stood as a forum that encouraged students to boldly face the audience, to dispel stage fear, enhances presentation skills and make them aware current issues in biology.

This forum invoked a healthy competitive attitude amidst students. It was a prestigious forum as this was the only forum of this kind amongst the few colleges that had PG course in Botany. It kindled the habit of referring journals and using libraries information mining. It was a lively and vibrant podium for many who walked over it. It was an egoistic affair too that always culminated in intense discussion and debate.

Fifty glorious years have gone by. PG Seminar club has stayed uninterrupted all along nurtured and sustained by the whole hearted participation of students, effective guidance and support of the successive Heads and faculty who steered the club as Presidents.

For many of our former students the club brings mixed memories: nostalgia, happiness, nervousness, pride and satisfaction. Many students were able to face the world better and earned positions to serve in many parts of the globe due to the training imparted by this club.

It was customary that every M.Sc. student presents a topic of his/her choice, followed by an interactive session. Guest speakers

were often invited to share their expertise for the benefit of the students.

This year it was decided to invite scholars of eminence from different institutions to deliver lectures and to have one day student seminar in each semester. In the 51st year of PG Seminar Club and the PLATINUM JUBLIEE year of our department, I am very happy to organize this two day students' seminar. In this connection I must thank Prof. H.K.P. Devadoss, Head, Department of Botany for accepting all the proposals from PG Seminar Club without any reservation and for providing seminar funds sanctioned by the college to conduct this event. I take this great opportunity to thank all the retired and serving faculty members who have served as Presidents of PG Seminar Club from 1961 onwards and also all the members of the club in the past and present for successfully continuing this unique activity with zeal for the past 50 years.

I sincerely hope that seminar club would continue with vigor and passion and wish all members a grand success in all their endeavors.

**M.BALUSWAMI**

PRESIDENT

P G Seminar Club

**H.K.P.DEVAOSS**

M.Sc.,M.Phil.,



Dean of Sciences &  
Head of the Dept. of Plant Biology and  
Plant Bio Technology

**MADRAS CHRISTIAN COLLEGE (Autonomous)**

Tambaram, Chennai - 600 059

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25.02.2012

**FROM THE DESK OF THE HEAD**

I am pleased to note that the PG seminar club is organizing two day student's seminar on 27th and 28th of Feb 2012. This is not new to PG club. I recollect that in 1976-77 there was two day symposium in which I PG and II PG students participated and presented papers and two best from each class were rewarded with certificates.

I specially thank the President of PG seminar Club Dr. M. Baluswami for his commitment and tireless effort, spending valuable time and energy for organizing such an event. Last year being silver jubilee, he conducted a special program to honor the founder of PG club Dr. K.R. Venkatasubban, and in the beginning of this academic year he conducted an event to honor Dr. Crispin Devadas. PG Club has become very active after Dr. Baluswami took over as PG club president. I extend Dr. Baluswami and the organizing committee my best wishes, for the forthcoming two day student's seminar organized by PG seminar Club.

  
**H.K.P. Devadoss**  
HEAD

DEPARTMENT OF PLANT BIOLOGY AND PLANT BIOTECHNOLOGY

## PG SEMINAR CLUB

UGC SPONSORED STUDENT SEMINAR (27.02.2012 & 28-02-2012)

### PROGRAMME

**DAY ONE : Monday 27<sup>th</sup> February 2012**

8.30Hrs

#### **Registration of members**

Inauguration of Seminar

Prayer

Welcome Address                      Prof. H.K.P. Devadoss

About PG Club Seminar              Dr. M. Baluswami

Introduction of Speaker              Dr.D. Narasimhan

Inaugural Address                      Dr. P. Ravichandran

#### **My Search and Research**

Associate Professor,  
Sri Paramakalyani Centre for  
Environmental Science,  
Manonmaniam Sundaranar  
University, Alwarkurichi-627412

Vote of Thanks                      Dr.(Mrs.) Joyce S. Priya

#### **Coffee Break**

10.30 Hrs      **Session 1**

Chairperson: Dr. G.A.I. Ebenezer

Rapporteur: Ms. Sanjana Julius Thilakar

#### **ORAL PRESENTATION**

**Lichenometry**                              R. Parimala Devi

**Algae and global warming**              S. Monica

**Edible Vaccines**                              Bondada Prathyusha

**Stem cell therapy**                              Sowmya Thomas

**Biodegradable plastics**                      N. Thivya

#### **Lunch**

14.00 Hrs **Session 2**

Chairperson: Dr. Joyce S. Priya

Rapporteur: Miss. Hajji Habeeba Beevi

Introduction of speaker:

Dr. P.Ravichandran

**Special Lecture 1**

Dr. E. Sivamani  
Senior Research  
Scientist Team  
Leader  
Maize  
Transformation  
Syngenta, USA

