

- Dr. Alfin Immanuel, Post Doctoral Researcher, Korea Maritime & Ocean University, South Korea.
- Ms. Hanneke, Student of Applied Health Science, Howest University, Belgium.
- Prof. A. Ramachandran, IFS, Centre for Climate Change and Disaster Management, Anna University, Chennai.
- Prof. S. Sathish Kumar, Prof. and Head, Department of Biotechnology, Bharathiar University, Coimbatore.
- Mr. Joseb Raj, MD, Oceanic Edibles International Pvt. Ltd., Chennai.
- Dr. S. Gandhi, Department of Biotechnology, Anna University, Trichy Campus.
- Dr. Ramesh, Prof. and Head, Department of Botany, Alagappa University, Karaikudi.
- Dr. Appavu, Associate Professor of Botany, Scott Christian College, Nagarcoil.



GREEN MOTUS

SJC Botany - Newsletter
No. 1 & 2, October - 2022



DEPARTMENT OF BOTANY ST. JOSEPH'S COLLEGE (AUTONOMOUS)

Special Heritage Status Awarded by UGC Accredited at A⁺⁺ Grade (4th Cycle) by NAAC
College with Potential for Excellence by UGC
DBT-STAR & DST- FIST Sponsored College, Tiruchirappalli – 620 002, India.

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Fr.Principal Desk

It gives me immense joy and satisfaction to have GREEN MOTUS the new venture of the students of Botany department, St. Joseph's College, Tiruchirappalli. It is a collective initiative of all the students of botany of our college. It will serve as a platform for each one of us to share our knowledge and views on Botany to others.

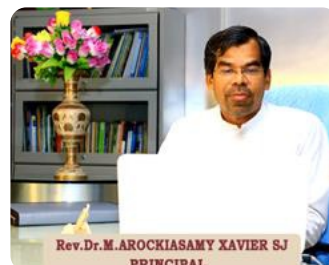
Green Motus is connected with concerned and protecting the environment or the green world. Green denotes importance of protecting the environment that is plants. Motus is a Latin word which means concern. Anyone who asks 'what is important to the students' of this generation has the only answer to is look at and explore the beauty of nature. Then nature will speak how we need to proceed further. Even though nature doesn't need people, people need nature. At this moment the human relationship with the natural world is deeply in need of attention. We should be open to listen to what the nature speaks to us. Then it will protect us and fulfil our needs.

The information and news in this newsletter invite us to experience the life of plants as well as our relationship with them. We hope that this experience will spur us to attempt the impossible by coming out of our comfort zone. We will soon realize that nothing is impossible for us when we are open to learn and do new things. I wish these thoughts will act as a starter to our initiatives.

I congratulate the Department of Botany and wish them a meaningful journey.

May God Bless you All

Rev.Dr.M. Arokiasamy Xavier SJ
Principal



Medicinal Use

Normally coleus used to cold and fever.

But, presence of Forskolin secondary Bio-chemical compound used for Cancer and Advance cancer.

Forskolin has a long history as a folk remedy for asthma. Some research supports that.

Forskolin appears to work in a way similar to certain types of conventional asthma drugs, by boosting the levels of a compound called cyclic AMP. This helps relax the muscles around the bronchial tubes to make breathing easier.

Forskolin has also been used to try to treat glaucoma. A small study indicates that forskolin may help relieve pressure in the eyes, which is often seen in glaucoma. It has also been found to be a safe alternative to beta blockers in glaucoma patients having concomitant asthma.

Another potential use of forskolin is for people with idiopathic congestive cardiomyopathy, which can cause heart failure. In a small study, patients who took forskolin through an IV showed improved heart function.

Optimal doses for forskolin have not been established for any condition. Also, as with supplements generally, the quality of the active ingredients and the level of concentration in products that contain forskolin vary from maker to maker. Some experts recommend that forskolin only be taken under the supervision of a health care professional.

Useful Parts

Leaf - allergies, dry eye, urinary tract infections, bladder infections, advanced cancer, blood clots

Stem - heart disorders such as high blood pressure and chest pain, as well as respiratory disorders such as asthma.

