

ENUMERATION AND ANTIBIOTIC SENSITIVITY OF *ESCHERICHIA COLI* AND A SOCIOLOGICAL SURVEY ON WATER QUALITY IN THE RIVER MAHAWELI, SRI LANKA

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While water quality affects health, in Sri Lanka, unlike in developed countries, recreational water quality is hardly assessed. Faecal contamination of recreational water poses health risks as faeces are sources of pathogens. The current study aimed to investigate *Escherichia coli* in recreational water by enumeration to assess antibiotic sensitivity and conduct a sociological survey. Water samples were collected from six bathing locations along the river Mahaweli during rainy and dry periods from 2020 - 2022. Samples were subjected to membrane filtration and typical blue colonies on m-FC agar were enumerated. Antibiotic sensitivity test was performed on *E. coli* isolates using Amikacin (30 µg), Amoxicillin-clavulanate (20/10 µg), Cefotaxime (30 µg), Ciprofloxacin (5 µg), Imipenem (10 µg), Meropenem (10 µg), and Ticarcillin-clavulanate (75/10 µg). A sociological survey was conducted at the bathing locations to infer possible sources of contamination. The *E. coli* counts in 95.0% of water samples exceeded the permissible limit of 235 CFU/100 ml (USEPA). In all locations except one, counts were significantly different between the rainy and dry periods ($p < 0.05$). Counts were higher during the rainy period in four sites and lowered in two sites, compared to dry period. The *E. coli* isolates were resistant to Ciprofloxacin (56.5%), Cefotaxime (4.8%), Amoxicillin-clavulanate (4.2%), Amikacin (3.0%), and Ticarcillin-clavulanate (0.6%). None was resistant to Imipenem or Meropenem. In one site, the percentage of isolates that was resistant to at least one antibiotic was significantly higher ($p < 0.05$) during the rainy period (92.9%) compared to the dry period (64.3%). According to the survey, the reasons for water contamination at these locations were inadequate sewage facilities, industrial effluents and urban runoff, augmented by water stagnation. The elevated *E. coli* counts and the presence of antibiotic-resistant *E. coli* render the water unsuitable for recreational purposes, emphasizing the need for proper monitoring and necessary action by relevant authorities.

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