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## Water Quality of Drinking Water Sources in Eppawala in Anuradhapura District, Sri Lanka

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### Abstract

Chronic kidney disease of unknown etiology (CKDu) is a non-communicable disease that is distributed among adults mainly due to the environmental toxicants. The main objective of this study was to find out whether there is any correlation between the drinking water quality and the occurrence of CKDu. The area selected for this study was Eppawala situated in Anuradhapura district in Sri Lanka. During the dry season, 15 water samples were collected from drinking water sources from residences of CKDu patients and residences where no CKDu patients were found. Within that area, it has about 60% of the population with CKDu. The same type of procedure was followed for the sampling carried out in Dambethalawa in Ampara district which was considered as the reference site where comparatively low occurrence of CKDu reported. Total of 15 water samples were collected from drinking water sources within that area. The physicochemical parameters (pH, Conductivity, Dissolved Oxygen) were measured onsite of all the samples collected using Multiparameter HATCH HQ 14D. The heavy metal concentrations were measured by Inductive Coupled Plasma-Mass Spectrometer and the counter ions were determined by Ion Chromatograph. The drinking water sources in Eppawala and Dambethalawa showed pH, dissolved oxygen and ion content of some cations and anions within acceptable levels. In Eppawala area, the average Cd, As, Pd and Cr concentrations have not exceeded the standard (SLS 614:2013) limits. But high fluoride content was recorded with an average of 1.797 mg/L which has exceeded the standard (SLS 614:2013) limit. And also, it was found out that 80% of the drinking water samples were contaminated with fluorides. The high content of fluoride in drinking water may contribute to the emergence of CKDu in Eppawala area. Hence, it is suggested to use a suitable purification process for this drinking water before consumption.

**Keywords:** Chronic kidney disease, Heavy metals, Contamination, Water quality, Fluorides