

Water quality and microbial contamination status of Madawachchiya, Padaviya and Kebathigollewa areas in Anuradhapura District

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Typhoid or enteric fever is a worldwide infection caused by the bacterium *Salmonella enterica*. In Sri Lanka, 12,823 *Salmonella* positive cases were recorded and 133 cases were recorded from Anuradhapura District during 2005 to 2014. Therefore, the present study was carried out to identify the microbiological and chemical contamination status of eighteen water sources in Madawachchiya, Padaviya and Kebathigollewa during October, 2016. The study was focused to determine total coliform, faecal coliform, *Salmonella* sp. and *Shigella* sp. contamination along with some physico-chemical parameters of both ground and surface water. Sampling, transportation and analysis were performed following standard protocols. Results of the study revealed that all sampling locations were contaminated with both total and faecal coliform bacteria and the values were not within the WHO and Sri Lanka drinking water quality standards. Around 50% of sampling locations were positive for *Salmonella* sp. and among them 2 spring sampling locations are being used to extract water for drinking. However, *Shigella* sp. was not recorded during the study period. Majority of the sampling points were recorded high COD values greater than the Sri Lanka drinking water quality standards (10 mg/L). The springs were recorded acidic pH values which were less than the WHO and SLS water quality standards. The electrical conductivity of two sampling locations was recorded greater than 750 $\mu\text{s}/\text{cm}$ conductivity. The tested other water quality parameters; N-NO₂⁻, N-NH₃ and total phosphate (TP) concentrations were found within the Sri Lanka drinking water quality standards. Principal component analysis revealed that sampling locations were grouped into three groups such as, well water, tank water and springs according to the water quality recorded during the study period.

Keywords: Anuradhapura, ground and surface water, *Salmonella* sp., *Shigella* sp., water quality

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