



AVIT
AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY



VINAYAKA MISSION'S
RESEARCH FOUNDATION
(Deemed to be University under section 3 of the UGC Act 1956)



DEPARTMENT OF BIOTECHNOLOGY
GUEST LECTURES REPORT
ON
“NANOMATERIALS AND NATURAL PRODUCTS”
30.04.2021

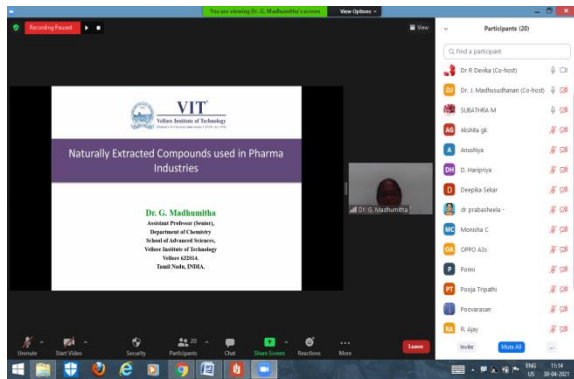
Topic-1: NATURALLY EXTRACTED COMPOUNDS USED IN PHARMA INDUSTRIES

Topic-2: BIOSYNTHESIS OF NANOMATERIALS: GROWTH AND PROPERTIES

Department of Biotechnology has organized a guest lecturer titled “Nano-materials and Natural products” on 30.04.2021 for the students of Biotechnology. Dr. R. Devika, Professor and Head, Biotechnology welcomed the chief guests and the gathering. Dr. B. Prabasheela, Associate Professor, Department of Biotechnology gave introduction of the Guest Dr. G. Madhumitha, Assistant Professor (Senior), Department of Chemistry, School of Advanced Sciences, Vellore Institute of Technology, Vellore. The session was mainly focused on the topic “Naturally extracted compounds used in pharma Industries” particularly the steps involved in drug discovery from natural products, Extraction of non-polar solvent and preparation of extracts, analysis, testing and the chromatographic analysis by using fractionation and physiochemical analysis was briefed and interacted with students by Dr. G. Madhumitha.

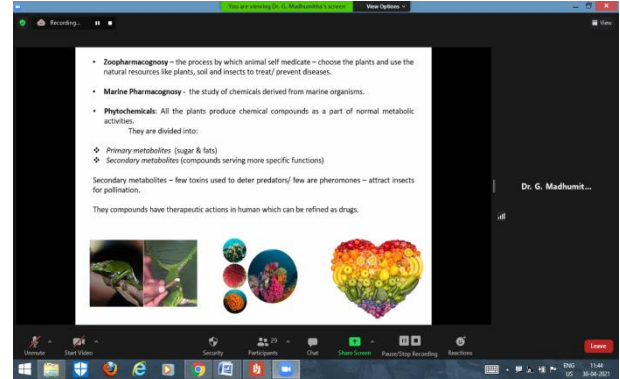
The second session guest speaker Dr. S. MohanaRoopan, Assistant Professor (Senior), Department of Chemistry, School of Advanced Sciences, Vellore Institute of Technology, Vellore was introduced by Dr. A. Nirmala, Assistant Professor (G-II), Department of Biotechnology and the session was focused on “Biosynthesis of nano-materials: Growth and Properties”. Dr. MohanaRoopan gave clear insight of nanomaterials, their synthesis using biological sources, types, gap identification, XRD patterns, and the uses of nanocomposites to the students.

At the end of each session participants question were clarified by the guest speakers and the guest lecture ended successfully by vote of thanks by Dr. J. Madhusudhanan, Associate Professor, Department of Biotechnology.



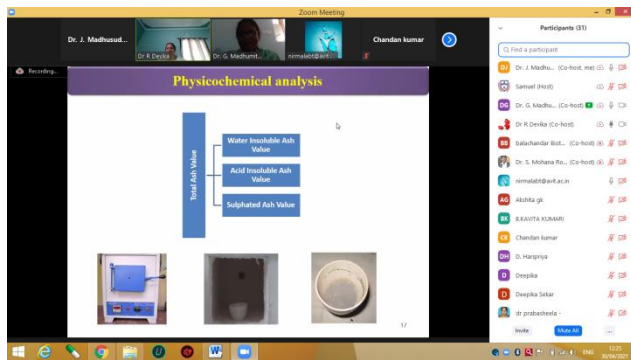
Naturally Extracted Compounds used in Pharma Industries

Dr. G. Madhumitha
Assistant Professor (Chemistry),
Department of Chemistry,
School of Advanced Studies,
VIT Vellore Institute of Technology,
Vellore 622014,
Tamil Nadu, INDIA.