14.45 Hrs

**ORAL PRESENTATION**

Chairman: Dr. Joyce S. Priya

Rapporteur: Miss. Hajji Habeeba Beevi

**Preliminary study on the  
Ethnobotany of Adi Tribe of  
Arunachal Pradesh**

Nung Boko

**Phytoremediation**

K.V.Srilakshmi

**Urban Eco-restoration: Adyar  
Poonga as a model**

K.R.Divyesh

**TEA**

16.30 Hrs **Group Photo**

**UGC SPONSORED STUDENT SEMINAR (27.02.2012 & 28-02-2012)**

**PROGRAMME**

**DAY TWO : Tuesday 28<sup>th</sup> February 2012**

9.00 Hrs **Session 3**

Chairperson: Dr. M. Baluswami

Introduction of Speaker: Dr. G.A.I.Ebenezer

**Special Lecture 2: Forest tree breeding and conservation: parallels between Tiger and Teak**

**Dr. A. Nicodemus**, Scientist – E, Institute of Forest Genetics and Tree Breeding, Coimbatore

**Coffee Break**

10.15 **Session 4**

Hrs

Chairperson: Dr. S. Ravishankar

Rapporteur: Mr. Md. Nyazz

**ORAL PRESENTATION**

**Urban Eco-Restoration: AdyarPoonga as Model** K.R. Ajay Divyesh

**Flavor profile and Bio-active Bio-chemicals from Spices** Anu Thomas

**Medicinally important Macro Fungi of MCC Campus** S. Karthik

**Flora of Rock Out Crops** M. Alister

**Recombinant Drugs: Insulin** P. Vivek

**Vectors and Vector construction** Christine Sara Abraham

**DNA Barcoding** Ningthoujam Arju Singh

**Lunch**

14.00  
Hrs

### **Session 5**

Chairperson: Mrs. J. JeyaRathi

Rapporteur: Miss. M. Jansi Rani

#### **ORAL PRESENTATION**

<b>Mushroom and their Diversity</b>	S. Muthukumar
<b>Diatom Art</b>	K. Maheswari
<b>Endosulfan</b>	Tisha Liza Tomy
<b>Fire Ecology</b>	Ranjana Julias Thilakar
<b>Pharmaceutical uses of Algae</b>	M. Gayathri

#### **TEA**

16.30  
Hrs

### **Plenary Session and Valedictory Address**

**Summing up of seminar proceedings** Dr. D. S.Rajasekaran

Distribution of certificates

Distribution of prizes

Feedback by the members (maximum 4 members)

Introduction of Speaker Prof. H.K.P. Devadoss

Valedictory Address Dr. B. Nagarajan,  
Scientist – E,  
Institute of Forest Genetics and  
Tree Breeding, Coimbatore.

Vote of Thanks Bondada Prathyusha

#### **National Anthem**

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## **LICHENOMETRY**

**R.PARIMALA DEVI**

Lichenometry is a geomorphic method of geochronologic aging that uses lichen growth to determine the age of exposed rock: lichens are presumed to increase in size radially at specific rates as they grow. Measuring the diameter of the largest lichen of a species on a rock surface can therefore be used to determine the amount of time that the rock has been exposed. The use of lichenometry is of increased value for dating deposited surfaces over the past 500 years as radiocarbon dating techniques are less efficient over this period. The most common lichens used for lichenometry are that of the genus *Rhizocarpon*, for example the species *Rhizocarpon geographicum*, and those of the genus *Xanthoria*. Lichens are composite organisms consisting of a symbiotic association of a fungus with a photosynthetic partner, usually either a green alga or cyanobacterium. The fungal component is called 'the mycobiont'. The method was first developed by Roland Beschel in the 1950's, by measuring lichen diameters on gravestones of different ages.

# **ALGAE AND GLOBAL WARMING**

**S. MONICA**

Global Warming is the slow and steady increase of temperature on the earth. It happens when greenhouse gases (carbon dioxide, water vapor, nitrous oxide, and methane) trap heat and light from the Sun in the earth's atmosphere, which increase the temperature. The largest contributing source of greenhouse gas is burning of fossil fuels to the emission of carbon dioxide. As the earth is getting hotter, disasters like cyclone, droughts, floods are getting more frequent. In an attempt to retard this increase and, therefore, the greenhouse effect, most industrialized nations have taken initiatives to hold their carbon dioxide emission levels. Algae based capture is one of the latest methods of biological sequestration vastly exploited in CO<sub>2</sub> emitting industries. Using algae for reducing the CO<sub>2</sub> concentration in the atmosphere is known as algae-based Carbon Capture Technology. This technology offers a safe and sustainable solution to the problems associated with global warming.

