

Determination of total cadmium and arsenic levels of selected cereal varieties from North Central province of Sri Lanka

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Cadmium (Cd) and arsenic (As) pose a serious threat to human health and cause diseases. In order to prevent such disorders it is extremely important to assess the level of these metals in food products. The aim of this study is to determine the levels of Cd and Ar in several varieties of cereals grown in North Central Province of Sri Lanka. Four different cereal varieties including Finger millet (Bran), Sesame, Maize and Urad Dal were collected from seven different areas of the province and the levels of Cd (228.8 nm) and As (193.7 nm) were determined by Atomic Absorption Spectroscopy (AAS). The concentrations of Cd values varied from Not Detected to 121.46 µg/kg, while the Ar values varied from Not Detected to 602.5 µg/kg. The highest Cd level was detected in Sesame (121.46 µg/kg) from Galenbindunuwewa. The amounts of Cd in samples of all cereal varieties were within the acceptable range set by WHO (200 µg/kg). The highest As level was detected in Finger millet (602.5 µg/kg) from Galenbindunuwewa. Twenty one samples out of 97 cereal samples were found to be containing higher As content than the acceptable range set by WHO (200 µg/kg). Average concentrations of As and Cd in cereal varieties did not exceed the acceptable limits established by FAO/WHO. When comparing according to the area, As concentrations in Labunoruwa and Galkulama areas exceeded the safe limits. When comparing according to the variety, weekly intake of As and Cd was within tolerated amount corresponding to 15 µg/kg PTWI and 7 µg/kg Provisional Tolerable Weekly Intake (PTWI) respectively. According to the area, PTWI values of Cd and As for cereals in selected areas were within the limits of tolerable intake. However, in Galkulama and Labunoruwa areas it may cause a bad health effect.

Keywords: Arsenic, Cadmium, Heavy metals