Emergence of multi drug resistance *Escherichia coli* strains against clinically significant antibiotics from river system, India

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*Escherichia coli* is an emerging pathogen of the greatest concern as it is the leading cause of various severe infections of stomach, urinary tract, ear, wound etc. in humans. Increasing rates of antimicrobial resistance among *E. coli* is another furthestmost fret worldwide. This problem is more traumatic when water bodies are getting contaminated with faecal pollution and inappropriate use of antibiotics that led to emergence of multi-drug resistant strains of this normal microbiota of human intestine. The current study dealt with the isolation of twenty-eight *E. coli* strains from water samples collected from River Yamuna in Delhi stretch of India. *E. coli* was tested for antibiotic susceptibility by Kirby Bauer disc diffusion method as per Clinical and Laboratory Standard Institute (CLSI) guidelines using 24 different antibiotics belonging to three different modes of action namely β-lactams, aminoglycosides, phenicols, tetracyclines and quinolones. Most evident finding of the study was that none of antibiotic used in the study was 100% effective. In total, 100% of the isolates exhibited multi drug resistance (MDR) character and all the isolates had a very high multiple antibiotic-resistance (MAR) index, suggesting the origin of the isolates to be of high antibiotic usage. MAR index for all the isolates were calculated on the basis of resistance patterns. It has been observed all the strains were having the MAR value > 0.2 and up to 1, showing very high degree of multi-drug resistance. Therefore, the analysis is highly informative in terms of assessing the faecal contamination of river water, determining resistance of *E. coli* against the commonly available significant antibiotics and prediction of future emergence of MDR strains.

Biography

Richa Bhardwaj is pursuing PhD under the supervision of Prof. J.K. Garg and Co-supervision of Dr. Anshu Gupta. Her area of research is Environmental microbiology wherein the work involves the study of Antibiotic and Heavy metal pollution of River Yamuna using microbiological indicators. She has her masters as a gold medalist throughout in scientific fields of Environment and Microbiological sciences as well as administration fields of Disaster management and NGO management. She graduated as honors in Microbiology from Delhi University as University topper. She has been associated with organizations as National Centre of Disease Control (Ministry of Home Affairs), Red Cross Society (Ministry of Health and Family Welfare), and Samsung Electronics (Corporate Social Responsibility). She has been associated with several projects including KAP studies for Disasters in Delhi, Psycho-social impacts of quality of work life in Multinational corporations, Quality standards for various Bio-safety levels as an integral part of epidemiological significance.

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