Root - Allergies, Obesity, Insomnia, seizures, Blood



Horticulture And Landscape Designing



Infrastructure appended



Forskolin

Its bio chemical compound .
Its only one present in Coleus forskohlii plant root.



History

History of Botany

The history of botany goes as far as to 4th century B.C.E. The man's curiosity on plants lead to many discoveries in Botany which shaped our current lives in many ways. At present, various sub-fields of botany have already emerged. These include the following: plant pathology, plant ecology, paleobotany, and forensic botany.

But despite being established as a discipline, the definition of the term "plant" remains to be vague and still up for more clarifications. Botanists often describe plants more inclusively with multicellular, eukaryotic organisms that do not have sensory organs and have, when complete, root, stem, and leaves.

History of Botany – A Timeline During the Pre-17th Century

4th Century B.C.E: Both **Aristotle** and **Theophrastus** got involved in identifying plants and describing them. Because of his contributions, Theophrastus was hailed as the "**Father of botany**" because of his two surviving works on plant studies. Although Aristotle also wrote about plants, he received more recognition for his studies of animals.

In A.D. 60:Dioscorides wrote **De Materia Medica**. This work described a thousand medicines, majority of which came from plants. For 1500 years, it remained the guidebook on medicines in the Western world until the invention of the compound microscope.

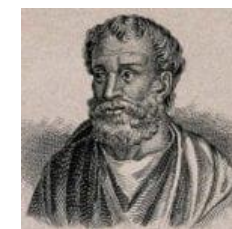
During the 17th Century.

Early 17th century: For a brief period, the search for knowledge in the field of Botany temporarily became stagnant. However, the revival of learning during the European Renaissance renewed interest in plants.

1640:Johannes van Helmont measured the uptake of water in a tree. "In what is perhaps his best-known experiment, van Helmont placed a 5-pound (about 2.2-kg) willow in an earthen pot containing 200 pounds (about 90 kg) of dried soil, and over a five-year period he added nothing to the pot but rainwater or distilled water. After five years, he found that the tree weighed 169 pounds (about 77 kg), while the soil had lost only 2 ounces (57 grams). He concluded that "164 pounds of wood, barks, and roots arose out of water only," and he had not even included the weight of the leaves that fell off every autumn."

1665:Robert Hooke invented the microscope. Because of this, Robert Hooke had the chance to take a close look of a cell looks like. His description of these cells was published in Micrographia. However, the cells seen by Hooke showed no signs of the nucleus and other organelles found in most living cells (Rhoads 2007).

1674:Anton van Leeuwenhoek saw a live cell under a microscope. Before his discovery, the existence of single-celled organisms were unknown and initially were met with skepticism.



Courtesy – **BIOEXPLORER**

Carl Linnaeus (1707 - 1778) was a Swedish botanist who devised the binomial classification system, a two-part naming system to identify, classify and name organisms from bacteria to elephant. Carl Linnaeus is often called the Father of Taxonomy. His classification, which formed the foundation of our modern taxonomic system, uses the dual "genus, species," nomenclature to classify organisms.



Linnaeus was born in the province of Smaland in Sweden in 1707. His father, a pastor and an amateur botanist, instilled a love of nature in Linnaeus. Carl Linnaeus studied medicine and science at the University of Lund and later in Uppsala University. At the time, training in botany was part of the medical curriculum, as doctors had to prescribe drugs derived from medicinal plants. But memorising scientific plant names was difficult – each plant was known by a long description in Latin.

Carl Linnaeus was keen on finding a way to name species better. In 1732, he travelled to Lapland, in the far north of Sweden, on a six-month long research expedition sponsored by the Uppsala Academy of Sciences. He collected some 400 species of new plants. He made observations of the native plants and birds. All Swedish medical students were required to receive their degrees outside Sweden, so Linnaeus finished his studies at the University of Harderwijk in the Netherlands in 1735. His doctorate was focused on the causes of malaria.

