MARUDHAR KESARI JAIN COLLEGE FOR WOMEN
(AUTONOMOUS)

VANIYAMBADI, TIRUPATTUR DT – 635 751

- Recognized u/s 2(f) & 12(B) of UGC Act 1956
- Perimanently Affiliated to Thiruvalluvar University
- Supported by DST - FIST | DBT STAR College Scheme

NAAC A+ | Star Rated Institutions Innovation Council | Best College Award

PG & Research Department of Biotechnology
organizes

Training Session on
"Antibacterial Activity of Plant Extract"

Supported by
DBT STAR COLLEGE SCHEME

Date : 25.09.2026 | **Time :** 10.00 am | **Venue :** Sri Arihanth Seminar Hall

CHIEF GUEST

Dr. T. Srinivasan
Associate Professor & Head
Department of Microbiology
Hindustan College of Arts & Science,
Rajiv Gandhi salai Padur, Kelambakkam,
Chennai-603103

PRINCIPAL
Marudhar Kesari Jain College
for Women (Autonomous)
Vaniyambadi - 635 751.
Tirupattur District

Sri. V. Dilip Kumar Jain	Sri. Anand Singhvi	Dr. M. Inbavalli	Dr. M. Gomathi	Ms. S. Aruna
President	Secretary	Principal	DBT STAR College Scheme Coordinator	Head i/c

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AGENDA

1	Prayer	
2	Welcome Address	**Madhumitha** I M.Sc Biotechnology
3	Felicitation	**Dr. M. Inbavalli** Principal, MKJC
4	Chief Guest Introduction	**M. Sivaranjanni** II B.Sc Microbiology
5	Honouring of Chief Guest	**Dr. M. Inbavalli** Principal, MKJC
6	Chief Guest Address	**Dr. T. Srinivasan** Associate Professor & Head, Department of Microbiology Hindustan College of Arts & Science, Rajiv Gandhi Salai, Padur, Kelambakkam, Chennai - 603103
7	Vote of Thanks	**Zuha Kownain T** III B.Sc Biotechnology
8	National Anthem	–

Master of Ceremony

Nafisa Fathima P & Nisha Katwal
III Biotechnology

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Date **25.09.2026** | Time **10.00 am** | Venue **Sri Arihanth Seminar Hall**

Activity Report

Topic/ Subject of the Activity

Training Session on Antibacterial Activity of Plant Extract under DBT STAR College Scheme.

Objectives (Input)

- To create awareness among students about medicinal plants, herbal medicine, and their uses in healthcare.
- To help students understand important plant compounds such as alkaloids, flavonoids, tannins, and terpenoids and their benefits.
- To introduce students to different plant extraction methods and simple tests used to identify plant compounds.
- To teach students how to test the antibacterial activity of plant extracts using disc diffusion, well diffusion, MIC, MBC, and zone of inhibition methods.

Methodology (Process)

The PG & Research Department of Biotechnology organized the Training Session on 25.09.2026 at 10.3 a.m. at the Sri Arihanth Seminar Hall with the support of the DBT STAR College Scheme. Dr. T. Srinivasan, Associate Professor & Head, Department of Microbiology, Hindustan College of Arts & Science, Rajivi Gandhi Salai Padur, Kelambakkan, Chennai – 603 103 served as the Chief Guest. The programme commenced with a prayer, invoking blessings for the successful conduct of the programme. This was followed by the Master of Ceremony with Nafisa Fathima P & Nisha Katwal III Biotechnology, warmly welcomed the Chief Guest, faculty members and students. Welcome Address delivered by Ms. Madhumitha I M.Sc Biotechnology. The Chief Guest was felicitated by Dr. M. Inbavalli, Principal, MKJC. The Chief Guest was then formally introduced by Ms. M. Sivaranjanni, II B.Sc. Microbiology. The Chief Guest delivered a detailed two-hour guest lecture in the Sri Aruthanth Seminar Hall. Following the lecture, the students participated in a hands-on training session in the Biotech Laboratory, where they were trained to identify different bacterial species and perform antibacterial activity assays using plant extracts.

The training session was conducted on the topic "Antibacterial Activity of Plant Extracts." The session aimed to provide students with knowledge of medicinal plants, their therapeutic applications, and their importance in healthcare. The session began with an overview of the historical evolution of herbal medicine and the traditional use of medicinal plants in various healthcare systems. The development of modern scientific approaches to herbal medicine research was also discussed.The advantages of multi-component botanical extracts were explained, emphasizing their ability to act on multiple cellular targets. The concepts of synergistic activity, multi-target mechanisms, and biodegradability were highlighted. Major phytochemical classes, including alkaloids, flavonoids, tannins and terpenoids were introduced. Alkaloids were described

as nitrogen-containing compounds with potential antimicrobial properties. Their possible interactions with bacterial DNA and inhibition of essential enzymes were explained.

