

**A Random Study of the Microbiological Quality of Bottled Drinking Water in Canada
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Microorganisms are ubiquitous in the environment. Drinking water along with food, air and soil is one of the numerous possible sources of microbes. This project focuses on the level of heterotrophic microorganisms in bottled drinking water which could be a health concern for the elderly, infants, pregnant women and immuno-compromised patients. Regulatory bodies such as Food and Drug Administration (FDA), Environmental Protection Agency (EPA), World Health Organization (WHO) and Health Canada do not specify a maximum allowed limit for the heterotrophic bacteria counts in bottled drinking water available in the market. However, according to the United States Pharmacopeia (USP) not more than 500 CFU/mL of microbial contaminants should be present in the water used for drinking. In this study, different brands of packaged water (from 0.5L plastic bottles to 20L carboys) were analyzed for their microbiological quality, using different culture media. Heterotrophic microbiological count varies between less than 10 to 72,000 CFU/mL for ten different brands of bottled water. Whereas, the average heterotrophic microbial count for the tap water and USP water samples was 170 CFU/mL and less than 10 CFU/mL respectively. Morphological studies indicated the presence of five different kinds of colonies in the bottled water samples. There were no cases of fecal contamination or the presence of *Escherichia coli*, *Pseudomonas aeruginosa* and *Salmonella* however, we could not rule out the possibilities of some random species of opportunistic pathogens which were found to sustain growth in the bottles. Bottled water is not expected to be free from microorganisms but the CFU observed in the samples was surprisingly high which indirectly reflects the poor sanitary practices during the packaging of the product. Since the significance of non-pathogenic heterotrophic microorganisms in relation to health and diseases is not entirely understood, there is an urgent need to establish a maximum limit for the heterotrophic count in the bottled water that should be tested and regulated periodically. Also, the unknown microbial isolates found in bottled water should be identified at species level and studied for their pathogenicity.

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