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Research Paper

Determination of Mineral Contents of *Blighia Unijugata* Leaves

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ABSTRACT:- Mineral composition of *Blighia unijugata* leaves was investigated using spectrophotometric methods. The results recorded the concentrations (mg/100g) of the minerals as calcium (66.20±0.01), potassium (62.12±0.02), magnesium (60.20±0.09), phosphorus (33.72±0.02), iron (22.44 ±0.01), sodium (14.33± 0.02), zinc (12.47±0.03) and manganese (2.15± 0.01). The results showed high concentrations of calcium, potassium, magnesium and phosphorus indicating that fresh leaves of *Blighia unijugata* could be rich in those minerals. Hence, *Blighia unijugata* plant could be considered as a medicinal plant containing inborn potentially active ingredients used to cure diseases or relieve pains due to its mineral potentials.
Key words: Minerals, *Blighia unijugata* leaves.

I. INTRODUCTION

Plants containing inborn potentially active ingredients used to cure diseases or relieve pains are called medicinal plants (Okigbo *et al.*, 2008). Plants play a therapeutic and restorative role in protecting human beings from the adverse effects of diseases and other complications, thus considered to have a beneficial role in healthcare system (Ozturk and Ozturk, 2008). Plants are the natural and most easy accessible sources of therapeutically active biological principles, thus there is a dire need to screen out plants for development of new drugs. For this purpose plants have been assayed widely but still large number of them has not arrived to the conventional health care system (Bhattarai *et al.*, 2006).

In tropical Africa, extending from Guinea Bissau eastwards to Ethiopia and Kenya, and through DR Congo southwards to Angola, Zimbabwe and Mozambique, *Blighia unijugata* is wide spread. It is also found in South Africa (Ayodele *et al*., 2008). *Blighia unijugata* is small to medium-sized tree up to 30-35 m tall, slightly fluted at base, bark surface fairly smooth, but often with horizontal ridges and warts, grey to dark green, inner bark thin, brittle, granular, white to pale red or brown with white streaks (Ayodele *et al*., 2008).

A mineral is a naturally occurring substance that is solid and inorganic representable by a chemical formula, usually abiogenic, and has an ordered atomic structure. It is different from a rock, which can be an aggregate of minerals or non-minerals and does not have a specific chemical composition. Finally, the requirement of an ordered atomic arrangement is usually synonymous to being crystalline; however, crystals are periodic in addition to being ordered, so the broader criterion is used instead (Takai, 2010).
This work investigated the mineral content of fresh leaves of *Blighia unijugata*.

Fig. 1: *Blighia unijugata* Plant (Koenig, 2010)

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II. MATERIALS AND METHODS

Materials

Fresh leaves of *Blighia unijugata* were gotten from Abakaliki, Ebonyi State, Nigeria as all chemicals and reagents were of analytical grade.

III. METHODS

Mineral Analysis

` The determination of calcium and magnesium concentrations was done by the methods of Pearson (1976). The methods of Association of Official Analytical Chemists (AOAC) (1980) were used to determine the concentrations of phosphorus, iron, zinc potassium and sodium.

