

# IONICITY OF DRINKING WATER AND CHRONIC KIDNEY DISEASE OF UNKNOWN ETIOLOGY IN GIRANDURUKOTTE AREA

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Chronic Kidney Disease of unknown etiology (CKDu) is a major health issue in the Dry Zone of Sri Lanka, and Girandurukotte is one of the endemic regions with CKDu, located in Uva province. Based on observations of past researches, there is strong evidence that CKDu has a profound relationship with drinking water quality. Therefore, this study was aimed to compare drinking water quality in CKDu prevalent and non-prevalent areas. Eight samples from shallow dug wells and eight samples from natural surface water bodies were selected, representing CKDu prevalent and non-prevalent communities, separately. Water quality parameters such as fluoride, calcium, magnesium, sodium, potassium, chloride, phosphorus, nitrate nitrogen, alkalinity, total hardness, pH, electrical conductivity and total dissolved solids were analysed once a month during May to July, 2015. ANOVA procedure was performed to compare the water quality parameters in CKDu prevalent and non-prevalent communities using Minitab. A significant difference was observed in groundwater samples in CKDu prevalent and non-prevalent areas ( $p < 0.05$ ) in  $F^-$ ,  $Cl^-$  and  $Ca^{2+}$ . Highest  $F^-$  and  $Cl^-$  content were recorded in CKDu prevalent areas, while highest  $Ca^{2+}$  content was recorded in non-prevalent areas. However, a significant difference was not observed for ionicity of surface water in both areas. Based on all the measured water quality parameters in the study area 12%, 65% and 23% of shallow wells were identified as suitable, doubtful and unsuitable categories, whereas 71%, 23% and 6% of natural streams were identified as suitable, doubtful and unsuitable for drinking purpose, respectively. It can be concluded that majority of the water quality parameters did not exceed the SLS drinking water quality standards and further studies are needed to identify the relationship between CKDu and ionicity of drinking water especially with  $F^-$ ,  $Cl^-$  and  $Ca^{2+}$ .

**Keywords:** Chronic kidney disease of unknown etiology, Drinking water quality, Ionicity