The same year, Carl Linnaeus published his pivotal work of Systema Naturae ("The System of Nature"). He had laid the groundwork for this first edition in a series of manuscripts written over the years. Systema Naturae proposed a radical new approach to the ordering and classification of plants and animals. His system was hierarchically ranked. Organisms were grouped based on morphological traits. At the broadest level, the classification system was divided into three broad kingdoms: animals, plants and minerals (the mineral designation was subsequently dropped). These categories were further subdivided into "classes," "orders," "genera," and "species."

Linnaeus continued to revise Systema Naturae throughout his lifetime. It eventually grew from 11 pages in the first edition to more than 2,000 pages, as new species were added over time.

In 1739 he was among the founders of the Royal Swedish Academy of Sciences in Stockholm. Linnaeus spent many years teaching at Uppsala University. Linnaeus was knighted by the King of Sweden in 1761 and took the nobleman's name of Carl von Linne.

Courtesy -May 20, 2021, The Hindu

Granted 3 Patents [Australia, Germany and India]

Discovered 3 New plant species from Eastern and Western Ghats
(*Solanum pulneyensis*, *Psydrax cudalorensis*, *Jasminum greenii*)

Innovation Unit established

DBT-STAR, DST-FIST Sponsored Department

Research units have been established

52st Fr. Balam Memorial and Endowment Lectures

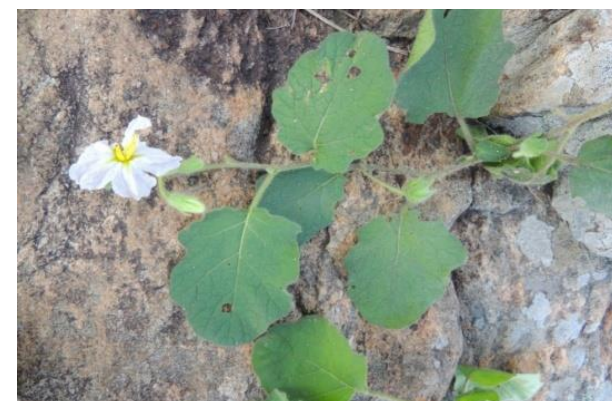
Establishment of Vermicompost yard

Value-added Course

Herbal Garden and Mushroom Unit

Phyto-Med Food preparation Unit

NCBI-USA Gene deposition



MoUs Signed



Name and Address of the Organisation with which MoU is Established	Type (Institution/ Industry/ Corporate House, etc.,)	Year of Establishment of MoU	Duration	List of Activities in the current year	Number of Students / Teachers participating in Activities related to MoU
India Academy Science College, Bangalore	Institution	2021	2021-2026	Knowledge Sharing, Visitation	Faculty delivered Lecture
NRCB, Trichy	ICAR Institute	2022	5 years	Faculty visit	4
Oceanic Edibles International Limited, Chennai	Industry	2022	5 years	Endowment Lecture Delivered	280 student participants from SJC and other colleges
K.S. Varier's Asthanga Ayurvedics (P) Ltd.	Industry	2022	5 years	Faculty Visit	1

Smallest Flowering Plant *Wolffia Spp*

Watermeal(*wolffiaspp*) is a member of the duckweed family (Iamnaceae), a family that contains some of the simplest flowering plants. The plant itself average 1/42 long and 1/85 wide size. It belongs to the gymnosperms.

- It has a single pistil and stamen
- It produces smallest fruit called utricle
- It is found in a fresh water
- It is a monocot and rootless plant
- It contains high protein & essential amino acids
- It mostly reproducing by budding
- It has a fastest growth rate



Dragon blood tree

Dracaena cinnabari, the dragon blood tree belongs to the family Asparagaceae. IUCN placed this species under VULNERABLE (VU) status. It looks like umbrella shape tree. This tree produces dark resin known as “emzolah” it looks dark red colour. It has a widely used as a traditional medicinal uses. This resin also used for the dye process. Due to the climatic change this tree became extinction It has a fastest growth rate



New Discovery

Western Ghats offer major additions to new flora

The Botanical Survey of India, in its new publication Plant Discoveries 2020 has added 267 new taxa/ species to the country's flora. The 267 new discoveries include 119 angiosperms; 3 pteridophytes; 5 bryophytes, 44 lichens; 57 fungi, 21 algae and 18 microbes.

