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Evaluation of the Proximate and Phytochemical Compositions of Leaves of Obscure Morning Glory (*Ipomoea obscura*)

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Abstract:

This study was conducted to evaluate the proximate and phytochemical composition of leaves of Ipomoea obscura. Analysis to determine the proximate and phytochemical composition of leaves of Ipomoea obscura was performed using standard methods. Proximate analysis on leaves of the said vegetable showed that the leaves contain moisture (7.86±0.09%), crude protein (1.82±0.01%), crude fibre (1.96±0.01%), Ash (1.81±0.01%), carbohydrate (85.6±0.09%) and calorie (357.8±0.29 Kcal/100g). However, quantitative phytochemical screening on same leaves showed that sample contains phytate (0.9±0.04g/100g), oxalate (0.7±0.02 g/100g), phenol (10.2±0.01 g/100g), Saponin (17.8±0.01 g/100g), steroid (135.1±0.02 g/100g), tannin (1.7±0.01 g/100g), alkaloid (150.6±0.01 g/100g), flavonoid (6.7±0.01 g/100g) and cynate (13.5±0.02 g/100g). In conclusion, Although, Ipomoea obscura contains appreciable amount of carbohydrate and calorie which may have readily dependable alternatives for the rural populace. Its richness in some medicinally important phytochemicals, such as alkaloid among others should further consolidate its use in traditional medicine for the treatment of certain diseases ravaging mankind.

Keyword: Proximate, phytochemicals; *Ipomoea obscura*, vegetable

1. Introduction

Vegetables are those herbaceous plants whose part or parts are eaten as supporting food or main dishes. They may be aromatic, bitter or tasteless [4, 2]. The role of green leafy vegetable to health and nutrition cannot be overemphasized [6]. The utilization of leafy vegetables is part of Africa's cultural heritage and thus, plays important roles in the customs, traditions and food culture of the African household [4].

Nigeria is endowed with a variety of traditional vegetables and different types are consumed by the various ethnic groups for different reasons [4]. Although vegetables contain a wide array of nutrients, they are not considered the major sources of carbohydrate, and thus cannot take the place of conventional carbohydrate sources in the traditional food system.

The increased awareness of the health benefits associated with phytochemicals and nutrients found in vegetables has directed immense attention to vegetables as a vital component of daily diets [6]. This is evident by the fact that several studies have proven their efficacious abilities in promoting good health both as food and medication [7, 5].

Ipomoea obscura is an underutilized traditional vegetable belonging to the family Convolvulaceae. It is a small climbing vine, with small cordate leaves and acuminate apex, with corolla which is composed of five fully fused petals. This plant is actively used as an antioxidant [9]. The leaves are mucilaginous, with a pleasant smell and are cooked and eaten as a vegetable or added to soup.

Although research efforts have been a viable source of information on plants, their potentials as foods, medication, their acceptability and consumption, many wild species have received little or no scientific attention to date. This has consequently undermined knowledge of their potentials as food and drugs with attendant consequence of under utilization. *Ipomoea obscura* is one of the numerous indigenous wild vegetables that has received little scientific attention and thus has been abandoned over the years by potential consumers. Research efforts to unveil the phytochemical and food values inherent in this neglected specie will enhance its acceptability and consumption both as a source of therapeutic substances and food especially among the rural populace.

2. Collection and preparation of plant Sample

Mature green leaves of *Ipomoea obscura* were harvested from the surrounding of a public pond located in Amasiri in Afikpo North Local Government Area of Ebonyi State, South East Nigeria in the month of May. The leaves which were authenticated at the herbarium unit of the department of forestry, Micheal Okpara University of Agriculture Umudike (MOUUAU) Abia State and South East Nigeria were conveyed to the laboratory in a clean polythene bag. The leaves were thoroughly washed with clean tap water, spread on a clean flat surface for 5 days to be shade dried. They were pulverized into fine powder before being stored in an airtight container prior to analysis.

3. Determination of Proximate and Phytochemical composition of plant sample

Phytochemical composition was determined by the methods as described by Trease and Evans [10]. Proximate composition was determined by the methods described by AOAC [1]

4. Result and Discussion

The rate of consumption of wild traditional or indigenous vegetables such as *Ipomoea obscura* in most communities within the South-Eastern part of Nigeria has been low owing to a popularly held belief that widely consumed vegetables are more important than the wild species. Results on the proximate analysis of the leaves of *Ipomoea obscura* displayed on **table 1** show the values for crude protein, crude fibre and ash to be 1.82 ± 0.01 , 1.96 ± 0.01 and 1.81 ± 0.01 respectively. Carbohydrate content and energy values of leaves of *Ipomoea obscura* are 85.6 ± 0.09 and 357.8 ± 0.29 respectively. These results are consistent with the findings of Essiett and Ukpong [3], which show that the stems of members of the Ipomoea Family *Ipomoea involucreta*, *Ipomoea triloba* and *Ipomoea batatas* contain appreciable amount of carbohydrate and calorie. Results on the phytochemical composition of leaves of *Ipomoea obscura* on **table 2** show that leaves contain oxalate, saponin, tannin, alkaloid, flavonoid and phytate with alkaloid 150.6 ± 0.01 being higher in value than every other, phytochemical present. This is evident by the fact that leaves of *Ipomoea obscura* have been employed in the treatment of diseases of some disease conditions such as inflammation and diarrheal disorder among others [8].

Proximate	Composition
Moisture content (%)	7.9 ± 0.09
Crude protein (%)	1.8 ± 0.01
Crude fibre (%)	2.0 ± 0.01
Ash (%)	1.8 ± 0.01
Carbohydrate (%)	85.6 ± 0.09
Calorie (Kcal/100g)	357.8 ± 0.29

Values are mean \pm standard deviation of three determinations.

Table 1: Proximate Composition of Leaves of *Ipomoea obscura*

Phytochemical	Composition
Phytate	0.9 ± 0.04
Oxalate	0.7 ± 0.02
Saponin	17.8 ± 0.01
Tanin	1.7 ± 0.01
Alkaloids	150.6 ± 0.01
Flavonoids	6.7 ± 0.01

Values are mean \pm standard deviation of three determinations

Table 2: Phytochemical Composition of Leaves of *Ipomoea obscura* (g/100g)

5. Conclusion

Although, *Ipomoea obscura* contains appreciable amounts of carbohydrate and calorie which have dependable alternatives in the rural communities, its richness in some medicinally important phytochemicals, should further consolidate its use in traditional medicine in the treatment of certain diseases ravaging mankind.

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