The ocean is the largest carbon sink we have, and it has a microscopic phytoplankton called *Emiliana huxleyi*. This phytoplankton plays a critical role in drawing carbon from the atmosphere and sequestering it deep in the seas after using the major portion of CO<sub>2</sub> absorbed to produce calcium carbonate that get deposited on its wall surface to form protective scales.

## **EDIBLE VACCINES**

**BONDADA PRATHYUSHA**

Edible vaccines hold great promise as a cost-effective, easy-to-administer, easy-to-store, easy delivery system, especially for the poor developing countries. It involves introduction of selected desired genes into plants and then inducing these altered plants to manufacture the encoded proteins. Initially thought to be useful only for preventing infectious diseases, it has also found application in prevention of autoimmune diseases, birth control, cancer therapy, etc. Edible vaccines are currently being developed for a number of human and animal diseases. However, resistance to genetically modified foods may affect the future of edible vaccines. Various technical obstacles, regulatory and non-scientific challenges, though all seem surmountable, need to be overcome. This presentation attempts to discuss the current status and future of this new preventive modality.

## **MUSHROOM AND THEIR DIVERSITY**

**MUTHUKUMAR**

Fungi is a nucleated, spore bearing, achlorophyllous organisms which generally reproduce sexually or asexually. Usually filamentous, branched, somatic structures are typically surrounded by cell walls containing cellulose or chitin or both. It is associated with an enormous range of plants, animals and there product in saprobic, mutualistic and parasitic relationships. Macrofungi is a group of fungus comes under Ascomycetes and Basidiomycetes.

Mushrooms is the fleshy, spore bearing, fruiting body of a higher fungus, typically produced above ground on soil or on its food source. It is not only beautiful but also plays a significant role in the daily life of human beings besides their utilization in industry, agriculture, medicine, food industry, textile, bioremediation, natural cycling, as biofertilizer and many other way.

## **VECTORS AND VECTOR CONSTRUCTION**

**CHRISTINE SARA ABRAHAM**

A vector is a DNA molecule used as a vehicle to transfer foreign genetic material into another cell. The four major types of vectors are plasmids, viruses, cosmids, and artificial chromosomes. Common to all engineered vectors are an origin of replication, a multicloning site, and a selectable marker. The vector itself is generally a DNA sequence that consists of an insert (transgene) and a larger sequence that serves as the "backbone" of the vector. The purpose of a vector which transfers genetic information to another cell is typically to isolate, multiply, or express the insert in the target cell. Vectors called expression vectors (expression constructs) specifically are for the expression of the transgene in the target cell, and generally have a promoter sequence that drives expression of the transgene. Simpler vectors called transcription vectors are only capable of being transcribed but not translated: they can be replicated in a target cell but not expressed, unlike expression vectors. Thus vectors play a major role in genetic engineering.

# **STEM CELL THERAPY**

**SOWMYA THOMAS**

A stem cell is a “generic” cell that can make exact copies of itself indefinitely. It is a precursor cell that has the ability to make specialized cells for various tissues in the body (such as heart, muscle, brain tissue and liver tissue). Stem cell research is expected to impact advances in curing diseases such as Parkinson’s and Alzheimer’s diseases, diabetes, spinal cord injury, heart disease, stroke, arthritis and cancer. The process of injecting stem cells into an organism in the hope that the stem cells will differentiate into the same type of cell as the damaged cell and replace them. Stem cells have the remarkable potential to develop into many different cell types in the body. Serving as a sort of repair system for the body, they can theoretically divide without limit to replenish other cells as long as the person or animal is still alive.

Stem cell transplantation is removing stem cells from the patient’s or a donor’s bone marrow and re-infusing them into the patient to help produce healthy blood cells; a method of replacing stem cells which are destroyed by cancer treatment.

# **BIODEGRADABLE PLASTICS**

**THIVYA.N**

Plastic is one of the few new chemical materials which pose environmental problem. Polyethylene, polyvinyl chloride, polystyrene is largely used in the manufacture of plastics.

20% of solid municipal wastes in India are plastic. Non-degradable plastics accumulate at the rate of 25 million tonnes per year. According to an estimate more than 100 million tonnes of plastic is produced every year all over the world.

Biodegradable plastics are plastics produced to solve the plastic pollution to the environment. That will decompose in natural aerobic (composting) and anaerobic (landfill) environments. Biodegradation of plastics occurs. when microorganisms metabolize the plastics to either assimilable compounds or to humus-like materials that are less harmful to the environment. They may be composed of either bioplastics. which are plastics whose components are derived from renewable raw materials, or petroleum-based plastics which contain additives.

# **PHYTOREMEDIATION**

**KV SRILAKSHMI**

Phytoremediation describes the treatment of environmental problems (bioremediation) through the use of plants that mitigate the environmental problem without the need to excavate the contaminant material and dispose of it elsewhere.

