

## Proximate Analyses of Atama (*Heinsia Crinita*) And Editan (*Lasianthera Africana*)

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**Abstract:** Indigenous vegetables in Akwa Ibom State, Nigeria have been consumed by the people of the region for desire for aroma and taste without finding out their nutritional values. Although researchers have established the fact that vegetables play a vital role in the contribution of essential nutrients to the body which help to maintain a healthy life style and the prevention of diseases. On that note, the proximate compositions: moisture content, total ash, crude fat, crude protein, fibre content and carbohydrate were determined in Atama (*Heinsia crinita*) and Editan (*Lasianthera africana*) using the recommended method of Association of Official Analytical Chemist (AOAC) for Proximate Analysis. The result of the analysis showed that the percentage moisture content, total ash, crude protein, fat, crude fibre and carbohydrate values were  $14.86\% \pm 0.062$ ,  $2.7\% \pm 0.092$ ,  $4.06\% \pm 0.286$ ,  $1.61\% \pm 0.15$ ,  $5.76\% \pm 0.76$  and  $11.03\% \pm 1.17$  respectively for Editan (*Lasianthera africana*) and that of Atama (*Heinsia crinita*) were  $59.41\% \pm 1.64$ ,  $3.71\% \pm 0.40$ ,  $4.68\% \pm 0.18$ ,  $2.23\% \pm 0.26$ ,  $7.02\% \pm 0.43$ ,  $22.97\% \pm 0.16$  respectively. The percentage moisture content for Editan was higher than other parameters followed by carbohydrate, crude fibre, crude protein, total ash and fat content having the least percentage content and that of Atama followed the same trend. The percentage moisture content of *Lasianthera africana* was higher than that of *Heinsia crinita*. The carbohydrate value was higher in *Heinsia crinita* than *Lasianthera africana*. The value of the crude fibre, crude protein, total ash and fat were higher in *Heinsia crinita* than *Lasianthera africana*. The vegetables have nutritional value but the levels vary slightly.

**Keywords:** *Heinsia crinita*, *Lasianthera africana*, Proximate analysis.

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### I. Introduction

Green leafy vegetables play a vital role in the food culture of Nigerians and Africans as a whole [1]. A great variety of nutrients are found in vegetables consumed everyday through leaves, spinach, cabbage, carrot, onions, tomatoes and many others. In fact, vegetables are the cheapest and most available sources of important nutrients and they contributed substantially to protein, mineral salts, vitamins, fibres, essential amino acids and other nutrients which are usually inadequate supply in daily diets [2,3]. In addition, green leafy vegetables are used in the diet of postpartum woman during which time it is claimed that they aid the contraction of the uterus [4]. These vegetables are important commodities for poor households because their prices are relatively affordable compared with other food items. Scarcity of vegetable in the diet is a major cause of vitamin A deficiency, which causes blindness and even death in young children throughout the Arid and semi-Arid areas of Africa [5].

The medicinal value of some of these plants lies in some chemical substances that produce a definite physiological action on the body [6]. The most important features of some fresh vegetables is that they contain the nutritional value of economic importance and they are source of food. [7]. Vegetable is a source of many nutrients including potassium fiber, folate (folic acid) and vitamin A, E, and C. Vegetable is a source of food. Eating a diet rich in vegetables may reduce risk for stroke, cancer, heart disease and type-2-diabetes. Eating vegetable can make weight management easier, according to the centre of disease control and prevention, most produce is low in calories compared to other foods, so filling up on these vegetables can aid in weight loss.

