

*Article*

## **Trace metals quality of some herbal medicines sold in Accra, Ghana**

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### **Abstract**

Ten brands of herbal medicines were selected on the market for the analysis of trace metals quality using the Atomic Absorption Spectrometer. The results were reported as the mean concentration of three representative samples for each of the ten brands. The respective percentage incidence of the trace metals analyzed were; Fe (20%), Zn (80%), Cu (20%), Cd (40%); Al (100%) and Pb (100%). The range of the mean concentrations measured for all the brands were; Fe (<0.006-3.298 mg/L), Zn (<0.001-0.091 mg/L), Cu (<0.003-0.009 mg/L), Cd (<0.002-0.003), Al (0.278-0.533 mg/L) and Pb (0.0056-0.085 mg/L). The mean concentrations of the trace metals measured were generally low and below stipulated national limits as per WHO (2007). A hierarchical cluster analysis indicated two clusters; cluster 1 (CA1) loading Zn, Al and Fe whilst Cluster 2 (CA2) loaded Cd and Pb. The presence of these trace metals may be the result of accidental contamination during manufacture, for instance, from grinding weights or lead-releasing containers or other manufacturing utensils and contamination from polluted soils on which the herbs were harvested. Some brands of the herbal medicines sampled do not have the code in Food and Drugs Board of Ghana. Hence a routine analysis of these herbal medicines must be carried out to ensure the safety of the consuming populace.

**Keywords** trace metal; concentration; contamination; herbal medicine; cluster analysis; limits; safety.

### **1 Introduction**

About 70–80% of the world's population particularly in developing countries relies on non-conventional medicine in their primary healthcare as reported by the World Health Organisation (Akerele, 1993). Herbal medicine in recent years are used to treat many conditions, such as asthma, eczema, premenstrual syndrome, rheumatoid arthritis, migraine, menopausal symptoms, chronic fatigue, and irritable bowel syndrome, among others. The popularity of herbal medicines notably increased in the past years due to rapid increase in allopathic drugs price and reports on their safety. People are often using herbal products especially in rural areas because of availability and affordability. There is also a general public perception that herbal products are safer and harmless because of their natural plant based origin/material.

In some countries in Europe unlike the U.S. herbs are classified as drugs and are regulated. The German Commission E, an expert medical panel, actively researches their safety and effectiveness. Unlike in most developing countries, in Ghana, the food and drugs board is responsible for drug administration and control of the quality of medicinal products generally available in the market.