

# EVALUATION OF MINERAL AND VITAMIN COMPOSITIONS OF LEAF OF OBSCURE MORNING GLORY (*Ipomoea obscura*)

<sup>1</sup>\*Ewa, O, <sup>2</sup>Amah, A.K, <sup>3</sup>Ejiofor, D.C, <sup>4</sup>Opara, J.K, <sup>5</sup>Orabuike J.C

<sup>1</sup>Department of Medical Biochemistry Gregory University Uturu Abia state

<sup>2</sup>Department of Human Physiology, Imo State University, Owerri

<sup>3</sup>Department of Human Physiology, Imo State University, Owerri

<sup>4</sup>Department of Anatomy, Gregory University Uturu, Abia State

<sup>5</sup>Department of Food Technology, Federal Polytechnic Kaura Namoda

\*Corresponding Author: Ewa, O Email: [ewahalfred@gmail.com](mailto:ewahalfred@gmail.com)

---

**Abstract:** The study was conducted to evaluate the vitamin and mineral compositions of leaves of a wild and neglected vegetable *Ipomoea obscura*. Vitamins and minerals were determined using standard methods. Vitamins evaluated included Vitamin A, B1, B2, B3 and C. Results obtained thus, reported (15.7±0.01mg/100g), (10.4±0.01mg/100g), (15.2±0.02mg/100g), (7.3±0.02mg/100g) and (128.5±0.01mg/100g) respectively. Result further revealed leaves of *Ipomoea obscura* to contain Ca(26.4±0.01mg/100g), Mg(2.3±0.02mg/100g), P(5.2±0.01mg/100g), K(180.4±0.04mg/100g), Fe(10.0±0.01mg/100g), and Zn(0.1±0.01mg/100g), Na(2.9±0.06mg/100g), Cu(0.7±0.01mg/100g), Mn (0.01±0.01mg/100g). In conclusion, reported vitamins were present in quantities higher than those reported in literatures for a widely consumed and respected vegetable *Telfairia occidentalis*. This was contrary to the amounts of minerals present in the leaves of *Ipomoea obscura*. Thus, on the basis of its richness in the reported vitamins, it becomes imperative to actively embrace its consumption in order to make up for the deficiency in such nutrients that characterize the popularly consumed vegetables *Telferia occidentalis*.

**Keywords:** Vegetable, Minerals, Vitamins, *Ipomoea obscura*.

---

## 1. INTRODUCTION

*Ipomoea obscura* (obscure morning glory) is an indigenous vegetable which belongs 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. Many medicinal properties of *Ipomoea obscura* have been identified. It is used in the treatment of inflammatory and diarrheal disorders [1]. This plant is actively used as an antioxidant [2]. The decoction of the dried leaves and stems of this plant is traditionally used in the treatment of dysentery [3]. Although its leaves are cooked and eaten as vegetable or added to soup, its rate of consumption among the populace remains extremely low probably owing to a belief system that the widely consumed vegetables are more nutritionally viable than the wild and poorly known species.

Vitamins are organic molecules required in trace amounts for normal body functions, regulation of cellular activities, growth and development [4]. Minerals which comprises of micro and macro elements play diverse roles as enzyme cofactors, component of the red blood cell and electrolytes etc. Vitamins and minerals are essential components of vegetables and have contributed to their ability to protect the body against certain diseases.

Although research efforts have been a viable source of nutritional information about most foods, their acceptability and consumption, many food species have received little scientific attention to date which has consequently undermined consumers and farmers' knowledge of their nutritional potentials among other vital information on such foods with the attendant consequence of under utilization. *Ipomea obscura* is one of the numerous indigenous vegetables which have received little or no scientific attention and has been abandoned over the years by consumers. Thus, research efforts to reveal certain vital components of this neglected wild vegetable will enhance its acceptability and consumption especially among the rural poor.

## 2. MATERIALS AND METHODS

### 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 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.

### Determination of vitamins:

Vitamins; A, B1, B2, B3, and C were determined by the method of AOAC [5].

### Mineral Determination of Leaf Samples:

Mineral compositions of leaves of *Ipomoea obscura* was determined using Atomic Absorption spectrophotometer according to the methods of AOAC [6]. Laboratory procedures for the preparation and determination of mineral contents of leaf sample were used as outlined by Shah *et al.* [7].

## 3. RESULTS AND DISCUSSION

### Mineral and vitamin composition of leaves of *Ipomoea obscura*:

Results shown on **table 1** reveal the mineral composition of leaves of *Ipomoea obscura* are as follow; Ca (26.4±0.01), Mg (2.3±0.02), and P (5.2±0.01) K (180.4±0.04) Zn (0.1±0.01) Na (2.9±0.06), Cu (0.7±0.01), Mn (0.0±0.01) and Fe (10.0±0.01). Potassium was reportedly higher than every other mineral evaluated in the said leaf. However, extremely low value was reported for zinc while manganese was absolutely absent. Analysis to determine the vitamin composition of leaves of *Ipomoea obscura* showed that leaves contain amounts vitamin A, B1, B2, B3, and C as stated thus; 15.7±0.01, 10.4±0.01, 15.2±0.02, 7.3±0.02 and 128.5±0.01 respectively.

