

Titanium, Zinc, Lead, Chromium, Cadmium, Cobalt and Copper Concentrations in Vegetables Produced using Wastewater in Urban and Peri-Urban Areas of Nairobi City County, Kenya.

Abstract

Vegetables are rich sources of vitamins, minerals and fibres. Ingestion of vegetables contaminated with heavy metals is one of the main routes through which heavy metals enter the human body and may cause diseases. In this study we investigated the concentrations of titanium, zinc, lead, chromium, cadmium, cobalt and copper in the commonly produced vegetables viz. *Brassica* sp., *Spinacia oleracea*, *Amaranthus* sp. and *Solanum* sp. using wastewater in Ruai ward, Nairobi City County, Kenya. Atomic absorption spectrometry (AAS) was used to estimate the levels of these metals in vegetables sampled from five plots in the study area. The concentration status for each heavy metal in the samples was compared with the permissible levels for corresponding heavy metals set by the Food and Agriculture Organization and World Health Organization. Our findings indicated the presence of Ti, Zn, Cr and Cu in all the vegetable samples and their concentrations varied considerably, while Pb, Cd and Co were not detected in most samples. The presence of heavy metals in vegetables was in the order of $Pb > Cd > Co > Cu > Cr > Zn > Ti$. We concluded that vegetables produced using wastewater had elevated levels of the investigated heavy metals at the time of analysis beyond FAO/ WHO safe limits for corresponding metals in leafy vegetables.