Phytoremediation is considered a clean, cost-effective and non-environmentally disruptive technology, as opposed to mechanical cleanup methods such as soil excavation or pumping polluted groundwater. Over the past 20 years, this technology has become increasingly popular and has been employed at sites with soils contaminated with lead, uranium, and arsenic. However, one major disadvantage of phytoremediation is that it requires a long-term commitment, as the process is dependent on plant growth, tolerance to toxicity, and bioaccumulation capacity.

# **PRELIMINARY STUDY ON THE ETHNOBOTANY OF ADI TRIBE OF ARUNACHAL PRADESH**

## **NUNG BOKO**

Arunachal Pradesh is the largest state of North East India located in the Eastern Himalayan region covering an area of 83,743 sq. Km. The mountainous state is located between 26<sup>o</sup> 28'N and 29<sup>o</sup> 33'N latitude and between 91<sup>o</sup> 31'E and 97<sup>o</sup> 30'E longitude. The state has 16 districts which are inhabited by 26 major tribes and 110 sub tribes. The Adi tribe is one of the largest tribe in Arunachal Pradesh and inhabits the East Siang, West Siang, Upper Siang and Lower Dibang Valley Districts of Arunachal Pradesh. The Aditribe have their traditional uses of plants. Adi celebrates five main festivals they are solung, Etor (pre-harvesting), Aran or unying (hunting), in all this five festivals they use different plants for different rituals. For all the rituals they have their own mythological history. Their main God is KineNane who is goddess of rice. The indigenous practise has descended through generation by inheritance or through oral communication. The mirii (folk healer) inherits a rich traditional knowledge about the use of plants. Certain number of plants is used in combination for specific disease. The data on various plants were gathered from the miriis and from other knowledgeable persons. The present study is undertaken to explore the use of plants for various purposes.

# **REMOTE SENSING**

**PRABHA M. PILLAI**

Remote sensing is the science and art of obtaining information about an object, area or phenomenon through the analysis of data acquired by a device that is not in contact with the object, area or phenomenon under investigation. It is used in soils mapping, forestry, city planning, archaeological investigations, military observation, and geomorphological surveying, etc. It has further enabled monitoring of environment and thereby helping in conservation. In the last four decades it has grown as a major tool for collecting information on almost every aspect on the earth. With the availability of very high spatial resolution satellites in the recent years, the applications have multiplied. In India it has been used for various applications and has contributed significantly towards development. It is a multi-disciplinary science which includes a combination of various disciplines such as optics, spectroscopy, photography, computer, electronics and telecommunication, satellite launching etc. All these technologies are integrated to act as one complete system in itself, known as Remote Sensing System

# **URBAN ECO - RESTORATION: ADYAR POONGA AS A MODEL**

**K.R. AJAY DIVYESH**

The process of facilitating the recovery of an ecosystem that has been degraded, damaged or destroyed is called ecological restoration. Ecological restoration differs from other approaches of restoration as it tries to restore the original biodiversity and ecosystem processes that existed before the degradation or disturbance.

Adyar Poonga is a fine example of eco restoration of a polluted estuary as per the directive of the High court of Tamil Nadu. According to the government, the project was based on the master plan for the restoration of the vegetation of the freshwater eco-systems of the Coromandel Coast, especially the fragile eco-system of the Adyar estuary and creek. Of the total area comprising 358 acres, only 58 acres were considered for eco restoration.

Revegetation and regeneration are the two major components of eco restoration which is been followed in this model. Pitchandikulam Forest Consultants are the lead consultants in the revegetation of 58-acres of Adyar poonga. Revegetation not only protects the soil, plants and animals of the restored area it brings back the beauty to the restoration area with dark green foliage, birds and animals throughout the year. The revegetated area was divided into 3 zones: Mangrove and Mangrove Associate Zone, Littoral Zone and Tropical Dry Evergreen Zone. More than 1 lakh saplings comprising five life forms such as trees, shrubs, lianas, herbs including tuberous species were planted to serve as a habitat for aquatic, terrestrial and arboreal species in the poonga. The tree species which are planted in

Adyarpoonga belong to 35 different families. Some of the trees species that are considered to be the rare elements of Tropical Dry Evergreen Forest are found in Poonga: *Garcinia spicata*, *Tricalysia sphaerocarpa* and *Walsura trifoliata*.