In 2020, 202 new plant species were discovered across the country and 65 new records were added. With these new discoveries the latest estimate of plant diversity in India stands at 54,733 taxa including 21,849 angiosperms, 82 gymnosperms, 1310 Pteridophytes, 2791 bryophytes, 2961 lichens, 15,504 fungi, 8979 algae and 1257 microbes.



Syzygium anamalaianum (Wild Jamun) discovered in 2020 from Anamalai Tiger Reserve, Tamil Nadu

“The year 2020 will remain marked in global history for the outbreak of COVID-19 pandemic, with the havoc it caused and still continues in 2021. This overwhelming addition of 267 plant taxa to the Indian Flora, which were discovered as either new species or as new distributional records for India, is nowhere less than the average number of new plant discoveries made from India during the past one and half decade,” said Director of Botanical Survey of India, A.A. Mao.

Among the new discoveries this year, nine new species of balsams (*Impatiens*) one species of wild banana (*Musa pradhanii*) were discovered from Darjeeling, one species each of wild jamun (*Syzygium anamalaianum*) from Coimbatore and fern species (*Selaginella odishana*) were recorded from Kandhamal in Odisha. There are 14 new macro and 31 new micro fungi species recorded from various parts of India.

An assessment of the geographical distribution of these newly discovered plants reveals that 22% of the discoveries were made from the Western Ghats followed by Western Himalayas (15%), Eastern Himalayas (14%) and Northeast Ranges (12%). The West coast contributed 10% while East Coast contributed (9%) in total discoveries; Eastern Ghats and South Deccan contribute 4% of each while Central Highland and North Deccan added 3% each.

Ravi Agrawal, Additional Secretary, MoEF&CC, who released the publication said India being a signatory to the Convention on Biological Diversity (CBD) is committed to work towards the prime objective of Global Strategy of Plant Conservation and the newly discovered species may offer potential source of wild edible plants, traditional drugs, cosmetics and wild relative of crop plants.

Another scientist from the BSI, S.S. Dash who played a crucial role in the discoveries, said 45% of novelties published in various national and international journals are of seed plants, 21% fungi, 8% algae, 16% lichen and 7% microbes while 2% are bryophytes and 1% pteridophytes. This year one new monogeneric family Hanguanaceae has been recorded for the first time from India, he added.

Sanjay Kumar, botanist with the BSI, associated with the compilation work of plant discoveries since 2012, explained that during the last decade a total number of 3,245 taxa of plants from different plant groups have been discovered from India. Most discoveries have been made from seed plants, with 1,199 (37%) taxa, followed by fungi 894 (27%), he added

Courtesy-September 21, 2021, The Hindu.

Genetics

Our genes remember the suffering of ancestors: genetic analysis complements and improves historical records of the slave trade [USA-UK, July 2020]. Active slave trade between the African continent and the Americas resulted in millions of people being forcibly moved to another continent. The legacy of these tragic events is now reflected not only in the history and culture of the South and North America – but it is also saved in the genes of their populace, as a recent comprehensive genetic study shows



A research team from the 23andme has analyzed around 50,281 genomes obtained from participants. Afterward, the geneticists tried to match the ancestry of the participants to the historical record of transported slaves that were available

In general, it was found that the ratio of people originated from various areas of the African continent matches the ship records of transported slaves.

However, the origin records of the people displaced, and their actual genetic origin did not match certain areas in the Americas.

- The genetic analysis also shows that more slaves were living in the US than the records state, and the scope of slavery was underrepresented.
- The researchers have found that usually, the participants carried the Y chromosome components passed down from European males while at the same time carrying mitochondrial genomes that had links to females of African origin.
- There were fewer genetic traces of African males, as they probably were at higher risk of mortality, being sent to complicated and dangerous labor.
- Based on the genetic analysis, people from different regions of the continent were brought to different areas of the Americas.
- The data obtained from genetic analysis also reflected the period when people were transported between different South and North American regions.

The genetic sequencing data helps reconstruct the complex history of slavery in this region and helps visualize the processes and the conditions that influenced these events in the past.

