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Articles and Statements

Evaluation of Chemical Properties and Mineral Composition of Powdered and Dried Leaves of Baobab in Bauchi Metropolis

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Abstract

The evaluation of some chemical properties and mineral composition (proximate chemical analysis) of Baobab leaves (*Adansonia digita*) collected from Muda Lawal market were analyzed at the soil science laboratory of Abubakar Tafawa Balewa University, Bauchi using flame photometric and atomic absorption spectrophotometry. The results showed that the concentration of crude protein ranged from 1.44-1.63 with CV of 5.7 % and that of crude fibre range from 0.81-0.97 and CV 12.7 %. The chemical composition showed that ash ranged from 1.48-1.65 with CV of 7.7; Ca from 2.51-2.63 with CV 3.91 %; K from 0.71-0.19 with CV of 7.86 % and Na from 007-0.08 with CV 9.42 %. Based on the results obtained there were no significance (p= 0.05) difference between the powdered and dried leaves, since all the parameters observed had coefficient of variation less than 15 %. Therefore, people can consume any of the two forms of baobab leaves.

Keywords: coefficient of variation, Baobab.

1. Introduction

Baobab (Adanso*nia digituta*) belongs to the family Bambacaceae. It refers to a group of trees that are grown in tropical and sub-tropical regions of the hemisphere especially, in the Madagascar. It is probably the best know tree in Africa (Vimala, Shoba, 2014). Its thick, grey, fibrous trunk reaching in some instances over 25cm and the large spreading crown seasonally devoid of foliage, are instantly recognizable. It is sometimes called upside down tree because of its unusual, root like branch formations. It is extremely long lived, with some species believed to be as old as 3,000 years (Ibrahim, 2015).

Although the extremely high moisture content of wood renders it unusable as a timber, thus making it an excellent fiber material employed in basket, rug and rope making and has been used variously to make fishing nets, animal snares, sacking and even strings for musical instruments (De Smedt et al., 2012). The tree is best known for its high vitamin c content,/ranging 300ms/100g nearly 6 times higher than that of an orange, 20g at an average baobab fruit could provide the daily vitamin c requirement for human (Bale et al., 2013). The pulp also has value of carbohydrate, calcium, potassium, thiamine and nicotinic acid, with appreciable quantities of tartanic acid and

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potassium. The seed cakes, as well as the shells form the fruit, are a useful to livestock feed, being high in protein, calcium, vitamin B and C (De Smedt et al., 2012; Fagbohun et al., 2012).

Baobab comprises eight species with a large spectacular, nocturnal flowers, African baobab has long been known to be a bat-pollinated to be species in section brevitubae both endermic to Madagascar are pollinated by nocturnal mammals (fruits bats and lemurs) in contrast. The five species in section longitubae four endemic to the Madagascar and one to Australia are pollinated by long-tongue, hawk moths. The flowers and fruit hang from the stem which is long-tongue, hawk moths.The flowers and fruit hang from the stem which is long and ropy. The fruit with a hard woody shell covered in yellowish green velvety hair are again easily identified inside the shell the fruit containing a number of seeds, embedded in a whitish, powdery pulp and nutrients the pulp makes a tasty food after soaking in water or milk to make a refreshing beverage(Walker, 2014).

The baobab trees have large whitish flowers which open at night. The fruit which grows up to a foot long, contain tartanic acid and vitamin ca and can neither be sucked or soaked in water to make a refreshing drink (Vimala, Shoba, 2014). Fresh baobab leaves provide an edible vegetable similar to spinach which is also used medicinally to treat kidney and bladder disease, asthma, insect bites and several other maladies. The tasty and nutrients fruits and seed of several species are sought after, while pollen from the African and austrilian baobab is mixed with water glue (Ibrahim, et al., 2012; Azeh et al.,2014).

Boabab are thus plant species with a high potential in arid and semi-arid areas in the developing world. Despite the high potential, little formal research has been carried out to access their food value, potential for genetic improvement or responses to cropping and management techniques, nor are there any data available on marketability of their products.

This research therefore is intended to enable the people in the study area know the proximate and chemical composition of baobab leaves. And by extension this research would enable us understand the potential of baobab plant.

2. Materials and methods

Collection and Preparation of Leaves

The leaves of baobab were purchased from four (4) different retailers in Bauchi metropolis main market the powdered and dried leaves. The leaves were identified by two agronomist, Mallam Sanusi Adamu and Mallam Ahmad Bununu both of the Department of Agricultural Technology, College of Agriculture, Bauchi. The dried leaves were then transported to the laboratory in Abubakar Tafawa Balewa University (A.T.B.U) Bauchi and milled into powder using hammer miller machine. After milling the powder was then stored for further laboratory analysis.

Proximate Analysis

Proximate analysis of the powdered and the dried leaves were carried out to determine the crude protein, crude fibre, either extract using standard procedures. For crude protein total Nitrogen was determined by micro kjeldhal method of Uscar (1976); Ash was determined by method described by AOAC (1984).

Chemical Composition

The chemical composition of the dried leaves as well as the powder was determined, Na and K in the two samples were measured by flame photometer (FP 8000 series, KRUSS optronics Germany), Ca, Ma P by atomic absorption spectrophotometer (GD320N GOLD, LABS China).

Data Analysis

Simple statistical tools of mean and coefficient of variation were used to analyze the values of the parameters determined.

3. Results and discussion

Table 1. Mineral composition (mg) of Baobab leaves (*Adansonia digitata*)

SPECIMEN	CRUDE PROTEIN	ETHER EXTRACT	CRUDE FIBRE
Powdered	1.44	0.64	0.97
Dried leave	1.63	0.59	0.81
Mean	1.54	0.62	0.89
Range	1.44-1.631	0.54-064	0.81-0.97
Cu	8.7%	5.7%	12.71%

Conclusion

The result shows that powdered leaves obtained from muda lawa market has 1.4 4 % of crude protein, while dried leaves from yelwa market has 1.63 % crude protein with coefficient of variant 8.7 % which is very much within the range. Ether extract of powdered leaves from muda lawan is 0.64 % while that of dried leaves obtained form yelwa market is 0.59 % with coefficient of variant 5.7 %. The result shows that powdered leaves of crude baobab is an excellent and natural source of nutrients.

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