

Evaluation of Microbiological Quality of Commercially Available Bottled Drinking Water in Colombo District, Sri Lanka

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Recently, the consumption of bottled drinking water has dramatically increased globally and also in Sri Lanka. However, compliance by the manufacturers with the regulations regarding bottled water is debatable. Currently, there is a rising concern regarding the quality of Bottled water. The objective of the current study was to investigate the microbiological quality of bottled water in Colombo district, Sri Lanka. Three bottles each from Twenty-six brands of bottled water were randomly collected from the local market in the Colombo district. Total coliforms (TC) and fecal coliforms (FC) were tested using the Membrane filtration method. The heterotrophic bacteria and fungi were tested using the pour plate method and spread plate method, respectively. Sedgwick rafter cell was used to identify the algae species. Fifty percent of brands tested were positive for the presumptive TC. Out of that, 19% of brands violated the Sri Lanka Standards Institution (SLSI) permitted levels for presumptive TC (<10 CFU/100 ml). Further, fifty percent of brands exceeded the presumptive TC level violating the Health Ministry standards of Sri Lanka and the World Health Organization (WHO) permitted levels (0 CFU/100 ml). Similarly, 23% of brands exceeded the limits for presumptive FC (0 CFU/100 ml following WHO permitted levels, SLSI, and the Sri Lanka Health Ministry requirement). Thirty-five percent of brands showed higher heterotrophic plate count (HPC) which exceeded the WHO guidelines for bottled drinking water (<50 CFU/ml). The dominant fungi identified were *Aspergillus* sp., *Rhizopus* sp., *Trichoderma* sp. and *Mucor* sp. Eight percent of brands were positive for algae, and *Chlorella vulgaris* was identified as the algae species in tested bottled drinking water. The results of this study revealed that the bottled water industry needs to be closely supervised by the competent authorities to ensure that customers in Sri Lanka have safe bottled drinking water.

Keywords: Bottled water, Microbiological quality, Total coliforms, Fecal coliforms