

Exploring the multiple antibiotic resistance of potential human pathogenic bacteria from aquatic systems: A local action of global concern

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Abstract

This research explores the plasmid mediated antibiotic resistance of river water and sewage wastewater bacteria in Malda (West Bengal state), India. Potential pathogenic bacteria were isolated from Mahananda river water, for which multiple antibiotic resistance (MAR) phenotypes ranged from 4-drug resistance (*Streptococcus pneumoniae* and *Enterococcus faecalis*) to 9-drug resistance (*Pseudomonas aeruginosa*), municipality sewage wastewater: 7-drug resistance (*Klebsiella pneumoniae* and *Proteus vulgaris*) to 11-drug resistance (*Pseudomonas aeruginosa*), and the University sewage wastewater: 7-drug resistance (*Enterococcus faecalis*) to 12-drug resistance (*Escherichia coli*). The environmentally isolated bacteria had a single plasmid (≈ 54 kb) conferring multiple antibiotic resistances as well as tolerance to heavy metals (Hg^{+2} , Cd^{+2} , Cr^{+6} and Cu^{+2}). For the Mahananda river water bacteria, MAR indices ranged from 0.11 to 0.47, while the wastewater bacteria from the University sewage system, displayed MAR indices 0.39 – 0.63, and the MAR indices for bacteria from municipal sewage system



Biography:

Shyamapada Mandal is currently working as a Professor in the Department of Zoology, University of Gour Banga, India. Dr. Mandal focuses his research on molecular epidemiology of bacterial drug resistance, infectious diseases (bacterial, viral: coronaviruses including COVID-19), combined chemotherapy, and probiotics, public health and food science, genomics and bioinformatics.

Speaker Publications:

1. “Indigenous Probiotic Lactobacillus Isolates Presenting Antibiotic like Activity against Human Pathogenic Bacteria V (5(2):31.

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