
Defence Seminar

Seminar Title	: Understanding the diversity, carbon metabolism, bioprospecting potential and impact of environmental alterations on heterotrophic bacteria from Bhitarkanika mangrove ecosystem
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Venue	: Life Science Seminar Room
Date and Time	: 22 Jul 2024 (11.00 AM)
Abstract	: The thesis illustrates the bacterial diversity of the Bhitarkanika mangrove ecosystem, Odisha, India with potential cellulose degradation and antibiotic production by mangrove bacteria. Additionally, the thesis also focusses on the impacts of anthropogenic and environmental stressors on cellulose degradation and bioactive secondary metabolite production of the bacteria. The dominance of <i>Bacilli</i> , <i>Gammaproteobacteria</i> , and <i>Betaproteobacteria</i> was observed from culture-based approach while the dominance of <i>Gammaproteobacteria</i> , <i>Alphaproteobacteria</i> and <i>Bacilli</i> was recorded from culture-independent study. The study also aims to explore the cellulose degradation process of <i>Bacillus haynesii</i> DS7010 isolated from Bhitarkanika mangrove ecosystem. Anthropogenic and environmental stressors such as pH, salinity, and lead (Pb) affected the bacterial metabolism. Most detrimental effect was observed under Pb followed by pH stress which was determined by reduced bacterial growth, increased intracellular ROS production along with reduced enzyme activity and downregulation of cellulase producing genes (<i>celA</i> and <i>celB</i>). Salinity augmented bacterial growth and cellulose metabolism up to 3% concentration of NaCl. Microcosm study revealed 4.05% reduction in total carbon (C%) content in natural condition while 0.97% decrease in C% under combined stress condition. The study further emphasizes on bioactive compound producing bacteria <i>B. velezensis</i> ES8024 and characterization of bioactive compound effective against potential fish pathogen <i>Aeromonas hydrophila</i> ATCC 35654.