

Antimicrobial resistance reported among the bacteria and fungi isolated from Godavari River waters during *Kumbh Mela*

By Dr Bilqeesa Bhat

Dr. Yogesh Shouche and his group at the National Centre for Cell Science (NCCS) in Pune found that 37-67% of bacteria collected from waters of Godavari River before and during the Kumbh mela were resistant to antibiotics. Bacteria belonging to the genera, *Acinetobacter*, *Corynebacterium* and *Brevibacterium* were highly resistant to the antibiotics used in the study. The study can mitigate waterborne infections during mass gathering events like the Kumbh Mela.

Dr. Shouche's team research group isolated sixty three bacterial belonging to the genera, *Kocuria* and *Staphylococcus*, and twenty one fungi belonging to the genera, *Meyerozyma* and *Candida*. All microorganisms isolated from river water were tested against various antibiotics that can kill or inhibit bacteria by acting on various cellular processes that are necessary for their survival and growth. Antibiotics that impede the cellular process of protein synthesis were found to be most effective against more than 67% of the bacteria, and the other microorganisms were susceptible to antibiotics that inhibit bacterial cell wall synthesis.

Antimicrobial resistance (AMR), i.e. the resistance of microorganisms to antibiotics, represents a major global threat to public health, causing approximately 0.7 million deaths annually. Indiscriminate use of antibiotics including over the counter sale of antibiotics, higher dosage given to livestock, the introduction of effluents from the pharmaceutical industries, and untreated hospital and human waste into the water bodies, and cultural activities have been found to be main reasons for the spread of AMR.

Similarly, thousands of pilgrims bathing in the river during the Kumbh Mela results in large scale shedding of microorganisms associated with the human body into the river, and may therefore also play a role. This necessitated the investigation of influence that such mass

gathering events can have on the microbial ecosystems of the river, and any consequences this might have on human health.

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