DETERMINATION OF HEAVY METAL CONTAMINANTS IN LEAFY VEGETABLES CULTIVATED AND MARKETED IN ABA, NIGERIA

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ABSTRACT

Human food chain toxicity has been shown to be influence by application of fertilizers. This research studies the influence of fertilizer application on the uptake of heavy metals by *Telfaira occidentalis* and *Talinum triangulare* and the environmental health implication in Aba, Nigeria. The different fertilizer samples used were $N_{15}P_{15}K_{15}$, $N_{20}P_{10}K_{10}$ and $N_{27}P_{13}K_{13}$ with a soil treatment of 2.0g/kg. The heavy metal composition of the NPK fertilizer samples were studied using Atomic Absorption Spectrophotometer (AAS). Iron levels rated highest in the soil and the NPK fertilizer samples while V, As, Hg and Ag were not detected. The mean concentrations (mg/kg) of other metal followed the sequence Ni>Bo>Mg>Co>Zn>Mn>Pb>Mo>Cu>Cd. The potential toxic elements such as Cd and Pb in the fertilizers were 0.01 and 0.19mg/kg mean concentration respectively. The addition of the fertilizers showed an increase in heavy metal content of the vegetables. The result showed that the vegetables (*Talinum triangulare* and *Telfaira occidentalis*) accumulated significant amount of Iron and Zinc in their leaves than other heavy metals examined. *Talinum triangulare* accumulated about 12.29% of Pb and 55.50% of Cd from the treated soil while *Telfaira occidentalis* accumulated 4.09% of Pb and 13.88% of Cd. Heavy metal content of *Talinum triangulare* obtained from the cultivated and harvested samples were non-significantly higher than their corresponding concentrations obtained from the marketed samples, whereas *Telfaira occidentalis* showed the reverse in heavy metal concentrations. Their values however where within the recommended levels for vegetables nevertheless continuous consumption of these vegetables may lead to serious health challenges.

Keywords: NPK Fertilizers, Heavy metals, Talinum triangulare, Telfaira occidentalis.