

HEAVY METAL CONTAMINATION IN WATER AND FOOD SAMPLES AT PADAVIYA AND MEDIRIGIRIYA DIVISIONAL SECRETARIAT DIVISIONS OF NORTH CENTRAL PROVINCE, SRI LANKA

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Chronic Kidney Disease (CKD) has become a serious medical concern in Sri Lanka and it has been reported to occur in several areas, since 1990s. In recent years, a significant increase in number of patients of CKD of unknown etiology (CKDu) has been observed in some parts of Sri Lanka, especially in the North Central Province. Anuradhapura District reports the highest number of CKDu patients while Polonnaruwa District reports the second highest. Mainly Padaviya has the highest number of CKDu patients in Anuradhapura District whereas Medirigiriya in the Polonnaruwa District has the highest number of CKDu patients. It has been reported that heavy metals could be a causative factor for CKDu. This study aimed to identify and quantify the available heavy metals in food and water sources in these particular areas. Rice samples, well water samples and two vegetable samples, namely, long bean and brinjal were randomly collected from ten *Grama Niladhari* divisions from Padaviya and Medirigiriya areas. They were examined for heavy metals like Arsenic (As), Cadmium (Cd), and Lead (Pb) using atomic absorption spectroscopy. The results indicated that, Cd and As were not detected in any sample collected from Medirigiriya. Conversely, the levels of Pb in rice, brinjal and long bean samples collected from Padaviya (0.945, 0.31 and 1.48 mg kg⁻¹) and Medirigiriya (0.673, 0.45 and 0.579 mg kg⁻¹) exceeded the permissible limit of 0.3 mg kg⁻¹. However, it was not detected in well water samples. Only long bean collected from Padaviya was identified with Cd (2.81 mg kg⁻¹) and it exceeded the permissible limit of 0.2 mg kg⁻¹. What was detected in rice and well water samples in Padaviya (0.141 mg kg⁻¹ and 9.65 µg l⁻¹), were lower than the permissible limits of 0.15 mg kg⁻¹ and 10 µg l⁻¹, respectively. However, further investigations are recommended to identify the effect of these heavy metals on the incidence of CKDu.

Keywords: Arsenic, Cadmium, Lead, Rice, Well water