#### 1.2 *Heinsia crinita* and *Lasianthera africana*

*Heinsia crinita* belongs to the family of "*Rubiaceae*" which is locally known as "Atama" leave [8]. It is a shrub with woody stem and branches; it is indigenous to West Africa, especially the southern part of Nigeria. The leave extract is used in the treatment of skin rashes and the leaves for umbilical hernia. The Leave juice is also use in the treatment of various other gastro intestinal disorders [9]. *Lasianthera africana* belongs to the family of "*Icancinaceae*" and it is locally known as "*Editan*" leave [8]. It is a perennial glabrous shrub whose height may reach from 61 – 136cm and is widely distributed in the tropical rain forest [10]. It is ethnovarieties distinguished by their taste, leave colour and ecological distribution. The leave is consumed as vegetable in Southern Nigeria.

Ethnobotanically, *Lasianthera africana* is used as antacid, analgesic, antiulcerogenic, anti-diabetic and anti-malarial [8]. It has been reported to be bacteriostatic and fungicidal anti-diabetic and anti-plasmodia [11,12,13].

Having realized the wide spread usage of these vegetables which are indigenous species in southern part of Nigeria, it becomes necessary to carry out proximate analysis by determining the percentage composition of moisture content, total ash, fat, crude fiber, protein and carbohydrate content and compare the measured parameters of the two leaves.

## II. Materials And Methods

### 2.1. Sample collection sample treatment

Fresh samples of *Heinsia crinita* and *Lasianthera africana* was gotten from a garden in Odoro Ikot which is located in Essien Udim Local Government Area of Akwa Ibom State, Nigeria.

The sample was handpicked and oven dried at a temperature of 105°C for two hours and the dried sample was allowed to cool then ground into fine powder and the ground sample was put into a sample bottle until analysis

### 2.2. Proximate analysis

The quantitative determination of the various parameters including moisture content, total ash, fat, crude protein, crude fiber and carbohydrate were carried out using the recommended method of Association of Official Analytical Chemist (AOAC 1990). Moisture content was determined by the drying 10g of the sample in air oven at 105°C until constant weight was obtained, 16-18hours [14]. In crude protein determination, Nitrogen was determined by the Kjeldahl method and converted to protein by multiplying by a factor of 6.25, and to determine the total carbohydrate, the method based on difference was employed using the equation:

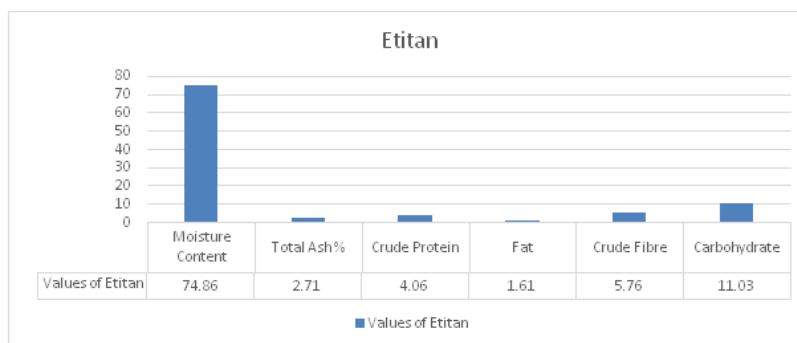
$$\text{Total carbohydrate} = 100 - [\% \text{crude protein} + \% \text{crude fat} + \% \text{crude fibre} + \% \text{crude total ash}] \quad (1)$$

## III. Results And Discussion

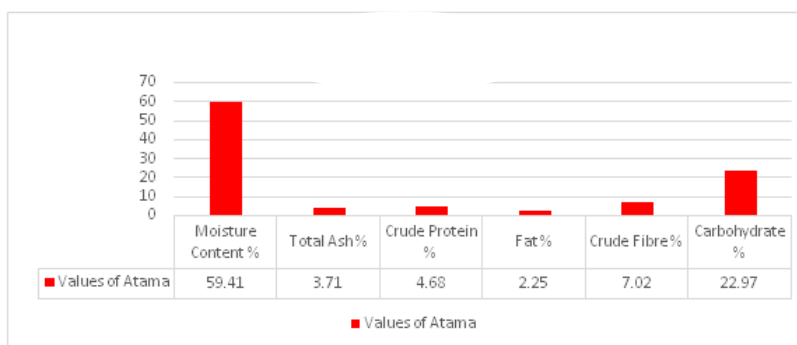
The results of the proximate analysis are show below:

