ASSESSMENT OF THE NUTRITIONAL AND MINERAL COMPOSITIONS OF *Pterocarpus Mildbreadii* (OHA) LEAVES

C.N, Eze and C.N, Igboeli
Science Laboratory Technology Department, Federal Polytechnic, Oko
Natural Science Department, University of Nigeria, Nsukka
email: chukwuduziem@ yahoo.com 07037394446

Abstract

This study investigated the nutritional and mineral contents of *Pterocarpus Mildbreadii* (oha) leaves. The *Pterocarpus Mildbreadii* leaves was air dried under room temperature and was ground to powdered form using manual grounder. The analysis to determine the nutritional and mineral composition was done using standard analytical procedures as described by AOAC, 2005. The nutrient content of *Pterocarpus Mildbreadii* leaves is as follows, Ash (3.65%) Moisture (4.33%) Protein (25.2%) Fiber (7.98%) Fat (2.84%) Carbohydrates (56.0%).The result of the content such is Calcium (4.100mg/100g) Potassium (0.311mg/100g) Iron (0.641mg/g) Magnesium (36.088mg/g) Zinc (5.43mg/g) and Manganese (2.36mg/g). These results show that the leaves of *Pterocarpus Mildbreadii* is of high nutritional value needed for proper functioning of the body system. The presence of the minerals indicates that it is medicinally beneficial to health and well-being.

Keywords: Minerals, *Pterocarpus mildbreadii*,

Introduction

Vegetables are generally succulent parts of plants grown in gardens and consumed as a side dish with starchy stales (Sonni, 2002). Green leafy vegetables constitute an indispensable constituents of human diet in Africa generally and West Africa in particular. Vegetables are rich sources of various health beneficial phytochemicals such as flavonoids, phenols, vitamins, minerals, carbohydrates. Extensive research by various groups has revealed the role played by these phytochemicals in the reduction of incidence of certain degenerative disease such as cardiovascular disease, cancers and arthritis (Sonni, 2002).

The genus *Pterocarpus* which is tropically and sub-tropically distributed belongs to the family *Fabaceae.* There are about 60 species of the genus of which 20 of these are found in African Countries such as Nigeria, Cameroon, Sierra Leone and Equatoria Guinea (Alfred and Patrick 2010). Fresh vegetables are highly recommended in any diet virtually without quantitative restriction and the roles played by vegetables in maintenance of good health are well known.
The leaves of *Pterocarpus mildbreadii* species known as "Oha" (Igbo) are used in soup making in the South Eastern part of Nigeria. Some tribes in the Eastern and Southern Nigerian use the leaf extracts in the

treatment of pains, fever, headache, convulsions and respiratory disorders and as antimicrobial agents.

The health of an individual depends on the qualities and quantities of food stuff he consumes. The food requirements are simply needed to supply the minimum requirements of the six groups of nutrients. Carbohydrates, fats, proteins, mineral elements, vitamins and water (Alfred and Patrick, 2010).

Vegetables contain low calories and negligible quantities of utilization energy. Hence, they are ideal for obese people who can satisfy their appetite without consuming much carbohydrate. Although there are low level of proteins in vegetables, there is increasingly awareness of the importance of vegetables in maintaining health, particularly in areas where animal proteins are scarce. Vegetables contribute to the mineral, vitamin and fiber contents of diets.

Minerals are naturally occurring in organic substances with a definite chemical composition and an ordered atomic arrangement. Among the plant, vegetables are excellent sources of minerals and contribute to recommended dietary allowances (RDA) of these essential nutrients. Minerals are very important ingredients for normal metabolic activities of body tissues. Out of 92 naturally occurring minerals 25 are present in living organism. They are constituents of bones, teeth, blood, muscles, hair and nerve cells. Vitamins cannot be properly assimilated without the correct balance of minerals (Sonni, 2002). The need for natural foods and vegetables that can help in enhancing human nutritional supplements prompted a research into the assessment of the nutritional and mineral composition of *pterocarpus mildbreadii* leaves (Ralistogi, and Mchrotra, 2002)

Materials and Methods

Sample Collection

Pterocarpus mildbreadii (Oha) leaves were bought from Ekwulobia in Aguata Local Government Area Anambra State Nigeria and was identified by Dr. S.I Okeke (a botanist) in the Department of Science Laboratory Technology, Federal Polytechnic Oko.

Sample Preparation

The *Pterocarpus mildbreadii* leaves were washed clean to remove dirt and foreign materials, The sample was air dried under room temperature for Two (2) weeks to reduce accumulated water. About 50g of the sample was ground into a fine powder texture using a hand grinder(corona model hand grinder) and was stored in an air tight container for laboratory analysis.

Procedure for Proximate Analysis

The determination of nutritional composition was done using standard analytical procedures described by (AOAC, 2004)

Method for Determination of Mineral Composition.