Courtesy – BIOEXPLORER

Reports and outcome of the Parent-Teachers' Meet



The Parent-Teachers meet for the academic year 2021-22 was held at Balam hall, Department of Botany on 04.06.2022 at 11.15 AM. The meeting was organized for the parents of I B.Sc, IIB.Sc and I M.Sc students.



IV. Parents expressed their views which are given below.

1. Parents clarified career opportunities and
2. Parents were appreciated teaching, discipline and lab facilities.
3. They are very proud to study and get admission.

I. Parents personal detail

Out of the 44 parents attended about 90 % of the parents are poorly educated and they have studied up to 8th to 10th Std and most of them are farmers and coolies. Only 5 to 10 % are Graduates. Most of the female parents are Home makers.

II. Views on the working

Many of the parents have said the curriculum and TLE was marked as excellent. Remaining parents have said Very Good. Few of them marked as good.

III. Views on Education, Facilities and resources in SJC

Many of the parents have said the education, facilities, and Resources are Excellent. Remaining parents have said Very Good.



Student's Participation In Academic & Cultural Events



Biofest, 2022
Dept. of Biotechnology & Microbiology, National College, Trichy

Name of the Activity	Date	Prizes / Position	Dept. No.	Name of the Students
Biofest, 2022 Dept. of Biotechnology & Microbiology, National College, Trichy	23.04.2022	Overall Championship		UG and PG Students
Biofest, 2022 Dept. of Biotechnology & Microbiology, National College, Trichy	23.04.2022	Quiz, I prize	20PBO105, 20PBO106, 21PBO120	Hansi, Mithra, Jayakumar
Biofest, 2022 Dept. of Biotechnology & Microbiology, National College, Trichy	23.04.2022	Cooking without fire, I Prize	20PBO104, 20PBO119	Jeferson, Vigneshwaran
Biofest, 2022 Dept. of Biotechnology & Microbiology, National College, Trichy	23.04.2022	Ad-zap, I Prize	20PBO104, 20PBO119	Jeferson, Vigneshwaran
Biofest, 2022 Dept. of Biotechnology & Microbiology, National College, Trichy	23.04.2022	Photography, I Prize	20PBO105	Hansi
Biofest, 2022 Dept. of Biotechnology & Microbiology, National College, Trichy	23.04.2022	Photography, II Prize	20PBO104	Jeferson
Biofest, 2022 Dept. of Biotechnology & Microbiology, National College, Trichy	23.04.2022	Short video, II Prize	20PBO104, 20PBO105, 20PBO119	Jeferson, Vigneshwaran, Hansi
Biofest, 2022 Dept. of Biotechnology & Microbiology, National College, Trichy	23.04.2022	Meme creation, I and II prize	20PBO104, 20PBO119	Jeferson, Vigneshwaran
Biofest, 2022 Dept. of Biotechnology & Microbiology, National College, Trichy	23.04.2022	Petriart, III prize	20PBO105	Hansi S
Biofest, 2022 Dept. of Biotechnology & Microbiology, National College, Trichy	23.04.2022	Bioart, I prize	21PBO110	Renister raj S

Top - up Initiatives Undertaken



Performance for the years

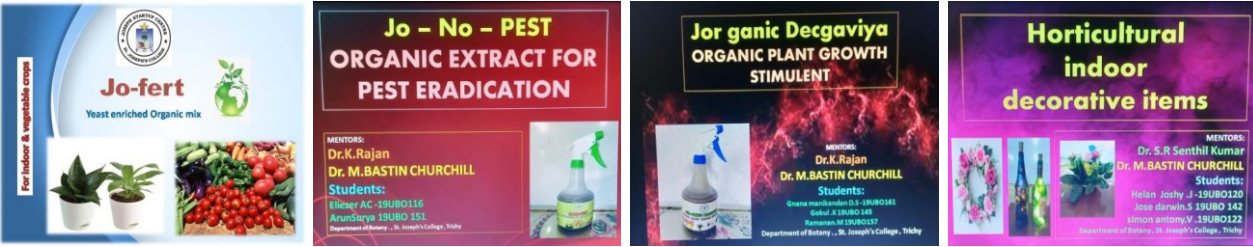
Linkage/Collaboration/Consultancy created and offered