Flavonoids were discussed as polyphenolic compounds that can interact with bacterial membranes and interfere with bacterial adhesion. Tannins were explained as compounds capable of interacting with proteins and microbial enzymes. Terpenoids were described for their potential to disrupt bacterial membranes and compromise cellular integrity.The session further focused on the cellular mechanisms underlying the antibacterial activity of plant extracts. Mechanisms such as cell-wall disruption, membrane damage, enzyme inhibition, and interference with bacterial nucleic acids and metabolism were explained.

Special emphasis was given to quorum sensing and biofilm formation in bacterial pathogens. Quorum sensing was explained as a bacterial communication mechanism that regulates coordinated activities. The potential of plant-derived compounds to interfere with bacterial signalling pathways and reduce biofilm formation was highlighted.The importance of biofilm inhibition in controlling persistent bacterial infections was discussed. The potential application of plant extracts against *Streptococcus* and other bacterial pathogens was also emphasized.

Various techniques for extracting bioactive compounds from medicinal plants were introduced. Conventional extraction methods, including maceration, percolation, and Soxhlet extraction, were explained. The importance of proper plant material processing and shade drying to preserve bioactive constituents was also highlighted. Students were introduced to advanced green extraction technologies, including Ultrasound-Assisted Extraction (UAE), Supercritical Fluid Extraction (SFE) and Microwave-Assisted Extraction (MAE). Their basic principles and advantages in improving extraction efficiency were briefly explained.

The session also covered qualitative phytochemical screening techniques used to identify important plant constituents. Shinoda test was explained as a preliminary test for flavonoids, while the ferric chloride test was introduced for detecting phenolic compounds and tannins. The final part of the session focused on evaluating the antibacterial activity of plant extracts. The importance of Mueller–Hinton Agar (MHA) in antimicrobial susceptibility testing was discussed. Students were introduced to the agar disc diffusion and agar well diffusion methods used to assess bacterial growth inhibition. The measurement of the zone of inhibition was explained as an indicator of antibacterial activity. The concepts of Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) were also discussed to explain the determination of the lowest concentrations required to inhibit bacterial growth and kill bacteria, respectively.

Overall, the training session enhanced students' theoretical understanding of medicinal plants, phytochemicals, extraction techniques, and antibacterial mechanisms. It also provided valuable insights into plant-based antimicrobial research and its potential applications in microbiology, biotechnology, and the development of alternative antimicrobial agents.

The Vote of Thanks was delivered by Ms. Zuha Kownain, III B.Sc. Biotechnology, expressing gratitude to the Chief Guest, faculty members, organizers and students for their valuable contributions and participation. The programme concluded with the National Anthem.

Output

- A total of 60 students from III B.Sc. Biotechnology participated in the programme and learned about plant-based antibacterial research.
- Students learned about the history and importance of herbal medicine in healthcare.
- Students understood how plant compounds fight bacteria by damaging cell membranes, stopping enzymes, and affecting bacterial activities.
- Students learned about plant extraction methods such as maceration, percolation, Soxhlet extraction, UAE, SFE, and MAE.
- Students learned about the Shinoda test and ferric chloride test to identify flavonoids, phenolic compounds, and tannins in plant extracts.
- Students understood how Mueller–Hinton Agar (MHA), disc diffusion, and well diffusion methods are used to test antibacterial activity and measure the zone of inhibition.
- Students learned about Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) to understand how plant extracts stop bacterial growth and kill bacteria.

Outcomes

The training session enhanced students understanding of plant based antibacterial research and its applications in biotechnology and microbiology. Students developed awareness of the major phytochemicals responsible for the therapeutic properties of medicinal plants. They understood how plant extracts can inhibit bacterial growth through different cellular and molecular mechanisms. The session also provided knowledge of conventional and modern extraction techniques and preliminary phytochemical screening methods. Students gained a clear theoretical understanding of antibacterial susceptibility testing, including zone of inhibition, MIC and MBC determination. Overall, the training encouraged students to explore plant derived bioactive compounds as potential sources of antimicrobial agents.

This training session aligned with SDG – 3 (Good Health and Well –Being), SDG 9 – Industry, Innovation and Infrastructure, SDG – 12 (Responsible Consumption and Production), SDG 15- Life on Land).

Head of the Department	Dean	Program Coordinator DBT Star College Scheme	IQAC Director	Principal

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MARUDHAR KESARI JAIN

College for Women (Autonomous), Vaniyambadi.

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PG &RESEARCH DEPAETMENT OF BIOTECHNOLOGY

Organizes

Training sessionon 25.09.2026

Antimicrobial Activity of plant Extract
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Venue:Sri Arihanth Seminar Hall





Principal

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