IV. RESULTS

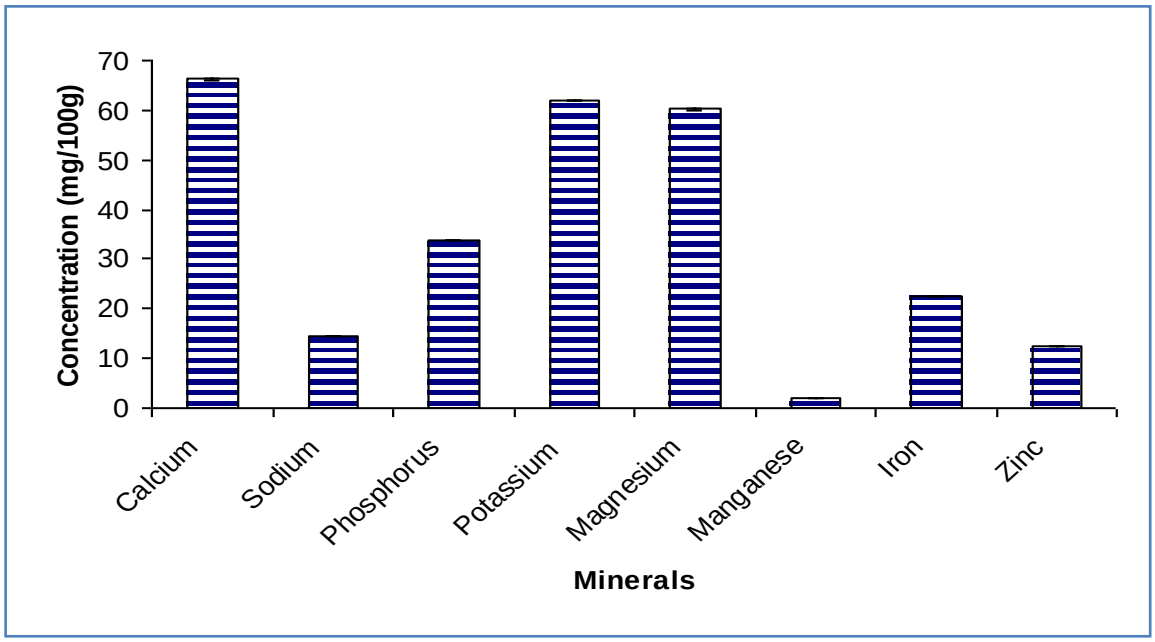

Fig. 2: Mineral Contents of *Blighia unijugata*

V. DISCUSSION AND CONCLUSION

Fresh leaves of *Blighia unijugata* recorded higher concentrations of calcium, potasium, magnesium, phosphorus, iron, sodium, zinc and a low concentration of manganese (Fig. 2). However, the results revealed that fresh leaves of *Blighia unijugata* are rich in minerals. The concentration of calcium in *Blighia unijugata* leaves was higher than that recorded for *Vernonia amygdalina* as reported by Mensah *et al*. (2008) but lower than that of *Occinum gratissmum* and *Piper guinenses* (Chima and Igyor, 2007).

The potassium concentration of *Blighia unijugata* was higher in the leaves of *Amaranthus cruentus*, *Telferia occidentalis*, *Vernonia amygdalina* and *Gnetum africana* as reported by Mensah *et al.* (2008). Magnesium concentration of *Blighia unijugata* was found to be higher than that of *Pterocarpus mildbreadii*, *Pterocarpus santalinoides*, *Gnetum Africana*, and *Triangular triangulare* as repoeted by Mensah *et al.* (2008) and Chima and Igyor (2007). Most green vegetables, legume seeds, peas, beans and nuts are rich in magnesium. Magnesium is widely distributed in plant and animal sources but in differing concentrations (Shils *et al*., 2006).

Iron has been reported as an essential trace metal and plays numerous biochemical roles in the body, including oxygen binding in haemoglobin and acting as an important catalytic center in many enzymes (Geissler and Powers, 2005). Thus, the use of *Blighia unijugata* leaves in the diet may furnish the diet with iron sufficient enough to meet the daily requirement for the nutrient. The zinc concentration of *Blighia unijugata* was observed to be higher than the leaves of *Gnetum africanum*, *Xanthosoma sagittifolium*, and *Lasianthera africana*. The Required Daily Allowance (RDA) of zinc for infants, children, adolescents and adult males and females ranges between 2.0 mg/100g to 11 mg/100g (Shils *et al.*, 2006). FAO/WHO (2001) reported that zinc is an essential component of a large number (>300) of enzymes participating in the synthesis and degradation of carbohydrates, lipids, proteins and nucleic acids as well as in the metabolism of other micronutrients.

Manganese is a trace element of significant importance. It is essential for glucose metabolism, normal body growth and reproductive function (Ibrar *et al*., 2003). Manganese intoxication is responsible for Parkinsonism (Wang and Zheng, 2008b). Ibrar *et al.* (2003) reported that the hypoglycemic potential of *Blighia unijugata*

might be due to the presence of fair amounts of trace elements including manganese. Some of the physiologic roles of minerals important to system are their involvement in muscle contraction, normal heart rhythm, nerve impulse conduction, oxygen transport, enzyme activation, immune functions, bone health and acid- base balance of the blood (Speich, 2001).

In conclusion, *Blighia unijugata leaves* are nutritionally rich in minerals such as calcium, potassium, magnesium, phosphorus, iron, sodium and zinc and could serve a good source of some minerals.

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