More than 70 species of herbaceous plants belonging to 23 different families have regenerated along with some tree species like *Albizia saman*, *Peltophorum pterocarpum*, *Polyalthia longifolia*, *Pithcellobium dulce*, *Parkia biglandulosa* and *Gauzoma ulmifolia* which were initially introduced during revegetation process has now got adapted to the restored area well and started to regenerate themselves. Restored area also provided a visiting place for migratory birds, home for mammals, reptiles, amphibians, butterflies and fishes. Around 10 species of mammals, 90 species of birds, 25 species of reptiles and amphibians, 56 species of butterflies, 20 different dragonflies and 30 species of fish have been identified so far after restoration. Critical ecological studies should be made by experts in order to safeguard the diversity and as well as to make this eco-restoration a successful model in near future.

# **MEDICINALLY IMPORTANT MACROFUNGI OF MCC CAMPUS**

**S. KARTHIK**

Among the large resources of fungi, higher Basidiomycetes especially mushrooms are sources of therapeutically useful biologically active agents. There are approximately 700 species of higher Basidiomycetes that have been found to possess significant pharmacological activities. Medicinal mushrooms have an established history of use in traditional oriental medicine. Many traditionally used mushrooms from genera, *Auricularia*, *Flammulina*, *Ganoderma*, *Grifola*, *Lentinus*, *Trametes* (*Coriolus*) and *Tremella* have been demonstrated to possess significant medicinal properties.

The significant pharmacological effects and physiological properties of mushrooms are bioregulation (immune enhancement), maintenance of homeostasis and regulation of biorhythm, Mushrooms are also known to have effective substances for antifungal, anti-inflammatory, antitumor, antiviral, antibacterial, hepatoprotective, antidiabetic, hypolipemic, antithrombotic and hypotensive activities.

The Madras Christian College campus has a rich biodiversity of Mushrooms and several of them have been already tapped for their medicinal use. There is also an amazing scope of further research on the campus mushrooms

## **FLORA OF ROCK OUTCROPS**

**M. ALISTER**

Outcrop, in geological terms, is a portion of naturally formed bedrock or other land form protruding through the soil level. It supports unique vegetation and has abundant endemic species. The gradients of soil depth (along with water availability) were key factors determining the floristic composition of that particular area. Although apparently monotonous, rocky outcrops bear a considerable diversity of pedo-environments and associated vegetation greatly determined by local topography and micro-environmental aspects. The vegetation mostly contains succulents and semi succulents and also some geophytes, threophytes (plants living only one year or one growing season). The seeds found in the shallow soils of rock outcrops are the outcome of the process of sexual reproduction. These plants possess a number of peculiar anatomical features and, perhaps more intriguingly, a combination of mesomorphic leaf blades with xeromorphic petioles. Such habitats can therefore even be used as monitoring sites for the effect of climatic changes. The most crucial threats to this vegetation are local tourism, cattle grazing and industrialization.

In India this vegetation is mostly seen in lateritic plateaus. This vegetation is also similar to the desert vegetation, during hot condition seeds of those plants survive. This vegetation is found in north Western Ghats in South India. The plants that survive in this vegetation blooms in succession, making rock out crops appear in different colors that change periodically. In konkan plateaus alone nearly 300 endemic plants are documented. Some endemic plants are *Aponogetonsatarensis*, *Exacumlawii*, *Habenariaheyneana*, *Ipatientetomentosa* and *Pogostemondeccanensis*

# **DIATOM ART**

**K. MAHESWARI**

Diatoms are a major group of algae, and are one of the most common types of phytoplankton belongs to the Class Bacillariophyceae. Most diatoms are unicellular, although they can exist as colonies in the shape of filaments or ribbons (e.g. *Fragillaria*), fans (e.g. *Meridion*), zigzags (e.g. *Tabellaria*), or stellate colonies (e.g. *Asterionella*). Diatoms are producers within the food chain.

A characteristic feature of diatom cells is that they are encased within a unique cell wall made of silica (hydrated silicon dioxide) called a frustule. These frustules show a wide diversity in form, but usually consist of two asymmetrical sides with a split between them, hence the group name. Fossil evidence suggests that they originated during, or before, the early Jurassic Period. Diatom communities are a popular tool for monitoring environmental conditions, past and present, and are commonly used in studies of water quality.

There is a wide range in the number of species of diatoms present on earth, from 20,000 to over 1-2 million. Ornamentation is important for diatom identification. Valve surface is usually covered with striations, pores, spines, punctations or raphes (an elongated fissure through the valve wall, involved in cell motility).

Diatoms are traditionally divided into two orders: Centric diatoms (Centrales), which are radially symmetric Pennate diatoms (Pennales), which are bilaterally symmetric. There is a wide range in the number of species of diatoms present on earth, from 20,000 to over 1-2 million.

Art: During Victorian times, it became quite fashionable for microscopists to form microscopic images using the frustules of diatoms. Using appropriate tools, the frustules were cleaned and moved into position to form geometric patterns or images of flowers and birds no more than a millimetre or two across. Clearly a hobby that requires an abundance of patience, but there are still those who are fascinated by their intricate structures. Exquisite line drawings produced by zoologist Ernst Haeckel influenced the Art Nouveau movement, and more recently, wood-worker Louise Hibbert and jeweller Sarah Parker-Eaton have collaborated to produce three-dimensional objects based on diatoms and other plankton.