Working Principle: Atomic absorption spectrometer's working principle is based on the sample being aspirated into the flame and atomized when the AAS's light beam is directed through the flame into the monochromator and onto the detector that measures the amount of light absorbed by the atomized element in the flame. Since metals have their own characteristic absorption

wavelength, a source lamp composed of the element is used, making the method relatively free from spectral or radiational interference. The amount of energy of the characteristics wavelength absorbed in the flame is proportional to the concentration of the element in the sample.(Adrian,1993)

Results

The results of the nutritional and mineral compositions of *pterocarpus mildbreadii* is presented in Table 1 and Table 2.

Table 1: Nutritional composition of *Pterocarpus mildbreadii* leaves

Parameter	**Concentration (%)**
Ash content	3.65
Moisture content	4.33
Protein content	25.2
Fiber content	7.98
Fat content	2.84
Carbohydrate content	56.0

Table 2: Mineral composition of *Pterocarpus mildbreadii* leaves

Parameter	**Concentration (ppm)**
Zinc	1.291
Potassium	0.311
Calcium	4.001
Manganese	0.144
Iron	0.641
Magnesium	36.088

Discussion, Conclusion and Recommendations

Discussion

The result of the nutritional compositions of *Pterocarpus mildbreadii* leaves shows that the moisture content is 4.33%,Ash content 3.65%, Protein content 25.2%, fiber content 7.98%, Fat content 2.84%,carbohydrate content 56%.

Moisture content of any food is an index of its water activity and used as a measure of its microbial contamination. Foods with low moisture content are less susceptible to spoilage by microorganism example, the moisture content of the sample is 4.33%. The fiber content forms part of the food not digested by man although it helps in the proper functioning of some of the body organs. It decreases the time that waste materials spend in the intestinal tract. (Hammer,2009)

The ash content is the reflection of the mineral content present in the food. Carbohydrate forms the bulk of food that supplies the body with energy.

The minerals present in the sample includes Zinc 1.291ppm, Potassium 0.311ppm, Calcium 4.001ppm, Manganese 0.144ppm, Iron 0.641ppm and Magnesium 36.08ppm. Zinc is needed for the body's defensive system to work properly. it plays a role in cell division, cell growth, wound healing and the breakdown of carbohydrates. (Beguin, and Osterborg, 2001) Magnesium is essential for metabolizing fat and protein, regulating blood glucose, supporting immune system and nervous function. The magnesium content of *Pterocarpus mildbreadii* is high, hence its importance in maintaining nervous coordination (Alfred and Patrick, 2010). Magnesium is an important element in connection with the circulatory diseases and calcium metabolism in bone. iron is an essential micronutrient for hemoglobin formation and normal functioning of the central nervous system. (Josiah, 2004)

Conclusion

The results from the study shows that the leaves of *Pterocarpus mildbreadii* is of high nutritional value needed for proper functioning of the body system and also the essential minerals needed for the body tissues and organs to function effectively.

Recommendation

it is recommended that further research be carried out on the plant to determine other bioactive compounds inherent in the sample that confers on it its biological and nutritional compositions.

References

Adrian, O. (1993). A Comparison of a Wet Pressure Digestion Method with Other Commonly Used Wet and Dry-Ashing Method. (16th, Edition). United States of America,Maryland. Analysis 98, 213.

Alfred, S. and Patrick, Y. (2010). Trace Metal Distribution in Nigerian Leafy Vegetables. Aliyu and Morufo, (2006). Nutritional Evaluation of Chemical Component of Leaves, Stalk Sand Stems of Sweet Potatoes Pp. 110-115.

Beguin, Y. and Osterborg, A. (2001). Epidemiological and Nonclinical Studies Investigating Effects of Iron in Carcinogenesis – A Critical Review. Critical *Reviews in Oncology/Hematology*. 89(1):1-15.

Hammer, G., (2009). Proximate and Mineral Composition of the Marchubeh (*Asparagus officinalis). World Dairy and Food Science,* 4(2), 142-149.

Josiah, C., (2004). Chemical analysis of Foods. (7th ed) London, Livingstone, Pp. 140-148.

Pohhull, M., and Raven, O. (2003). Zinc Deficiency, Infectious Disease and Mortality in Developing World. *Journal of Nutrition*., 133, S1485-S489.

Ralistogi, L., and Mchrotra, B., (2002). Mineral Composition of *Moringa Oleeifra* Leaves, Pods and Seed from two Region in Abuja, Nigeria. *International Journal of Agriculture and Biology*, 12, 431-434.

Sonni, R., (2002). Trace Elements and Major Minerals Evaluation of *Spondias mombin, Vernomia amygdalina* and *Mmordi cacharatia* Leaves. *Pakistan Journal of Nutrition*, 9(8), 755-756.