

## Quality Analysis of Selected Commercially Available Reverse Osmosis Treated Drinking Water Samples in Jaffna District

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The trend in choice of drinking water in Jaffna district has been changing from groundwater to Reverse Osmosis (RO) treated water. Therefore, this study was aimed to evaluate the quality of selected RO treated water samples available in Jaffna District, Sri Lanka. Randomly selected ten commercially available RO treated water samples were collected for water quality testing. The water quality analysis includes physiochemical parameters (pH, electrical conductivity, total dissolved solids, total suspended solids, turbidity, color, odor, taste, iron, nitrate, nitrite, sodium, potassium, total hardness, magnesium, calcium, alkalinity, and chloride) and microbiological parameter (Total bacterial count). The measured water quality parameters were compared with the Sri Lankan Standards (SLS). The results showed that all parameters of all samples except pH were below the maximum permissible levels; electrical conductivity - 45.5  $\mu\text{s}/\text{cm}$  - 151.97  $\mu\text{s}/\text{cm}$  (permitted level < 750  $\mu\text{s}/\text{cm}$ ), total dissolved solids -15.38 - 82.35 mg/L-(permitted level < 400 mg/L), total suspended solids -0 mg/L, turbidity -0.067 - 0.2117 NTU (permitted level < 2 NTU), color (colorless), odor (odorless), taste (tasteless), iron - 0.003 - 0.17mg/L (permitted level < 0.3 mg/L), nitrate -0.28 - 1.51mg/L(permitted level -50 mg/L), nitrite -0 - 0.004 mg/L (permitted level <3mg/L), sodium -0.8 - 13.35 mg/L(permitted level <200 mg/L), potassium - 0.27 - 1.50 mg/L (permitted level <20mg/L), total hardness - 4.81 - 10.63 mg/L (permitted level < 400 mg/L), magnesium -1.64 - 4.97 mg/L (permitted level <150 mg/L), calcium 1.7 - 13.2 mg/L (permitted level <100 mg/L), alkalinity 83.33 - 173.33 mg/L (permitted level <400 mg/L) and chloride -30.76-72.18 mg/L (permitted level < 200 mg /L). The pH of most samples (5.6 - 6.9) was below the permissible level (6.5 - 8.5). The mineral and ion contents of most samples were well below the maximum permissible level. This may be due to the elimination of minerals and ions during the reverse osmosis process. The analysis of microbial quality of all samples showed colony development after 24 hours. Therefore, proper sanitation practices and processing methods should be followed to enhance the microbial quality of the samples. Further studies are needed to quantify the mineral level in the RO treated water and to solve the acidity issues in RO treated water.

**Keywords:** Drinking water, Quality parameters, Reverse osmosis, Sri Lankan Standards