- Zoopharmacopony** – the process by which animal self medicate – choose the plants and use the natural resources like plants, soil and insects to treat/ prevent diseases.
- Marine Pharmacopony** – the study of chemicals derived from marine organisms.
- Phytochemicals:** All the plants produce chemical compounds as a part of normal metabolic activities. They are divided into:
 - Primary metabolites (sugar & fats)
 - Secondary metabolites (compounds serving more specific functions)
- Secondary metabolites – few toxins used to deter predators/ few are pheromones – attract insects for pollination.

They compounds have therapeutic actions in human which can be refined as drugs.



Physicochemical analysis

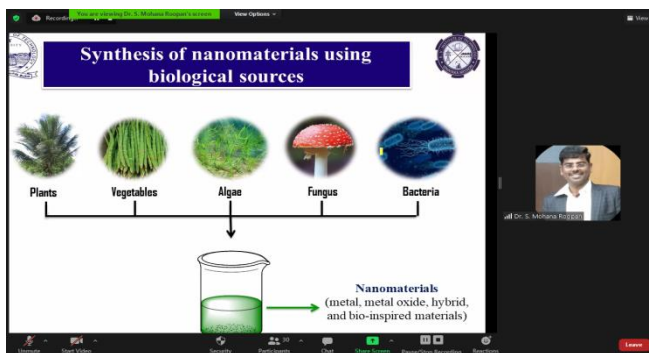
Water Insoluble Ash Value
Acid Insoluble Ash Value
Sulfated Ash Value



Biosynthesis of nanomaterials: Growth and Properties

Dr. S. Mohana Roopan
Assistant Professor (Chemistry),
Department of Chemistry,
School of Advanced Science,
VIT Vellore Institute of Technology,
Vellore 622014,
Tamil Nadu, INDIA.

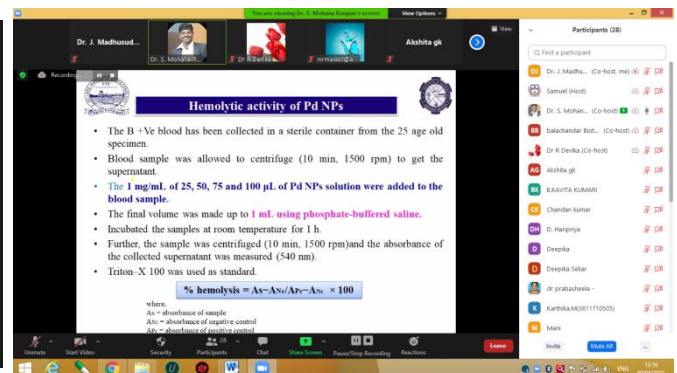
<https://scholar.google.com/citations?user=2b4dGAAAIAI&hl=en>



Synthesis of nanomaterials using biological sources

Plants, Vegetables, Algae, Fungus, Bacteria

Nanomaterials (metal, metal oxide, hybrid, and bio-inspired materials)



Hemolytic activity of Pd NPs

- The B +Ve blood has been collected in a sterile container from the 25 age old specimen.
- Blood sample was allowed to centrifuge (10 min, 1500 rpm) to get the supernatant.
- The 1 mg/mL of 25, 50, 75 and 100 µL of Pd NPs solution were added to the blood sample.
- The final volume was made up to 1 mL using phosphate-buffered saline.
- Incubated the samples at room temperature for 1 h.
- Further, the sample was centrifuged (10 min, 1500 rpm) and the absorbance of the collected supernatant was measured (540 nm).
- Triton-X 100 was used as standard.

$$\% \text{ hemolysis} = \frac{As - Aso}{Ar - Aso} \times 100$$

where:
As = absorbance of sample
Aso = absorbance of sample control
Ar = absorbance of erythrocyte control