- ❖ Plant Identification
- ❖ Vermicompost
- ❖ NRCB (ICAR)
- ❖ St. Jospeh’s College, Bengaluru
- ❖ St. Andrew College, UP
- ❖ Vimala College, Tirussur
- ❖ Zhejiang Gonshang University, China
- ❖ University of Texas, USA



Start Up/Incubation created

S. No.	Programme	Staff In-charge	From - To
1	Jo-fert	Dr. K. Rajan Dr. S. Anusuya	10.02.2022-15.03.2022
2	JO-No-PEST Organic extract for pest eradication	Dr. K. Rajan Dr.m. Bastin Churchill	10.02.2022-15.03.2022
3	Jorganic Decgavia An Organic plant growth stimulant	Dr. K. Rajan Dr. M. Bastin Churchill	10.02.2022-15.03.2022
4	Horticultural indoor decorative items	Dr. S.R Senthil Kumar Dr. M. Bastin Churchill	10.02.2022-15.03.2022



Important Days

- ❖ October 3:World Animal Welfare Day
- ❖ October 4:World Habitat Dayand 1949 - The patent for an antibiotic for typhoid was granted to Crooks, Rebstock, Controalis, and Bartz..
- ❖ October 10: World Mental Health Day
- ❖ October 14: World Sight Day
- ❖ October 16: World Food Day
- ❖October 22,1940 - Julian, Mayer, and Krause received a patent for cortisone, used to treat rheumatoid arthritis, bursitis, adrenal insufficiency, allergies, diseases of connective tissue, and gout.
- ❖ October 28,1867Hans Adolf Eduard DrieschGerman experimental embryologist and philosopher who was the last great spokesman for vitalism, the theory that life cannot be explained as physical or chemical phenomena.
- ❖ October 28 ,1914 Richard Laurence Millington Synge was a British biochemist who shared the 1952 Nobel Prize for Chemistry with A.J.P. Martin for their development of partition chromatography, notably paper chromatography.

Do you know?

- 1.Synthetic biology is linked to the study of...Artificial life
2. What is biomimetics?Study of synthesising material or machines resembling life systems3.
- 3.2010 marks the watershed year for artificial life research. Why? Scientists replaced the DNA of cells of bacteria with synthetic DNA
- 4.Sequencing of the human genome was completed in 2003. How many other species have been genome-sequenced so far?At least 250
5. By now we all know that humans and chimps share almost 99% of genes. What's the score of the cow?80%. Humans are not even close to cows
- 6.The divergence of Chinese small-leaf tea and Assam tea is believed to have taken place some 22,000 years ago. Which event among the following coincides with this divergence?Last glacial maximum
7. Which of the following styles of tea is made from very young leaves and buds and is minimally processed and not rolled or oxidised? White tea.
8. 'Camellia sinensis' is the botanical name of the tea plant. From which of the following plant species of the genus 'Camellia' mainly is tea oil made?C. japonica
- 9.Which factor present in tea gives it its characteristic reviving, stimulating quality?Caffeine
10. Camouflage, the tactic of organisms to disguise their appearance, is also called...Cryptic coloration

11. Aposematism is a type of camouflage that some species use to... **Warn predators**
12. What is countershading? **Using darker and lighter shades in different parts of the body**
13. What are biochromes? **Microscopic pigments some species use change colours**
14. Bats are the second most common group of mammals after rodents. How many species of bats are there in the world? **Over 1,400**
15. Approximately how many species of plants depend on bats for pollination? **Over 300**
16. The scientific name for bats is Chiroptera. What does it mean in Greek? **Hard wing**

Courtesy - The Hindu

Terms

Taxonomy

Pubescent -With straight, short, soft, somewhat scattered, slender trichomes.

Pulvinate- The swollen base of a petiole or petiolule.

