

## **Pb and Cr Contaminations of Irrigation Water, Soils and Green Leafy Vegetables Collected from Different Areas of Colombo District, Sri Lanka**

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**Abstract:** Excessive buildup of heavy metals in agricultural soils may contribute to environmental contamination, as well as increased heavy metal uptake by vegetable crops, which ultimately leads to adverse health consequences in mankind. A study was conducted to evaluate the Lead (Pb) and Chromium (Cr) concentrations in irrigation water, soils and green leafy vegetables ["Mukunuwenna" (*Alternanthera sessilis*), "Thampala" (*Amaranthus viridis*), "Nivithi" (*Basella alba*), "Kohila Leaves" (*Lasia spinosa*) and "Kankun" (*Ipomoea aquatica*)] collected from forty randomly selected fields of Colombo District, Sri Lanka using Graphite Furnace Atomic Absorption Spectrometry. The mean concentrations (mg/kg, dry weight basis) of Pb and Cr in the soils were reported as 39.7±32.3 and 48.4±42.9, respectively. The highest level of Pb detected in irrigation water samples was 2.01 mg/L and Cr was not detected in any of the irrigation water samples analyzed. The mean levels (mg/ kg, dry weight basis) of Cr and Pb in green leafy vegetables found as 3.36±2.76, 2.96±2.16 for Mukunuwenna, 3.58±2.80, 3.14±2.32 for Thampala, 3.28±2.45, 3.11±2.33 for Nivithi, 5.02±4.09, 4.32±3.47 for Kohila and 3.47±2.88, 3.21±2.44 for Kankun, respectively. The highest accumulations of both metals were found in Kohila leaves. Significant differences were observed in Pb and Cr levels, between both production sites and green leafy vegetables analyzed at P<0.05. Thus the study highlights the potential risks involved with the consumption of leafy vegetables cultivated in the contaminated areas which may adversely contribute to the food quality and safety.

**Key words:** Contamination, green leafy vegetables, lead, chromium

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