



Research Article

Ethnobotany and Conservation of Indigenous Vegetables in Ekiti State, Nigeria

¹Damilola Grace Ogunrotimi, ¹Joshua Kayode and ²Adewale Femi Odesola

¹Department of Plant Science and Biotechnology, Faculty of Science, Ekiti State University, Ado Ekiti, Nigeria

²Department of Biology, Faculty of Applied Science, Kola Daisi University, Ibadan, Nigeria

Abstract

Background and Objective: In recent times, traditional knowledge about indigenous vegetables among the younger generation is very minimal and their consumption in homes has declined, hence their underutilization. An ethnobotanical inventory of indigenous vegetables was carried out in towns and villages drawn from the three different senatorial districts in Ekiti State (Ekiti North, Ekiti Central and Ekiti South) to obtain information about the people's knowledge and use of indigenous vegetables. **Materials and Methods:** Informal interviews and semi-structured questionnaires were distributed to residents with adequate information about vegetable species. **Results:** About 23 indigenous vegetable species belonging to 11 different families stated to be of great nutritional and medicinal values were identified and documented during the survey. Most the vegetables were from the families Solanaceae, Asteraceae and Amaranthaceae. Leaves and stems of the vegetables were majorly utilized, informants stated that sun-drying was the mode of preservation; however they preferred to consume the vegetables fresh. About half of the vegetables were said to be cultivated by only a few farmers while others were collected from the wild. Their habits range from herbs, shrubs and climbers to trees. A relatively high proportion of the species were said to be available during both the dry and rainy seasons while a few were only available during the rainy season. **Conclusion:** There is, therefore; a need for the proper conservation and domestication of these vegetables so as to ensure sustainability, combat malnutrition and improve food security.

Key words: Conservation, ethnobotanical inventory, indigenous vegetables, Solanaceae, asteraceae and amaranthaceae

Citation: Damilola Grace Ogunrotimi, Joshua Kayode and Adewale Femi Odesola, 2018. Ethnobotany and conservation of indigenous vegetables in Ekiti State, Nigeria. Singapore J. Sci. Res., CC: CC-CC.

Corresponding Author: Damilola Grace Ogunrotimi, Department of Plant Science and Biotechnology, Faculty of Science, Ekiti State University, Ado Ekiti, Nigeria Tel: +234(0)8064066205

Copyright: © 2018 Damilola Grace Ogunrotimi *et al.* This is an open access article distributed under the terms of the creative commons attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Competing Interest: The authors have declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Ethnobotany is a term used to describe the scientific study of the relationship that exists between people and plants. It refers to how human beings make use of plants for their benefits either as food or medicine. Vegetables are a class of food usually eaten either in the form of leaves, seeds, fruits, flowers or pods. Indigenous vegetables refer to vegetable species which are peculiar to a particular region or locality. They constitute an important part of the daily diets which are consumed with relish along with other staple diets such as carbohydrates. Vegetables are an important source for the supplementation of micronutrients especially in vegetarian diets¹. Leafy vegetables also represent a veritable natural pharmacy of minerals, vitamins and phytochemicals². Nnamani *et al.*³ stated that some of these vegetables do not require formal cultivation as they easily grow in the wild and are readily available in the field, in addition, a large number of them are resilient, adaptive and tolerate adverse climates⁴.

In recent times, the consumption of wild vegetables is gradually declining in some parts of Nigeria and Africa at large. This is due to the opinion of people who still regard them as weeds or due to over-reliance on exotic varieties and people's perception of the vegetables as low status food⁵. Among the indigenous people of Ekiti State and Nigeria as a nation, knowledge about vegetable species has been transmitted from one generation to the next orally, without adequate documentation and such practices are still prevalent among rural and tribal communities in many parts of the world^{6,7}. Information about the different species available, the method of propagation, mode of preparation and preservation may be lost if the information are not properly documented. Lack of awareness and popularization of technologies for their proper utilization remain the major factors responsible for the underutilization of these vegetables despite that they can be raised at very minimal costs even on soils with low fertility⁸.

Gradual loss of genetic diversity may deprive future generations of these useful resources which are important for the enhancement of their health and wellbeing⁹. Several areas where vegetables have been cultivated on a large scale are gradually being eroded as a result of natural and anthropogenic factors¹⁰. There is therefore a need to conserve these genetic resources so as to ensure their continuous availability in years to come. Survey of rural and tribal areas for documentation of indigenous vegetables is the first step in prescribing suitable strategies for the conservation and sustainable utilization of these resources¹¹. The aim of this study was therefore to identify and document the

ethnobotanical knowledge on indigenous vegetables of Ekiti State, Nigeria, for further studies leading to their conservation and sustainable utilization in order to overcome malnutrition, fight against hunger and improve human wellbeing.