Catkin A unisexual, typically male spike or elongated axis that falls as a unit after flowering

Claw An attenuate base of a sepal or petal. (perianth part)

Coronate With a tubular or flaring perianth or staminal outgrowth, e.g. Narscissus, Asclepias. (perianth type)

Corymb An indeterminate inflorescence consisting of a single axis with lateral axes and/or pedicels bearing flat-topped or convex flowers. (inflorescence type)

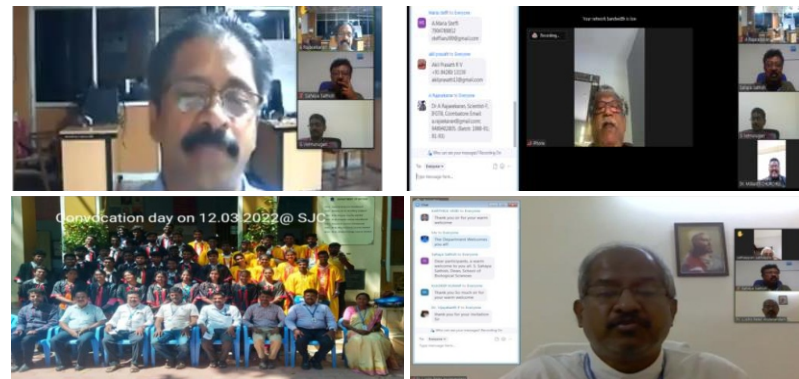
Decussate Opposite leaves or other structures at right angles to the preceding pair. (arrangement)

Dichlamydeous Perianth composed of a distinct outer calyx and inner corolla, regardless of total number of whorls. (perianth cycle)

Funiculus A stalk that attaches the ovule to the placenta. (gynoecium part)

Gamopetalous Sympetalous. (perianth fusion) gamosepalous Synsepalous. (perianth fusion)

Alumni/ae get-together



1. Graduation Day Meet (12.03.2022) 2. Alumni Meet Through Online (07.05.2022)

Glance of medicinal plants

Andrographis paniculata



நிலவேம்பு / சிறியாநங்கை

Family : Acanthaceae
Eng Name: Green chirayta
Usages:
Liver complaints, fever, an anti-inflammatory and immunostimulant.

Aloe vera



சோற்றுக்கற்றாழை

Family : Asphodelaceae
Eng Name: Aloe vera
Usages:
To boost the immune system, cures dermatitis, cures wounds, halts cancerous growth, reduces arthritis pain, delays the aging process, helps in alleviating nausea.

Azadirachta indica



வேம்பு / வேப்பை

Family : Meliaceae
Eng Name: Neem
Usages:
Cure eye trouble, used as ear ailments, useful in treating skin disease and headache, and boost immunity.

Cardiospermum halicababum



முடக்கத்தான் கீரை

Family : Sapindaceae
Eng Name: Indravalli
Usages :
To treat joint pain, body pain and hand leg pain. Improve body resistance.

Hibiscus rosa sinensis



செம்பருத்தி

Family : Malvaceae
Eng Name: Hibiscus
Usages:
Lowers blood sugar, cholesterol levels and blood pressure. Improves hair growth, protect against skin cancer, boosts the immune system.

Murraya koenigii



கறிவேப்பிலை

Family : Rutaceae
Eng Name: Curry Leaves
Usages:
Cure diarrhea, gastrointestinal protection, used in diabetic control, fighting against cancers, reducing cholesterol level and improve hair growth.

Phyllanthus emblica



நெல்லிக்காய்(மலை)

Family : Phyllanthaceae
Eng Name: Amla
Usages:
Used in the digestive system, treat constipation, reduce fever, purify the blood, reduce cough, alleviate asthma, strengthen the heart, benefit the eyes.

Plectranthus amboinicus



ஓமவல்லி / கற்பூரவல்லி

Family : Lamiaceae
Eng Name: Indian Borage
Usage:
To alleviate cold and cough. To reduce nasal congestion and sore throats in adults. To treat asthma and bronchitis.

Senna auriculata



ஆவாரம்

Family : Fabaceae
Eng Name: Avaram senna
Usages:
For diabetes, eye infections (conjunctivitis), joint and muscle pain(rheumatism), constipation, jaundice, liver disease, and urinary tract disorders.