

Comparative Analysis of the Nutrient Composition of Cashew (*Anacardium occidentale*) Apple and Nut

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Abstract: The Comparative analysis of the nutrient composition of cashew 'apple' and cashew nut has been conducted. The result show moisture content of the 'apple' and the nut to be 95.00% and 3.80%; ash content 0.50% and 2.40%; protein 0.19% and 11.11%; lipid 0.50% and 39.50%; carbohydrate 98.83% and 42.62%; fibre trace and 4.33% respectively. Elemental analysis of the 'apple' and nut has shown Na (25.33mg/100g and 108.06, mg/100g); K (383.30mg/100g and 437.79mg/100g); Ca (1.70mg/100g and 4.90mg/100g); P (3.39mg/100g and 10.44mg/100g) and Fe (0.56mg/100 and 1.33mg/100g) respectively. The Nut is more nutritious than the 'apple'. Conversely, the 'apple' contains a lot more vitamin C (45.5mg/100g) compared to the nut (7.80mg/100g).

Key words: Cashew (*Anacardium occidentale*) 'apple', Nut, Nutrition.

INTRODUCTION

Cashew (*Anacardium occidentale*) is a common seasonal fruit that is consumed in most parts of Nigeria and tropical Africa as a whole (Lawrence, 1982). In Nigeria some people eat the "apple" and discard the nut, while some eat the nut after roasting it and discard the 'apple'. In Nigeria, the former is very common among the northerners while the latter is very common among the southerner (Lam, 1984). *Anacardium occidentale* fruit is a kidney shaped nut about 3cm long attached to a bigger 'apple' that is sometimes mistaken for the fruit, but is just the edible receptacle plus fruit stalk (Samson, 1980). Cashew 'apple' is sweet when ripened fully. The juice of the 'apple' is rich in vitamin C and sugar while the nut contains a lot of other vitamins, minerals, protein and carbohydrate (Lawrence, 1982).

The cashew tree once established requires very little water and can be grown in areas with as little as 500mm of rainfall per year. They do well in hot climate and do not grow well above attitude of 500m (Umar and Birnin-Yauri, 2005). It grows quite well on fertile land and does not require the addition of manure, compost or fertilizer to planting holes (Lam, 1984). Cashew tree starts bearing fruit at the age of 2½ to 3 years and reach maturity at 9 to 10 years and economic life of 30-40 years if well taken care of (Lam, 1984). The tree is well grown in tropical America. Brazil. West Indies and East African cost (Lawrence, 1982).

The aim of the work was to compare the nutritive value of the cashew 'apple' and nut to find out the most nutritious of the two.

MATERIALS AND METHODS

Sample Collection

Ripened fruit of cashew nut and 'apple' were obtained from different sellers. The samples were mixed together and representative samples were picked randomly (Asaolu and Asaolu, 2002). The sample were then washed with tap water and rinsed with distilled

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water to avoid surface contamination. The 'apple' was squeezed to remove the juice from it for analysis, while the inner white nut was dried and ground to fine powder. Both were kept separately until further analysis.

Proximate and Elemental Analysis

Moisture content was determined at 105°C in an oven. Ash content was determined for 12 hours at 550°C (Samuel *et al.*, 1997). Crude protein, lipid and Fibre were determined according to the procedures of Association of Official Analytical Chemists (AOAC, 1990), while crude carbohydrate was determined by difference (AOAC, 1990). For elemental analysis, each samples was digested into solution by wet digestion using conc. nitric acid, Perchloric acid and sulphuric acid in the ratio 4:1:1 (Matazu and Haroun, 2003). Sodium, potassium and calcium were determined using flame photometer. Phosphorus was determined colorimetrically using phospho-vanado-molybdate method. Iron was determined using 1-10 phenanthrolin method colorimetrically (Ademoranti, 1996). Ascorbic acid was determined using 2,6- dichlorophenol iodophenol technique (Hassan *et al.* 2005).