## **ENDOSULFAN**

**TISHA LIZA TOMY**

Endosulfan is an organochlorine insecticide and acts as a contact poison in a wide variety of insects and mites. It is effective against a wide variety of pests on cereals, coffee, cotton, fruit, oil seeds, potato, tea, vegetable and other crops. Owing to the extensive use of endosulfan in developing countries more research proving its deleterious effects on human life is essential to impose a ban on the chemical.

# **PHARMACEUTICAL USES OF ALGAE**

**M. GAYATHRI**

Algae are a rich and varied source of pharmacologically active natural products and nutraceuticals. Pharmaceutical content in the algae strain is very small, current market values for these products are extremely high. The major products currently being commercialized extraction include carotenoids, phycobilins, fatty acids, polysaccharides, vitamins, sterols, and biologically active molecules for use in human health. The upcoming section will bring into focus the use of algae as a potential source of pharmaceutical and nutraceutical ingredients. Both microalgae and macroalgae exhibit antimicrobial activity which finds use in various pharmaceutical industries. Pharmaceutical companies could substantially reduce the expense of costly treatments for cancer and other diseases produced from mammalian or bacterial cells by growing human therapeutic proteins in algae.

The markets for pharmaceuticals and nutraceuticals are growing quickly worldwide, and it particularly attracts marketers. A growing proportion of today's pharmaceutical and nutraceutical research focuses on the production of promising compounds from algae. Thus, the untapped potential of algae in the field of pharmaceuticals and nutraceuticals has to be still explored to grow and capitalize on tremendous global marketing opportunities

## **FLAVOUR PROFILE AND BIO-ACTIVE PHYTOCHEMICALS IN SPICES**

**ANU THOMAS**

Spices have become indispensable as the most important natural flavouring materials available to food processor. It provides individuality to dishes and tang and zest to beverages and appetizers. Spices are primarily used for flavouring and as food preservatives. But they are now gaining importance for their nutritional, antioxidant, antimicrobial and medicinal properties. In the present scenario, the antidiabetic, antihypercholesterolemic, anticarcinogenic and anti-inflammatory effects of spices have paramount importance. Here comes the use of components of spices as possible preventive agents for these health disorders.

## **ALGAL CULTIVATION SYSTEMS**

**MEGALA**

Microalgae are very efficient solar energy converters. They can produce a variety of metabolites. Man has always tried to take advantage of these properties through algal mass culture. Despite the fact that many applications for microalgae have been described in the literature, their usefulness is not known to many. Industrial reactors for algal culture are at present, designed as open race-ways (shallow open ponds where culture is circulated by a paddle-wheel). Technical and biological limitations of these open systems have given rise to the development of enclosed photoreactors (made of transparent tubes, sleeves or containers with natural or artificial light). The present review surveys advances in these two technologies for cultivation of microalgae.

## **PHYCO-FUEL**

**U.ELAYA PERUMAL**

Algae are diverse in its habit and habitat. Biofuel is derived from many plants materials, but algae has identified as more potential one. Microalgae have been identified as a potential biodiesel feedstock due to their high lipid productivity and potential for cultivation on marginal land. One of the challenges in utilizing microalgae to make biodiesel is the complexities of extracting the lipids using organic solvents followed by transesterification of the extracts to biodiesel. In the present work, reaction conditions were optimized that allow a single step extraction and conversion to biodiesel in high yield from microalgae.

## **DNA BARCODING**

**NINGTHOUJAM ARJU SINGH**

A short stretch of genetic code from a reference gene is unique enough to one species to distinguish it from every other species and that comparison of sequence variations in that stretch of genes can reveal evolutionary relationship among species. DNA barcoding uses this concept to identify species by using short standardized DNA regions known as “DNA barcodes”. For DNA barcoding to work sequence variation must be high enough between species so that they can be discriminated from one another; however, it must be low enough within species that a clear threshold between Intra and Inter specific genetic variation can be defined. These “DNA barcodes” show promise in providing a practical, standardized species-level identification tool that can be used for biodiversity assessment, life history and Ecological studies and forensic analysis.

# **ALZHEIMER'S DISEASE**

**SHYAMA**

Alzheimer's disease, it is the most common form of dementia. It was first described by Alois Alzheimer in 1906. It is diagnosed in people over 65 years of age. Each of the stages Alzheimer's disease may bring about changes in everyday activities, behavior and mood, and cognition (that is, memory and thinking).

