



Prevalence of Multidrug Resistant *Pseudomonas* species in water sample of Patna Region

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Abstract: *The global problem of antimicrobial resistance is pressing in developing countries like India. The overuse and misuse of antimicrobials has led to appearance of organisms that can evade them, the so called antibiotic resistant bacteria. Since water can be a reservoir of these resistant bacteria, there is a strong need to identify the sources of antibiotic resistant bacteria in aquatic environment. Multidrug-resistant Pseudomonas which is a significant threat to antibiotic resistance can be deadly for patients in critical care. An estimated 51,000 healthcare-associated P. aeruginosa infections occur in the United States each year. More than 6,000 (13%) of these are multidrug-resistant, with roughly 400*

deaths per year attributed to these infections. Thus, the aim of the study is to see the prevalence of Multidrug Resistant Pseudomonas species in water sample of Patna Region. It was found that the prevalence rate of Pseudomonas species in Ganga water was maximum (47%) as compared to the other water samples studied. Out of 15 isolates three Pseudomonas isolates were screened on Pseudomonas Agar Base and named as P1, P2 and P3. All the three isolates were obtained from Ganga water. By studying the antibiotic susceptibility profile of the isolates P1, P2 and P3, it was observed that the strains P1 and P3 showed multidrug resistance. Isolate P1 was resistant to 13 out of 15 antibiotics studied thus, showing resistance for 86.66% of antibiotics tested. Out of the panel of 15 antibiotics tested, two commonly used antibiotics Streptomycin and Tetracycline (for which many other gram-negative bacilli are resistant) showed susceptibility towards strain P1. Therefore, these two antibiotics were further used to study the Minimum Inhibitory Concentration. The minimum inhibitory concentration of Streptomycin and Tetracycline were recorded as 7.5mg/ml and 25mg/ml, respectively, which points to their progression towards resistance. Thus, it is recommended that in order to protect public health, a series of control strategies should be developed and implemented at all stages of water disinfection system to eliminate contamination with this important human pathogen.

Keywords: *Pseudomonas sp, antibiotic resistance, Ganga water.*

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