



SEASONAL VARIATION OF PATHOGENIC BACTERIA IN GROUNDWATER OF THE KELANI RIVER BASIN, SRI LANKA

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WHO estimated, around 1.5 billion people globally suffer from waterborne diseases and 3.4 million people die due to consumption of contaminated water. Salmonella spp., Shigella spp., and Campylobacter spp. are bacteria which frequently cause waterborne diseases worldwide, especially in Asian and African countries. Kelani river basin is the main source of drinking water for over 2 million inhabitants in the capital city Colombo. The present study was carried out to identify pathogenic bacterial contamination in the groundwater sources of the Kelani river basin. Shigella spp., Salmonella spp., Campylobacter spp., total coliform and fecal coliform were identified along with some physico-chemical parameters of water using standards methods. Seventy two groundwater sampling locations in the river basin were selected for the study during 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 the recorded numbers were greater than the threshold values given by SLS (Sri Lanka Standards) and WHO guideline for drinking water. It was detected that 17 sampling locations were positive for Salmonella spp. and two were positive for Campylobacter spp. during the study period. It was found that bacterial contamination was high during the dry season. However, Shigella spp. was not recorded during the study and serovar identification revealed that recorded Salmonella spp. were pathogenic for human. ANOVA test revealed that there is no significant difference between two seasons ($0.05 < p$). Thus, the people and stakeholders within the river basin should aware about groundwater quality and responsibilities to safe guard aquifers of the river basin.

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