Alzheimer's disease occurs in many ways. Such as head injury, brain tumor, family factors, genetics, hereditary. . Alzheimer's disease is caused by formation of plaques and lumps in brain. Symptoms of this Alzheimer's disease are forgetfulness, problem in thinking, problem in language, problem in speaking, walking, forgetting things which happened just now, forgetting relations, names of friends, etc. Effective care and interest should be given

The future builds upon the events and experiences of the past. That's certainly true of AD research. Our knowledge of AD is advancing rapidly, and we have much to celebrate in our scientific successes.

# **INSULIN**

**VIVEK.P**

Insulin is a hormone that regulates carbohydrate and fat metabolism in our body. Endogenous Insulin is secreted by beta cells of islets of langerhans in pancreas.

When the body fails to secrete enough Insulin it leads to diabetes. Type 1 and Type 2 are the types of diabetes. Type 1 is common in young adolescents and TYPE 2 in persons more than 30 years of age. Remedy includes dietary control, oral medication (OHA or Oral Hypoglycemic Agents) and injection (Insulin therapy).

In Insulin therapy external Insulin is provided to regularize the carbohydrate and fat metabolism. History of Insulin dates back to 1920's. F.G. Banting (Toronto University). Earlier Insulin was produced from animals but now with advances in molecular genetics Analogue Insulin (lab produced and genetically altered) is produced to provide rapid / uniform acting Insulin.

With rapid changes in food habit and work culture Diabetes is rampantly spreading and has become a global issue. Control measures include large scale production of drugs and appropriate distribution.

## PROCEEDINGS OF THE PREVIOUS MEETS

PG Seminar Club Inaugural Meet, 29<sup>th</sup> August 2011

Seminar Club activity of the academic year 2011-2012 was inaugurated by Dr.C.K. Sreedharan I.F.S., Principal Chief Conservator of Forests (Retd.), Government of Tamil Nadu on 29<sup>th</sup> August, 2011. Dr.Sreedharan, in his inaugural address spoke on 'Bio-Diversity of Western Ghats' and covered the biodiversity of western Ghats, activities of the forest department over a period of time to regenerate the vegetation, showed excellent visuals of different forest types and rare habitats in which several endemic plants are growing. During his speech he stressed the importance of reservoirs that supply water for irrigation and domestic purposes in Thirunelveli and Tuticorin districts and their conservation.

Second meet, 6<sup>th</sup> September, 2011

Talk 1

Dr.A.G.Pandurangan, Head, Taxonomy and Conservation Division TBGRI, Trivandrum spoke on 'Medicinal Plant Trade: Regulation and Scope'. His talk threw light on the role of Indian medicinal plants in different medicinal systems. His talk covered medicinal plant trade and sources, International value of medicinal plants trade, development of legal and regulatory instruments, Indian scenario of medicinal plants, Strategies for medicinal plant collections, value addition of medicinal plants in Kerala and a lot more.

Talk 2

The second talk on that day was on "Micro algae: Potential for effluents treatment and energy production" by Dr. M.Muthukumaran, Assistant Professor, Post-graduate and research department of Plant Biology and Plant Biotechnology, RKM Vivekananda College, Chennai 600 004. He talked on using freshwater algae for removing pollutants from effluents,

He has also discussed using algal biomass for energy production, functioning of an algal fuel cell, using effluents treated with algae for culturing fish etc. He has elaborately discussed about the financial gain for any industry by adopting 'phycoremediation' over chemical treatment of industrial effluents.

Third meet, 9<sup>th</sup> September, 2011

Mr. M. Amirthalingam, Research Officer, C P R Environmental Education Research Centre, Chennai spoke on 'Ecological traditions of Tamil Nadu'. He started his talk with *tinais* of Tamil tradition and went on covering all sacred things such as sacred groves, sacred trees, sacred gardens, etc. He elaborately discussed on the role of sacred groves in maintaining the fertility of soil,

recharging ground water, functioning as wind breaker and source of medicinal plants. He has listed the RET present in the groves. His talk then migrated to temple tanks. He discussed in detail about the origin of temple tanks and their usefulness in the day to day life of the people. He ended his talk by giving an insight in to some embedded ecologies of popular culture such as the usefulness of kolam, medicinal properties of tulsi, turmeric, banana leaves, neem leaves, etc.

Fourth meet, 19th September, 2011

Dr. Nather Khan, Ecotone Environmental Management SDN, BHD., Malaysia made a detailed deliberation on 'Environmental Impact Assessment for The Proposed Perhentian Tinggi Sanitary Landfill, Pedas, Rembau Negeri Sembilan'.

