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Comparative Proximate Analyses of *Pterocarpus santalinoides* and *Ficus carpensis* Leaves from Abakaliki, Ebonyi State, Nigeria

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Abstract:

Pterocarpus santalinoides and *Ficus carpensis* leaves are common vegetables in Ebonyi State, Nigeria. The comparative proximate analyses were carried out on the dry leaf samples using standard method. The result of the proximate analysis of *Pterocarpus santalinoides* leaf showed the percentage (%) composition of ash, moisture, crude fibre, protein, fats/oil and carbohydrates contents to be 6.50 ± 0.024, 9.0± 0.89, 40.50±2.59, 8.85±0.01, 2.35± 0.77 and 32.80± 3.13 while that of the *Ficus carpensis* leaf were 12.25±0.07, 9.49±0.33, 10.05±0.28, 3.34±0.06, 5.36±0.29 and 60.47±2.90 in both samples respectively. This showed that *Ficus carpensis* leaf is richer in ash, fats/oil and carbohydrates contents while *Pterocorpus santalinoides* leaf is richer in crude fibre and protein contents.

Introduction:

Pterocarpus santalinoides is one of the species of tree in the legume family of *Fabacea*. It has a native to tropical western Africa and also to South America (Osuagwu *et al.*, 2007). The Nigerian species are trees with bright yellow flowers and usually have alternate leaflets (Osuagwu *et al.*, 2007). The fruit pod has a usual irregular shape (Adetunji, 2007). It is a shade tree commonly found along riverine forest in Africa and tropical South America (Galant, 1972). The plant can also help in erosion control because of the type of root system as well as nitrogen fixation (Tian *et al.*, 1992). In Nigeria many indigenous plants including *Pterocarpus santalinoides are* used as food or medicine. The tender leaves are used as vegetables in soup making while the stem bark is used in making pepper soup. *Pterocarpus santalinoides* plant commonly referred to as "Red sandal wood" in English, "Ouokisse" in French, "Uturukpa" in Igbo, "Gunduru gyadar kurmi" in Hausa and "Gbenghe" in Yoruba (Appidi *et al*., 2008).

Ficus capensis commonly known as fig tree is a common vegetable and also a medicinal plant found in terrestrial zones mostly along rivers. It is a spreading deciduous evergreen tree with a thick bole and spreading roots. It belongs to the family of *Moraceae* and it produces fruits throughout the year and the leaves are broad and green (Shahidi *et al.*, 1999). In Nigeria *F. carpensis* has been used for the treatment of dysentery and wound dressing. It is also used in circumcision, leprosy and epilepsy, rickets, infertility, gonorrhea, edema, respiratory disorders and emollient. Vernacular names of *Ficus carpensis are* "Iyeye" in Yoruba, "Akpuru" in Igbo and "Bera" in Hausa (Shahidi *et al.*, 1999).

However, despite that the leaves of *Pterocarpus santalinoides* and *Ficus carpensis* are used as vegetable in soup and preparation of sauce for cooked yam in Ebonyi State, no information has been published on the comparative proximate composition of the two plant leaves from Ebonyi State, Nigeria. In order to ascertain the nutritive value of the vegetable species and thereby stimulate interest in its utilization beyond the traditional localities. This study was designed to compare the composition of the proximate of the two plants leaf.

Figure 1: Leaves and Flowers of *Pterocarpus santalinoides*

Figure 2: Leaves of *Ficus carpensis*

Materials and Methods

Materials:

Collection of *Pterocarpus santalinoides* and *Ficus carpensis* Leaves

The fresh leaves of *Pterocarpus santalinoides* and *Ficus carpensis* were collected by hand picking in the month of November, 2014 in Abakaliki, Ebonyi State, Nigeria. The plants were identified by a taxonomist in the Department of Applied Biology, Ebonyi State University, Abakaliki, Nigeria. Some parts of the plants were also deposited in the herbarium for reference purpose.

Preparation of *Pterocarpus santalinoides* and *Ficus carpensis* Leaf Samples

The leaves were destalked, washed and shade dried at ambient temperature with constant turning to averts fungal growth. The dried leaves were later milled to obtained the vegetable leaf meals (VLMs) using an electric blender and were stored in 4^0C temperature in refrigerator in well labeled air-tight containers for analysis.

