Comparison of Fluoride and Calcium Levels in Drinking Water Before and After Water Treatment

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This study was conducted to compare the calcium and fluoride levels in drinking water before and after water purification in dry and wet zones. Low Fluoride intake results-in dental caries and high intake leads to Fluorosis. Low Calcium intake results in osteoporosis and high intake leads to urinary stones. According to WHO recommendations the optimal range for fluoride in drinking water is 0.5–1.0mg/L and the minimum level of calcium in drinking water is 40mg/L. Water samples were collected from 6 different water sources used in water purification in 3 different districts, namely Anuradhapura (Nuwarawewa-NW, Tissawewa-TSW, Thuruwilawewa-TRW), Polonnaruwa (Parakramasamudraya-PS, ZD canal-ZD), Kandy (Mahaweli river-MR). Water samples were obtained before and after the purification process. Ion levels were measured using Ion meter (JENWAY3340). Lowest fluoride difference was observed in PS (-0.005mg/L) and highest fluoride difference was observed in the NW(-0.37mg/L). Lowest Calcium level difference was observed in MR (+1.15mg/L) and highest Calcium level difference was observed in TRW(+6.35mg/L). The fluoride levels in NW, ZD, MR were in the range of 0-0.5mg/L and TSW, TRW, PS fell in the range of 0.5-1.0mg/L after the purification. Fluoride levels after the purification were lower than WHO recommended level in NW, ZD, MR. Calcium levels of all water sources after the purification were in the range of 6.85-28.7mg/L which is lower than the WHO recommended level. Reduction of Fluoride levels and increase of Calcium levels were observed after the water treatment.

Keywords: Drinking water, Calcium, Fluoride