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**Determination of heavy metals in soil in chronic kidney disease of unknown etiology affected areas of Karanbankulama
(A preliminary study)**

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The increased prevalence of Chronic Kidney Disease of unknown etiology (CKDu) among specific occupational groups confined to specific geographical regions of Sri Lanka has dragged the attention of scientific community in recent years. The objective of the study was to determine the concentrations of heavy metals Cu, Cr, Zn, Pb and Cd and characteristics like moisture content, organic matter content, pH and conductivity in soil samples obtained in the areas which are affected CKDu. The study was conducted in the Karanbankulama area in North Central Province, Sri Lanka. Soil samples were collected from reservoirs and paddy fields. Prior to the heavy metal analysis an acid or acid combination such as HCl: HNO₃, HNO₃: H₂O₂ and HNO₃ was examined to digest the soil samples aid with microwave digestion. A higher metal concentration was obtained for aqua regia for each metal mentioned above when a selected soil sample was treated with the above acid combinations. Flame Atomic Absorption Spectrometer was used for the analysis of the samples. The resulted concentrations were 10-37, 20-86, 3-30 and 25-50 mg kg⁻¹ for Cu, Pb, Cr and Zn respectively. However, Cd was not in detectable limits by FAAS. The results showed that the concentrations of Cr, Zn, Pb were in the permissible levels set by WHO (World Health Organization) while the concentration of Cu was recorded slightly above the permissible levels in paddy field soil of some sites. The soil characterization studies showed that the pH of the soil in tanks and paddy fields was in between 5-7. Moreover, the soil conductivity measurements showed a considerable variation even between the samples of the same site. This may be due to the variations in the accumulation of fertilizer in the paddy field. Furthermore, the concentration of the electrolytes was less than that of the paddy fields. The organic matter percentage of the soils in tanks in two sites were relatively higher than other sites. The moisture percentage in the tank soil samples was in the range 1-4% while it was 1-3% in the soil samples in the paddy fields.

Keywords: CKDu, Heavy metal concentration, Soil characterization

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