He stressed the importance of selecting a landfill site for disposal of solid waste after taking into consideration of a variety of parameters that included the topography, soil condition, air quality, wind direction and velocity during different months, temperature, rainfall, etc. He highlighted the importance of leachate collection from land fill and its subsequent treatment. It was also noted the importance given to the selection process of the site and elaborate studies right up to the aesthetic appearance after the completion of the project. His lecture was accompanied with a lot of illustrations to supplement his talk.

Fifth meet, 21st September, 2011

Talk 1

Miss. D. Kanimozhi, M.Phil. Scholar, spoke on 'Treating aqueous *blue Hf 2b* - a dye used in textile industry with *Scenedesmus spp.*'. Kanimozhi presented most of her work completed in the 'phycolab' during the last M.Phil. academic year (August 2010-August 2011). She discussed about the isolation of algae, selecting *Scenedesmus* for the selected dye reduction experiment. Her experiment involved treating 10 mg/L and 20mg/L Hf 2b dye containing CFTRI medium using *Scenedesmus*. She has done the experiment in three different conditions and compared the rate of growth, variation in biomass of the experiment alga and its efficiency. She has also analyzed the biomass for its biochemical component such as carbohydrate, lipid and amino acid, etc. Her talk was supplemented with a lot of photographs, photomicrographs, tables and charts.

Talk 2

Miss. Sanjana Julias Thilakar, M.Phil. Scholar spoke on the 'Flora of Western Ghats'. Sanjana in her talk mentioned that she did the present project in association with Miss. G.Renu, her class mate with an aim of creating a database for the flora of Western Ghats. She went on mentioning about the importance of data base, position of India among the other countries with reference to biodiversity. Her talk covered the biodiversity hotspot regions in India,

biogeographic classification of India, Climate, available literature, vegetation, protected areas, methods of her study, etc. She showed a page of the data sheet to give an idea of the data included. She made an insight into the dominant dicot families, families represented by single species, endemism, State wise diversity, threats and conservation.

Sixth meet, 28st September, 2011

President after welcomed the members he announced that he himself would be giving a talk on 'Water Conservation'.

He has discussed the ways we waste the precious water and called for saving water by adopting four procedures such as reduce, reuse, recycle and retrofit. He has also touched upon the problems of using landfill for garbage disposal and suggested micro level management of solid waste, waste water and sewage. The methods suggested by him are easy to practice. Secretary, Treasurer and other office bearers of the PG CLUB had also stunned the President by presenting a memento in appreciation of his talk.

Seventh meet, 28st September, 2011

The meeting began with the screening of a film on the activities of Nallayan Research Centre, Navaloore. The film elaborately dwelt up on the *Spirulina* cultivation, circumstances at which the centre was started by a small group of people who came to India as repatriates, method of *Spirulina* cultivation going on in the centre, value added products produced using *Spirulina*, etc. Mr. Vijayakumar and Miss. Indumathi, both from the Nallayan Research Centre brought all the *Spirulina* products produced in the centre and displayed in the seminar hall for creating awareness about these products. Most of the members made use of this display and members bought some of these products.

Eighth meet, 28st September, 2011

Talk 1

The first talk on that day was on 'Fire Ecology' by Ms. Ranjana Julias Thilakar. She has traced the different types of forest fire, causes and consequences of forest fire. Discussion followed the talk threw light on not only the disadvantages of forest fire but also the advantages of induced forest fire when it is carried out under control.

Talk 2

The second talk on that day was on 'Algal Culturing Systems' by Miss. A. Megala. In the course of her presentation she screened photographs of different types of algal culturing systems like tanks and photobioreactors. She has explained the

significance of using these different culturing systems.

Ninth meet, 2nd December, 2011

Talk 1

The first talk on that day was on 'Diatom Art' by Ms. K. Maheswari. Maheswari, discussed about the artifacts of diatoms and about the artists who were inspired by them. The arrangement of diatoms in various patterns, furniture and other sculptures made using the patterns of diatom marking all created interest on diatoms. Her presentation included a lot of illustrations showing the patterns on diatoms for jewelry designing, diatoms printed on 'T' shirts, caps and shoes

Talk 2

The second talk was on 'Phycofuel' by Mr. U.Elayaperumal. He spoke on the importance of biofuel in the present day context of escalated prize for petroleum products and cause for global warming, etc. Then he highlighted the importance of algae as a source of biofuel. This was followed by a brief account on methods of cultivation of algae, methods of harvesting and extraction of oil, transesterification for conversion into biodiesel and the uses of oil cake obtained after oil extraction.

Tenth meet, 28st September, 2011

Dr.B.Babu, one of our former student, currently working in the Institute of Botany, Academia Sinica, Nankang, Taipei, Taiwan, spoke on 'An overview of Laboratory Safety). His talk covered all the bio-safety measures to be adopted while working in the laboratories overseas that included the following things: General safety practices, laboratory hazards, decontamination, waste disposal, safety documentation and action plant for safety