

## Assessment of drinking water quality in Monaragala district of Sri Lanka

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Monaragala district highly suffers from water related issues due to its geographical location, natural geochemistry and low annual rainfall that are common in the Dry Zone of Sri Lanka. According to the information obtained from the Monaragala Regional Office of Health Services, Chronic Kidney Disease of Unknown etiology (CKDu) was identified as the major health issue of the region. Since past studies have revealed that the disease is highly connected with drinking water quality, this study was carried out to assess the suitability of water for drinking purpose based on the physico-chemical parameters. Total of 97 samples were collected from different water sources of 8 divisional secretariats of *Monaragala* district from September 2017 to February 2018, and analyzed for major anions ( $\text{NO}_3^-$ ,  $\text{PO}_4^{3-}$ ,  $\text{SO}_4^{2-}$ ,  $\text{F}^-$ ,  $\text{Cl}^-$ ,  $\text{CO}_3^{2-}$ ,  $\text{HCO}_3^-$ ) and cations ( $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Mg}^{2+}$ ,  $\text{Ca}^{2+}$ ). Chemical analysis showed that Sodium and Calcium are the dominant cations, while bicarbonate and chloride are the dominant anions in the region. According to the Sri Lanka Standards 614-2013 for potable water, the highest desirable levels of total hardness (250 mg/l), total dissolved solids (500 mg/l) and electrical conductivity (750  $\mu\text{S}/\text{cm}$ ) were exceeded by the 39%, 49% and 42% of groundwater samples respectively. Up to 5.65 mg/l of fluoride were noted and 46% of the groundwater samples exceeded the highest desirable level (1.0 mg/l) while 28 % of samples exceeded the maximum permissible level (1.5 mg/l). The higher levels of total hardness and fluoride indicate the relationship between groundwater quality and natural geochemistry of the region. The groundwater in the area should be treated before using for drinking purpose.

**Keywords:** Dry zone of Sri Lanka, physico-chemical parameters, groundwater, water quality

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