Proximate Analysis: Proximate analyses of the two samples were carried out according to the procedure of Association of Official Analytical Chemist (A. O. A.C., 1990) to determine the carbohydrates, ash, fats/oil, crude fibre, moisture and protein.

Results:

The result showed that *Ficus carpensis* leaf is richer in ash, fats/oil and carbohydrates contents while *Pterocorpus santalinoides* leaf is richer in crude fibre and protein contents as shown in Figure 3.

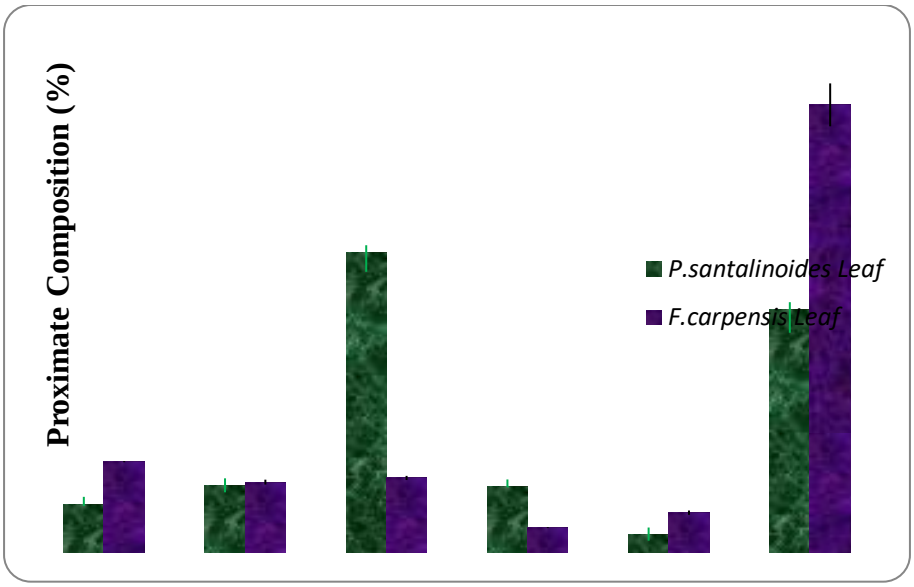

Figure 3: Comparative Proximate Composition of *Pterocarpus santalinoides* and *Ficus carpensis* Leaves

Discussion and Conclusion:

Discussion:

The result of this research study showed that *Ficus carpensis* leaf is richer in ash, fats/oil and carbohydrates contents while *Pterocorpus santalinoides* leaf is richer in crude fibre and protein contents as shown in Figure 3. This result is in correlation with the reports of Aja *et al.* (2010) on the proximate analysis of *Talinum triangulare* leaves and Akubugwo *et al.* (2007) on crude fibre content of vegetables in South-Eastern Nigeria. Fibre cleanses the digestive tract by removing potential carcinogens from the body and binds cancer binding chemicals by keeping them away from the cells (Ensminger and Ensminger, 1996). The prime role of carbohydrates is to produce energy required for the body as they are the pivotal nutrient required for adequate diet (Emebu and Anyika , 2011). Protein is necessary for body development, maintenance of fluid balance, formation of hormones, enzymes and contribution to immune function (Emebu and Anyika , 2011). This result also conformed to the report of Offor *et al.* (2012) on the comparative proximate compositions of yam, cassava, rice, maize and cowpea from Ezzangbo in Ohaukwu and Iboko in Izzi Local Government Areas of Ebonyi State. Aja *et al.* (2015) reported similar proximate compositions in *Parkia biglobosa* fruit in Abakaliki, Ebonyi State, Nigeria. Aja *et al.* (2013) also reported proximate compositions of *Moringa oleifera* (Drumstick) which are commonly used as Nutritional and Medicinal plant in Nigeria. Then a similar result was obtained by Offor *et al.* (2015) on the proximate composition of the leaves of *Terminalia catappa.* The report of Nwali *et al.* (2014) on the proximate compositions of *Bryophyllum pinnatum* Leaves was in conformity with the result of the study.

Conclusion: The result of this study showed that *Ficus carpensis* leaf may be a good source of *ash*, fats/oil and carbohydrates contents while *Pterocorpus santalinoides* leaf may be a good source of crude fibre and protein contents.

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