
**PATHOGENIC MICROBIAL AND PHYSIO-CHEMICAL
CONTAMINATION STATUS, AND ANTIBIOTIC RESISTANCE OF
ISOLATED *Salmonella* Spp. IN WELL WATER OF JAFFNA PENINSULA,
SRI LANKA**

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The incidences of typhoid fever which are caused by *Salmonella* Spp. have markedly increased in Sri Lanka in the recent past. Out of 12, 823 typhoid cases reported between 2005 and 2014, 2588 cases were reported from the Jaffna peninsula. Statistics of Ministry of Health showed the occurrence of significant intestinal diseases in Jaffna during 2005 - 2014. As the only source of water for drinking and domestic consumption of people in the Jaffna peninsula, concern on quality of groundwater is important. In the present study, microbial contamination status with special emphasis on *Salmonella* spp. and *Shigella* Spp. contamination in samples collected from 40 dug wells were evaluated during May 2018. Total coliform, and fecal coliform, *Salmonella* spp. and *Shigella* Spp. were enumerated and identified according to the methods given by WHO. The results of the study revealed that the entire peninsula was contaminated with total and fecal coliform and they were not within the standard range given by the WHO and SLS drinking water quality standards. Further, it was found that 8% of sampling locations were contaminated with *Salmonella* Spp. and all the positive wells are being used to extract water for drinking. However, no *Shigella* Spp. contamination was recorded during the time of sampling. Serovar identification revealed that the isolated *Salmonella* strains belonged to *Salmonella weltevreden* a human pathogen which causes water born intestinal diseases. Further, it was found that one strain of *Salmonella weltevreden* is resistant to Gentamycin and displayed intermediate resistance to Amoxicillin. Along with this physicochemical parameters were also evaluated. From the results it was found that total hardness, water conductivity, and COD were higher than SLS drinking water standards. However, the fluoride concentrations of the well water were within the standard limits. The results of the study are alarming and proper strategic plans to monitor microbial and physicochemical contamination of ground water along with proper disposal practices of antibiotics should be adopted in order to avoid development of antibiotic resistant pathogens in the environment.

Keywords: Antibiotic resistance, *Salmonella* spp., Jaffna peninsula, Total coliform, Fecal coliform, Water quality

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