MATERIALS AND METHODS

Ekiti State is located between longitudes 4°33' and 5°55' East of the Greenwich meridian and latitudes 7°15' and 8°5' North of the Equator in geographical limits in 5,887.890 km² land area at an average elevation of 373 m¹². According to the 2010 census, the population of Ekiti State is about 2,384,212. The state has an adult literacy rate of 79.5% with a major proportion of its rural dwellers predominantly engaged in farming activities.

Ethnobotanical survey and collection of data: Survey of some towns and rural areas of Ekiti state was carried out between April-June, 2018 in the three senatorial districts in Ekiti State namely Ekiti Central, Ekiti North and Ekiti South. Two Local Government Areas (LGAs) were selected from each senatorial district and four rural areas purposively selected from each LGA, making a total of 6 LGAs and 24 rural villages and towns sampled in this study. A total of 120 (78 females and 42 males) individuals, aged between 35 and 93 years was selected and interviewed using a semi-structured questionnaire matrix.

Information regarding the local names of plant species, habits, parts used, domestication status, availability status in the wild, method of collection, processing and preparation were carefully obtained and recorded. The plants were identified by their local names during the field surveys while proper identification and scientific nomenclature of the plants were later carried out after collection. Voucher specimens were later deposited at the Herbarium of the Department of Plant Science and Biotechnology, Ekiti State University, Ado-Ekiti, Nigeria, for future references.

Data analysis: Data were analyzed and summarized by using Microsoft Excel and appropriate statistics to determine frequencies of citations in order to identify the most commonly used indigenous vegetable in the study area. This was done according to the method of Kumar¹¹. Proportions of different variables like plant families, growth forms, availability and plant part used were determined and presented in a tabular form. Values were expressed in percentages.

The percentage frequency of citation was calculated as follows:

$$\text{Frequency of citation (\%)} = \frac{\text{No. of times a species was cited}}{\text{Total no. of species recorded}} \times 100$$

RESULTS

A total of 23 indigenous vegetable plants belonging to 11 different families were collected and identified. The scientific,

local and English names of the vegetables were also recorded (Table 1). The respondents stated that the major parts of the vegetables which were consumed are the stems and leaves (Table 2), although some parts such as fruits, flowers and roots were used in herbal and folkloric medicine. The vegetables are usually propagated either through seeds or vegetatively by stem cuttings, nevertheless a proportion of the vegetables

Table 1: Indigenous vegetables in Ekiti State, Nigeria

Scientific name	Family	Local name	English name	Voucher number	Habit
<i>Amaranthus viridis</i> L.	Amaranthaceae	Arowojeja	Green amaranth	UHAE2018059	Herb
<i>Amaranthus dubius</i> L.	Amaranthaceae	Tete atetedaye	Red amaranth	UHAE2018060	Herb
<i>Abelmoschus esculentus</i> (L.) Moench	Malvaceae	Ila	Ladies finger	UHAE2018066	Shrub
<i>Basella alba</i> L.	Basellaceae	Amunututu/Laali	Malabar spinach	UHAE201863	Climber
<i>Bidens pilosa</i> L.	Asteraceae	Agaranmayan	Black jack	UHAE2018069	Herb
<i>Ceiba petandra</i> (L.) Gaertn	Malvaceae	Egigun	Kapok tree	UHAE2018071	Tree
<i>Celosia argentea</i> L.	Amaranthaceae	Shoko	Lagos spinach	UHAE2018057	Herb
<i>Cnidoscus acotifolius</i> (Mill.) I.M. Johnst.	Euphorbiaceae	Iyana ipaja	Tree spinach	UHAE2018055	Shrub
<i>Corchorus olitotius</i> L.	Tiliaceae	Ewedu	Jute mallow	UHAE2018058	Herb
<i>Crassocephalum cecropioides</i> (Benth.) S. Moore	Asteraceae	Ebobo/Ebire	Fireweed	UHAE2018064	Herb
<i>Cucurbita pepo</i> L.	Cucurbitaceae	Elegede	Pumpkin	UHAE2018067	Climber
<i>Launaea taraxacifolia</i> (Willd.) Amin	Asteraceae	Yanrin	Wild lettuce	UHAE2018054	Herb
<i>Manihot esculentus</i> Crantz	Euphorbiaceae	Odo ege	Cassava	UHAE2018070	Shrub
<i>Myrianthus arboreus</i> P. Beauv	Urticaceae	Ewe ade	Giant yellow mulberry	UHAE2018073	Tree
<i>Ocimum gratissimum</i> L.	Tiliaceae	Efinrin	African basil	UHAE2018072	Shrub
<i>Senecio biafrae</i> Olive and Hiern	Solanaceae	Rorowo	English spinach	UHAE2018068	Climber
<i>Sesamum radiatum</i> Schum and Thonn	Pedaliaceae	Ekú	Vegetable sesame	UHAE2018065	Herb
<i>Solanum scabrum</i> Mill.	Solanaceae	Ogunmo	Garden huckleberry	UHAE2018053	Herb
<i>Solanum macrocarpon</i> L.	Solanaceae	Igbagba	African eggplant	UHAE2018051	Herb
<i>Solanum nigrum</i> L.	Solanaceae	Odu	Black nightshade	UHAE2018052	Herb
<i>Talinum triangulare</i> (Jacq.) Willd.	Portulacaceae	Gbure	Water leaf	UHAE2018061	Herb
<i>Telfaria occidentalis</i> Hook. F.	Cucurbitaceae	Apiroko/Ugu	Fluted pumpkin	UHAE2018062	Climber
<i>Vernonia amygdalina</i> Del.	Asteraceae	Ewuro	Bitter leaf	UHAE2018056	Shrub

