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**Health risk analysis of toxic metals via consumption of rice and other food species grown in Mahakanadarawa - Maradankulama areas in Anuradhapura district; A study in Sri Lanka**

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Chronic Kidney Disease of unknown etiology (CKDu) is a heterogeneous disorder that impairs kidney functions and structure. Even though a number of studies were conducted on this issue, a specific reason has not yet been discovered. Unexpected contaminants have harmed crop quality in recent decades, threatening food security and human health. This study was designed to assess the status of toxic metal contamination of frequently consuming food species in selected Maradankulama - Mahakanadarawa Grama Niladari (GN) divisions to evaluate the link between CKDu prevalence and food safety in the selected areas. Maradankulama - Mahakanadarawa GN divisions in Anuradhapura district, Sri Lanka, were selected as the sampling areas. The sampling procedure was conducted in April (2022). Food samples, including (rice grains of *Oryza sativa*; n=25, leaves of *Centella asiatica*; n=25, fruits of *Citrus crenatiflora*; n=18, grains of *Vigna radiate*; n=10) were collected from the villager's own paddy fields, and home gardens of the CKDu suspected patients according to the random stratified sampling method and the collected food samples were digested by microwave digestion. (added 8.0 mL of conc. Nitric acid to 0.2 g of food sample and digested) The concentrations of metal ions in food samples, including Cadmium, Nickel, Chromium, Copper, Iron, Manganese, Lead, Zinc, Arsenic, and Calcium, were measured using the Inductive Coupled Plasma technique (ICP). Statistical analysis was done using SPSS Statistics Software. Accordingly, mean As and Pb concentrations of *Oryza sativa* (As-0.15 mg/kg, Pb-3.10 mg/kg) and *Citrus crenatiflora* (As-0.15 mg/kg, Pb-0.47 mg/kg), Pb (0.65 mg/kg) and Cd (0.05 mg/kg) content in *Centella asiatica*, and mean concentrations of As (0.14 mg/kg), Pb (9.25 mg/kg) and Cu (57.8 mg/kg) in *Vigna radiate* exceeded the permissible limits given by the FAO and WHO, 2011 (As-0.1 mg/kg, Pb-0.1 mg/kg, Cd-0.05 mg/kg, Cr-2.3 mg/kg, Cu-40 mg/kg). In addition to Pb, Cd, As, Cr and Cu, other detected metals have not exceeded the permissible limits in all samples. According to the Target Hazard Quotient (THQ) values of Cr exceeded the threshold value of 1 for all food species. In addition to that, Pb is also considered a toxic element, and THQ values of Pb in *Oryza sativa* and *Vigna radiate* reported noticeably high values. The total EDIs (Estimated Daily Intake) of Cr, Ni, Cd, As, Cu and Pb for all selected food samples studied have not exceeded the maximum tolerable daily intake (MTDI). Considering the resident's complete diet, these EDIs can be enhanced. As a result, the consumption of analyzed rice, leafy vegetables, and legumes was deemed unsafe, and their regular consumption may cause a risk for the prevalence of CKDu in selected areas.

**Keywords:** CKDu, Food safety, Health risk, Heavy metals, Nephropathy.