

Isolation and Characterization of microbial population associated with industrial waste effluent and their antibiotic sensitive patterns

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Abstract

Background: Both organic and inorganic chemicals are deposited in Industrial effluents, which contains radioactive, metals, Antibiotics and carcinogenic substances. These effluents are directly or indirectly affecting the daily life of human. Through food chains it migrates to human health and caused different diseases with different drug resistant strains

Aim: Identification and characterization of Microorganism found in Industrial liquid waste effluent and their antibiotic sensitivity pattern.

Materials and methods: Fifty-five industrial waste effluent samples were collected from waste effluent sites, serially diluted and documented CFU from individual effluents and sub-cultured for isolated colony on nutrient agar plate then grown bacteria were identified with culture morphology and biochemical tests. disc diffusion method was used for antibiotic sensitivity pattern of isolated bacteria. DNA isolated from the drug resistant strains and attempts to identify with molecular tools.

Results: From 55 industrial waste samples, total 13 different types of bacterial strains were found from industrial waste effluent. Among all isolated bacteria; pseudomonas spp. was found highest (20%), followed by *S. epidermidis* (18%), pseudomonas aeruginosa (10%), Gram positive bacilli (8%), Acenatobacter spp. (6%), staphylococcus aureus (5%), micrococcus spp. And Citrobacter spp. (3%), shigella spp. (2%) and Escherichia coli (1%). Also 2 aspergillus spp. and 2 unidentified fungus were revealed from this study. Bacteria were identified using 16S rRNA primer (27F, 1492R). antibiotic susceptibility pattern revealed all the organism shows 100% resistant to amoxiclav, 71% resistant to ampicillin and 43% resistant to Oxacillin antibiotics, 23% resistant to streptomycin, 15% resistant to both gentamycin and tetracycline antibiotics. Also, we revealed 31%MRSA from industrial waste, whereas rest 69% revealed MSSA strain. All the gram-positive strain shown highly resistant against beta-lactam group antibiotics.

Conclusion: Our findings raise potential public health concerns for industrial waste effluent. workers and individuals exposed to reclaimed wastewater. Because of increasing use of reclaimed wastewater, further study is needed to evaluate the risk of exposure to antibiotic-resistant bacteria in treated wastewater.



Biography: Mahesh Chandra Sahu is from Department of Toxicology Division, ICMR-national institute of occupational Health

Speaker Publications:

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