
Departmental Seminar

Seminar Title	: Biodegradation of commercial LDPE microplastics from bacteria isolated from dump sites
Speaker	: Raja Iswarya G (223bm2009)
Supervisor	: Dr. Nivedita Patra
Venue	: BM Department Seminar Room
Date and Time	: 25 Mar 2025 (03:30 PM)
Abstract	: The ubiquitous prevalence and non-degradable nature of microplastics cause severe environmental and health hazards. LDPE microplastics absorb and transport toxic chemicals such as pesticides, Persistent Organic Pollutants (POP), and pathogenic microbes, posing ecological threats. This study explores a sustainable solution through green microbiology for the remediation of white pollution. Here, a total of 52 bacterial isolates were isolated from the municipal solid waste dump sites in Rourkela, Odisha, and Karur, Tamil Nadu through culture enrichment method using LDPE powder and LDPE films. Out of these 52 isolates, 30 isolates demonstrated potential LDPE degradation, which were screened through clearance zone assay and biofilm formation assay. The top 10 isolates were incubated with LDPE films in Minimal Salt Medium for 30 days. Significant weight losses (~3%) in LDPE films were observed for isolates DS020 and DS025, as confirmed through Scanning Electron Microscopy, Fourier Transform Infrared Spectroscopy, and X-ray Diffraction analyses. Degraded products were characterized using Gas Chromatography-Mass Spectrometry. The biochemical characterization of the potential LDPE degrading strain was performed. Further, the phenotypic and molecular identification of the efficient LDPE degrading strains will be done and the bacterial consortium will be formulated. This study underscores the potential of bacterial consortia to biodegrade LDPE microplastics, offering an eco-friendly solution to plastic waste management. Keywords: Microplastics, LDPE, consortium, biofilm, biodegradation ALL ARE CORDIALLY INVITED