RESULTS AND DISCUSSION

Table 1 and 2 show the results obtained from the analysis. The moisture content recorded in the 'apple' juice is higher than that of the nut. The high moisture content in the 'apple' will provide enabling environment for the activities of microorganism (Ladan *et al.*, 1997). Low moisture in the nut offers it some storage advantage (Umar and Birnin-Yauri, 2005). The nut has reasonable percentage of Lipid (39.50%) compare to the 'apple' (0.5%). The oil in the nut is edible and can be obtained in commercial quantity. It was found to be good for domestic and industrial purposes (Umar and Birnin-Yauri, 2005). The nuts has appreciable amount of protein and is high than that of the 'apple'. Carbohydrate is greater in the 'apple' than in the nut perhaps due to high sugar content of the 'apple'. Low fibre content was recorded for the nut while the 'apple' juice has trace fibre. Based on the results, high level of potassium and sodium was recorded in the nut than in the 'apple'. Taking each sample, concentration level of potassium is greater than sodium that has agreed with the finding of (Olaote and Sanni, 1988).

Table 1: proximate composition of Cashew (*Anacardium occidentale*)

| Cashew Part | Moisture | Ash | Protein | Lipid | Carbohydrate | Fibre |
|-------------|--------------|-------------|--------------|--------------|--------------|-------------|
| Apple | 95.00 ± 0.42 | 0.50 ± 0.10 | 0.19 ± 0.40 | 0.50 ± 0.03 | 98.83 ± 0.33 | Trace |
| Nut | 3.80 ± 0.11 | 2.40 ± 0.23 | 11.11 ± 0.50 | 39.50 ± 0.02 | 42.62 ± 0.30 | 4.33 ± 0.20 |

All results are presented as triplicate mean value ± standard deviation.

Table 2: Elemental and vitamin C compositions of the cashew (mg/100g)

| Cashew Part | Na | K | Ca | P | Fe | vitamin C |
|-------------|---------------|----------------|-------------|--------------|-------------|--------------|
| Apple | 25.33 ± 2.00 | 383.30 ± 10.20 | 1.70 ± 0.42 | 3.39 ± 0.46 | 0.56 ± 0.30 | 45.33 ± 2.10 |
| Nut | 108.06 ± 4.30 | 437.79 ± 12.04 | 4.90 ± 1.30 | 10.44 ± 0.03 | 1.33 ± 1.30 | 9.80 ± 1.01 |

All results are presented as triplicate mean value ± standard deviation.

Calcium and phosphorus are found to be concentrated in the nut than in the 'apple'. Calcium and phosphorus containing substances are required by children, pregnant and lactating women for bones and teeth development (Margaret and Vickery, 1997). Phosphorus is also required for biochemical reactions particularly those involving the release of energy (Hassan *et al.*, 2005). Human adult requires about 0.5g of calcium and 19g phosphorus per day, but children, pregnant and lactating women required more (Hassan *et al.*, 2005). The nut contains more iron than the 'apple'. Iron is essential for the

synthesis of haemoglobin (Margaret and Vickery, 1997; Abayeh *et al.*, 1988). The recommended dietary allowance (RDA) requirement for iron is 2-5mg (NRC, 1989). Iron content in the nut meets that requirement.

Table 2.0 shows vitamin C content in the sample. From the results, it is evident that the 'apple' contains large amount of vitamin C with very little in the nut. Vitamin C is essential for healthy gums and normal healing of wounds and broken bones and it is a very good antioxidant. Humans do not synthesize vitamin C and the daily requirement of vitamins C for human adult is about 30mg (Margaret and Vickery, 1997). Ascorbic acid presences enhance iron absorption (Hassan *et al.*, 2005).

CONCLUSION AND RECOMMENDATION

The nut of cashew is more nutritious than the 'apple'. Consumption of the nut is recommended more especially among pregnant, lactating women and children. The 'apple' is also recommended because of its large vitamin C contents. Those that eat the 'apple' and discard the nut should know that they are losing the most valuable, more precious and more nutritious part of the fruit.

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