

OP10

Pathogenic microbial contamination status and antibiotic resistance of isolated *Salmonella* spp. in well water of Jaffna Peninsula

Padeniya SMUMK and Manage PM

Centre for Water Quality and Algae Research, Department of Zoology, University of Sri Jayewardenepura, Sri Lanka

Background: The incidences of typhoid fever which is caused by *Salmonella* spp. has markedly increased in Sri Lanka in the recent past. Out of 12, 823 typhoid cases reported during 2005-2014, 2588 cases were reported from Jaffna Peninsula. Health ministry statistics also showed that, occurrence of significant intestinal diseases in Jaffna during 2005-2014. The only way of obtaining water for drinking and domestic consumption of people in Jaffna Peninsula is from dug wells therefore concern on quality of groundwater is important, as these diseases are water borne.

Objectives: To evaluate the microbial contamination status with a special emphasis on *Salmonella* spp. and *Shigella* spp. and their antibiotic resistance.

Methods: Forty sampling points were randomly selected covering the whole peninsula. Total coliform, and fecal coliform, *Salmonella* spp. and *Shigella* spp. were enumerated and identified according to the methods given by WHO. Antibiotic resistance of *Salmonella* sp. and *Shigella* sp. were carried out using antibiotic susceptibility tests according to CLSI guidelines. AST was carried out using Agar disk diffusion method using a commercially available susceptibility test disk.

Results: The results of the study revealed that the 100% of the samples were contaminated with total and fecal coliform and they were not within the 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. was recorded during the time of sampling. Serovar identification revealed that the isolated *Salmonella* strains belong to *Salmonella weltevreden*, a human pathogen which causes water borne intestinal diseases. Further, the isolated *Salmonella* spp. were tested for their antibiotic susceptibility. Six different commonly used antibiotics for typhoid and intestinal diseases were used. Out of them one strain of *Salmonella weltevreden* showed resistance to Gentamicin and intermediate resistance to Amoxicillin.

Conclusions: Thus, the results of the study is alarming, it relives that almost all the parts of Jaffna Peninsula are contaminated with coliforms. The contamination of ground water sources with *Salmonella* spp. is also posing a threat. The results also showed that there's a development of resistance to commonly used antibiotics. Therefore, the importance of proper strategic plan to monitor microbial contamination of ground water along with proper disposal practices of antibiotics in order to avoid development of antibiotic resistance in the environment are much needed.