The leaves of *Ipomoea obscura* are mucilaginous, with a pleasant smell. They are rarely cooked and consumed as vegetable especially by the rural poor in some communities in the South Eastern Nigeria. *Telfairia occidentalis* commonly known as fluted gourd or fluted pumpkin is a nutritious vegetable widely consumed and respected especially in the South Eastern Nigeria [8]. The amount of vitamins present in leaves of *Ipomoea obscura* was found to be higher than those reported for *Telfairia occidentalis* by Uraku *et al* [9] a fact consistent with the findings of Igwenyi *et al* [10] which showed that *Ipomoea aquatica* belonging to same family as the *Ipomoea obscura* contains higher amount of vitamins than those reported for *Telfairia occidentalis*.

Results on the mineral composition of *Ipomoea obscura* are displayed on **table 2** and are comparatively lower than the values obtained for the leaves of *Telfairia occidentalis* according to Usunobun and Egharebva [11]. This result is consistent with the finding of Ishida *et al* [12] which showed that the mineral content of the leaves of *Ipomea batata* which belongs to same family as the *Ipomoea obscura* were comparatively lower than those of *Telfairia occidentalis*.

**International Journal of Novel Research in Life Sciences**

 Vol. 5, Issue 3, pp: (8-11), Month: May - June 2018, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)
**Table 1: Mineral Compositions of Leaves of *Ipomoea obscura* (mg/100g)**

Minerals	Composition
Ca	26.4 ± 0.01
Mg	2.3 ± 0.02
P	5.2 ± 0.01
K	180.4 ± 0.04
Fe	10.0 ± 0.01
Zn	0.1±0.01
Na	2.9 ± 0.06
Cu	0.7± 0.01
Mn	0.01 ± 0.01
<b>Values mean ± standard deviation of three determinations</b>	

**Table 2: Vitamin Compositions of Leaves of *Ipomoea obscura* (mg/100g)**

Vitamins	Compositions
A	15.7±0.01
B1	10.4±0.01
B2	15.2±0.02
B3	7.3±0.02
C	128±0.01
<b>Values mean ± standard deviation of three determinations</b>	

#### 4. CONCLUSION

Vitamins and minerals are essential components of vegetables and have contributed to its ability to protect the body against certain diseases. Although the mineral content of the leaves of *Ipomoea obscura* is poor, its richness in vitamins A, B1, B2, B3 and C makes it an ideal dietary regimen for the rural poor who cannot afford the exotic and expensive vegetables which may even lack some or most of the nutrients present in the local, wild and neglected species such as *Ipomoea obscura*.

#### REFERENCES

- [1] Sekhar S D, Ashokumar, BS, Dhanasekaran S, Suresh B(2007) Anti-inflammatory and Anti diarrhoeal Activities of Ethanol Extract of *Ipomea obscura*. Pharmacologyonline1: 424-435.
- [2] Srinivasan R, Chandrasekar MJN, Nanjan MJ and Suresh B (2008) Free radical scavenging activity of *Ipomoea obscura* (L) Ker-Gawl. Journal of Natural Remedies 7(2): 184-8.
- [3] Arvind JM, Ravi A, Alka Ci, and Prakash Z(2010)Preliminary Phytochemical screening of *Ipomoea obscura* (L) -A hepatoprotective medicinal plant. International Journal of Pharm Tech Research 2(4): 2307-2312.
- [4] Wojciech JF, Robert LS, Bennhard B and Stanley EP (2009) Postharvest Handling; A systems Approach. (2<sup>nd</sup> Ed). Elsevier INC. Academic Press
- [5] AOAC (2000) Association of Official Analytical Chemists. (17<sup>th</sup> edn). Washington DC, Arlington, Virginia, USA.
- [6] AOAC (2004) Official methods of analysis of Association of Official Analytical Chemists (15<sup>th</sup> Edn) Washington D.C. USA
- [7] Shah AQ, Kazi TG, Arain M.B, Jamali MK, Afridi HI, Jalbani N(2009) Comparison of electrothermal and hydride generation atomic absorption spectrometry for the determination of total arsenic in broiler chicken. Food Chem. 113:1351-5
- [8] Yahaya A I, Suleiman I, Rahmatallah A A and Bello U B (2014) Nutrient content of selected edible leafy vegetable. American Journal of Applied Chemistry. 2(3): 42-45.

**International Journal of Novel Research in Life Sciences**Vol. 5, Issue 3, pp: (8-11), Month: May - June 2018, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

- [9] Uraku AJ, Oko AO, Onuigbo HN, Edwin N, Orji OU, Ezeali C et al. (2015) Determination of Some Vitamins in three Selected African Leafy Vegetables. *International Journal of Pharmacy and Medical Sciences*.5 (1): 22-26.
- [10] Igwenyi I O, Offor C E, Ajah D A, Nwankwo O C, Ukaomah, J. I. et al. (2011). Chemical Compositions of *Ipomoea aquatica*. *International Journal of Pharma and Bio Sciences*. 2(4): 593-596.
- [11] Usunobun U and Egharebva E (2014) Phytochemical Analysis, proximate and Mineral composition and invitro antioxidant activities of *Teliferia occidentalis* aqueous leaves extract. *Journal of Basic and Applied Science*1(1):74-87.
- [12] Ishida H, Suzuno H, Sugiyama N, Innami S and Todokoro T. (2000). National evaluation of chemical component of leavesstalks and stem of sweet potatoes. *Ipomea batatas* *poir*. *FoodChem*. 68: 359-367.