



SEASONAL VARIATION IN THE DISPERSION OF PATHOGENIC BACTERIA AND SOME CHEMICAL PARAMETERS IN SURFACE WATER OF THE KELANI RIVER BASIN, SRI LANKA

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ABSTRACT

WHO has documented that pathogenic and non-pathogenic microorganisms are usually present in recreational waters and the sources of microorganisms are mainly from sewage discharge, industrial processes, agricultural processes and livestock. Due to consumption of contaminated water, the mortality of water associated diseases are in increasing trend and it was estimated that more than 5 million people per year. From these, more than 50% are microbial intestinal infections such as gastroenteritis, salmonellosis and shigellosis. Kelani River Basin is the second largest watershed in the country and it plays an important role in relation to the natural, economical, agricultural and social background of the country. It starts from Nallathanniya at the central highland western border of the wet zone and end up at the most populated and economically important administrative district, Colombo. River basin covers nearly seven districts that including most popularized and industrialized districts along with 25% of population among total population receive drinking water supply from the Kelani River particularly the capital city Colombo. Therefore water quality monitoring in this river basin is a priority to safeguard the health of people who drink water from Kelani river. Due to lack of information on surface water quality data related to pathogenic bacteria, the present study was focused to identify the occurrence of pathogenic bacteria in the surface water sources for both dry and wet seasons of the Kelani River Basin. *Salmonella* spp., *Shigella* spp., *Campylobacter* spp., total coliform and fecal coliform bacteria were analyzed along with twelve physico-chemical parameters using standards methods. Forty five sampling locations in the river basin were studied during the January 2015 to December 2015 to cover both dry and wet seasons. The results showed that the entire Kelani River Basin was contaminated with total and fecal coliform bacteria (colony count-200<) and bacterial counts were not within the SLS (Sri Lanka Standards) and WHO guideline values for drinking water. It was detected that twenty six sampling locations were positive for *Salmonella* spp. and three were positive for *Campylobacter* spp. during the study period. It was found that, bacterial contamination was high during the wet season (42%) than dry season (33%) except *Campylobacter* spp. and interestingly *Shigella* spp. was not recorded either dry or wet period during the study period. ANOVA test was applied to see the differentiation between two seasons and a significant difference between two seasons was detected (0.05>p).

Keywords: Kelani river basin, surface water, Physico-chemical parameters, *Shigella* spp. *Salmonella* spp. and *Campylobacter* spp