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Heavy metal content of some selected vegetables grown with organic and inorganic fertilizers

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Statement of Problem: Vegetables are part of daily diet in many households forming an important source of vitamins and minerals required for health. However, they are bio-accumulators of heavy metals as they easily absorb heavy metals and it's known that heavy metal accumulation in the body could have adverse effects on human health. Therefore, this study aims to determine the heavy metal content of some vegetables grown with organic and inorganic fertilizers.

Methodology: Three leafy vegetables; *Celosia argentea*, *Telfairia occidentalis*, *Corchorus olitorius* were collected from four randomly selected farmlands in Odeda Local Government Area, Abeokuta, Ogun State, Nigeria. Edible portions of these vegetables were prepared and standardized into soup recipes. Lead, arsenic, cadmium, chromium, nickel and zinc content of these vegetables were determined from their raw edible portions and soup recipes using the Atomic Absorption Spectrophotometer. Means and standard deviation were derived, T-test was used to differentiate the means and difference was considered statistically different at 95% confidence interval.

Results: The mean concentration of heavy metals detected in the vegetables ranged from 0.22 mg/100 g-0.51 mg/100 g, 0.00 mg/100 g-0.61 mg/100 g, 0.00 mg/100 g-0.65 mg/100 g, 0.00 mg/100 g-0.01 mg/100 g for zinc, nickel, cadmium and chromium respectively. Arsenic and lead were not detected in all the vegetables. The result shows no statistical difference between the heavy metal content of the organic and inorganic vegetables both in the raw and soup recipes ($P > 0.05$) though the nickel content of the soup recipes were higher than the content in raw samples. This could have occurred due to leaching from the cooking ware. It was also observed that the mean concentration of heavy metals in the raw and soup recipes did not exceed FAO/WHO maximum limit for vegetables.

Conclusion: The vegetables raw or cooked, organic or inorganic, the heavy metal concentration was not significantly different and not above the permissible limit for vegetables.

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