

EGU2020-22121

<https://doi.org/10.5194/egusphere-egu2020-22121>

EGU General Assembly 2020

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## Comparative Prevalence and Provenance of Antibiotic-Resistant Bacteria and Antibiotic Resistance Genes in Tropical Rivers of Sri Lanka and India

Manish Kumar<sup>1</sup>, Tushara Chaminda<sup>2</sup>, Sulfikar Hanafi<sup>3</sup>, Arbind Patel<sup>1</sup>, Payal Mazumder<sup>4</sup>, Alok Thakur<sup>1</sup>, Ryo Honda<sup>5</sup>, and Himaya Sewwandi

<sup>1</sup>Department of Earth Sciences, Indian Institute of Technology, Gandhinagar, India (manish.kumar@iitgn.ac.in)

<sup>2</sup>Department of Civil and Environmental Engineering, University of Ruhuna, Galle, Sri Lanka

<sup>3</sup>Graduate School of Natural Science and Technology, Kanazawa University, Kanazawa, Japan

<sup>4</sup>Centre for the Environment, Indian Institute of Technology Guwahati, Assam-781039, India

<sup>5</sup>Faculty of Environmental Design, Institute of Science and Engineering, Kanazawa University, Japan

### Abstract:

Prevalence and provenance of antibiotic-resistant bacteria (ARB), antibiotic resistance genes (ARG) and metal concentrations were compared in river Kelani of Sri Lanka and Sabarmati and Brahmaputra of India. The prevalence of *E. coli* was 10-27, 267-76,600 and <50 CFU ml<sup>-1</sup> in aforementioned rivers, respectively. Isolated *E. coli* colonies were subjected to resistance test with norfloxacin (NFX), ciprofloxacin (CIP), levofloxacin (LVX), kanamycin monosulphate (KM), tetracycline (TC), and sulfamethoxazole (ST). The isolates were predominantly multi-antibiotic resistant, with greater resistance to TC and ST. Brahmaputra River showed greater resistance to all tested antibiotics. Sabarmati River showed higher resistance to TC and ST than Kelani. Genes conferring resistance to tetracyclines, sulphonamides, b-lactams and fluoroquinolones were common. ARG, *gyrA*, *tetW*, *sul1* and *ampC* were detected in Kelani River, additionally, *aac-(6)-1b-cr*, and *blaTEM* were detected in Brahmaputra River. In both countries, less polluted segments exhibited more copies of ARG. Faecal contamination was decoupled from percentage antibiotic resistance and metal contamination, suggesting to separate of hospital waste from domestic waste with specific guidelines.

**Keywords:** Antibiotic Resistance; Brahmaputra; *E. coli*; Kelani River; Sabarmati, Gene