**Table 1:** Proximate analysis of Heinsia Crinita and Lasianthera Africana.

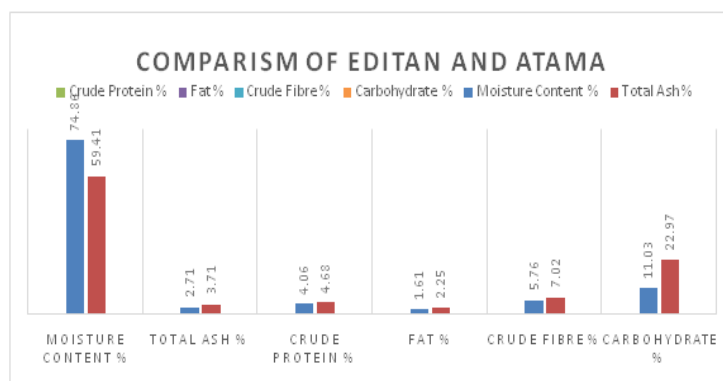
Sample	Moisture content (%)	Total Ash (%)	Crude protein (%)	Fat (%)	Crude fibre (%)	Carbohydrate (%)
Atama	59.41 ± 1.64	3.71 ± 0.40	4.68 ± 0.18	2.22 ± 0.26	7.02 ± 0.43	22.97 ± 0.61
Editan	74.86 ± 0.06	2.71 ± 0.09	4.07 ± 0.28	1.61 ± 0.15	5.76 ± 0.76	11.03 ± 1.17



**figure 1:** Result of Proximate Analysis of Editan (*Lasianthera africana*)



**figure 2:** Result of Proximate Analysis of Atama (*Heinsia crinita*)



**figure 3:** Comparison of Atama (*Heinsia crinita*) and Editan (*Lasianthera africana*)

In comparison, the result showed a high percentage fraction of moisture content in *Lasianthera africana* than *Heinsia crinita* and the percentage total ash, crude protein, fat, crude fiber and carbohydrate was higher in *Heinsia crinita* than *Lasianthera africana*. High moisture content helps in maintaining the protoplasmic contents of the cells [15]. It also supports a greater activity of water-soluble enzymes and co-enzymes needed for metabolic activities of these leafy vegetables [16]. However, high moisture content makes vegetables susceptible to spoilage [15]; microorganisms that cause spoilage are known to thrive in foods containing high moisture content [17]. Ash content in leafy vegetables is reflection of the amount of mineral elements present in the vegetable [18]. High ash content in a leafy vegetable would imply high mineral content, hence very nutritious. But Ukam, (2008) reported that it could be the reverse if it contained toxic metals which also contribute to the ash percentage in leafy vegetables [19]. Therefore, high ash content is not necessarily a conclusive factor regarding the health benefits of vegetables. Protein is an important part of diets that is used in body building and repair of tissues [20]. Dietary fat is a major determinant of palatability of food [21]. It has also been reported that vegetables fats and oil lower blood lipids, hence contribute to reduction in the occurrence of diseases associated with damage of coronary artery [22]. Fiber is known to cleanse the digestive tract, remove potential carcinogens from the body, as well as keep blood sugar levels under control [17].

Carbohydrate provides the body with fuel and energy that is required for daily activities and exercise. The human body needs constant supply of energy to function properly, and lack of carbohydrate in the diet may result in tiredness or fatigue, poor mental function and lack of endurance and stamina.

#### IV. Conclusion

The results obtained show that the two leaves are of important benefits to the body. However, further analysis like the mineral component as well as the level of pollutants and anti-nutrients present in these vegetables may be carried out in order to accurately determine the nutritional value.

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