Table 2: Parts used, availability, method of propagation and domestication status of indigenous vegetables in Ekiti State

Scientific name	Parts used	Availability	Method of propagation	Domestication status
<i>Amaranthus viridis</i> L.	Leaf and stem	EA	S	C
<i>Amaranthus dubius</i> L.	Leaf and stem	EA	n/a	W
<i>Abelmoschus esculentus</i> (L.) Moench	Leaf and fruit	EA	S	C
<i>Basella alba</i> L.	Leaf	EA	V	C
<i>Bidens pilosa</i> L.	Leaf	D	n/a	W
<i>Ceiba petandra</i> (L.) Gaertn	Young leaf	VD	n/a	W
<i>Celosia argentea</i> L.	Leaf and stem	EA	S	C
<i>Cnidoscus acotifolius</i> (Mill.) I.M. Johnst.	Leaf	D	n/a	W
<i>Corchorus olitotius</i> L.	Leaf	EA	S	C
<i>Crassocephalum cecropioides</i> (Benth.) S. Moore	Leaf and stem	D	n/a	W
<i>Cucurbita pepo</i> L.	Leaf	EA	S	C
<i>Launaea taraxacifolia</i> (Willd.) Amin	Leaf and stem	D	n/a	W
<i>Manihot esculentus</i> Crantz	Young leaf	EA	V	C
<i>Myrianthus arboreus</i> P. Beauv	Leaf	VD	n/a	W
<i>Ocimum gratissimum</i> L.	Leaf	EA	S	C
<i>Senecio biafrae</i> Olive and Hiern	Leaf and stem	EA	V	C
<i>Sesamum radiatum</i> Schum and Thonn	Leaf	D	n/a	W
<i>Solanum scabrum</i> Mill.	Leaf and stem	D	n/a	W
<i>Solanum macrocarpon</i> L.	Leaf and stem	D	S	C
<i>Solanum nigrum</i> L.	Leaf and stem	EA	n/a	W
<i>Talinum triangulare</i> (Jacq.) Willd.	Leaf and stem	EA	n/a	W
<i>Telfaria occidentalis</i> Hook. F.	Leaf and stem	EA	S	C
<i>Vernonia amygdalina</i> Del.	Leaf	EA	V	C

EA: Easily available, D: Difficult, VD: Very difficult, S: Seed, V: Vegetative means, n/a: Not applicable, W: Wild and C: Cultivated

Table 3: Seasonal availability and medicinal uses of indigenous vegetables in Ekiti State

Scientific name	Seasonality		Medicinal uses
	Rainy	Dry	
<i>Amaranthus viridis</i> L.	+	+	Leaves are eaten to improve digestion
<i>Amaranthus dubius</i> L.	+	-	Leaves are eaten to improve digestion
<i>Abelmoschus esculentus</i> (L.) Moench	+	+	n/a
<i>Basella alba</i> L.	+	-	Leaves are eaten to increase blood supply
<i>Bidens pilosa</i> L.	+	-	Leaves are eaten to treat stomach ailments
<i>Ceiba petandra</i> (L.) Gaertn	+	+	n/a
<i>Celosia argentea</i> L.	+	-	Leaves are eaten to increase blood supply
<i>Cnidioscus acotifolius</i> (Mill.) I.M. Johnst.	+	-	Leaves are used to treat hypertension
<i>Corchorus olitorius</i> L.	+	+	Leaves are used to ease delivery of pregnant women
<i>Crassocephalum cecropioides</i> (Benth.) S. Moore	+	-	Leaves are used to treat headache
<i>Cucurbita pepo</i> L.	+	-	n/a
<i>Launaea taraxacifolia</i> (Willd.) Amin	+	-	Leaves are eaten to improve digestion
<i>Manihot esculentus</i> Crantz	+	+	n/a
<i>Myrianthus arboreus</i> P. Beauv	+	+	n/a
<i>Ocimum gratissimum</i> L.	+	+	Leaves are used to treat pile
<i>Senecio biafrae</i> Olive and Hiern	+	+	Leaves are eaten to improve blood supply
<i>Sesamum radiatum</i> Schum and Thonn	+	-	Leaves are used as laxative
<i>Solanum scabrum</i> Mill.	+	-	Leaves are used as purgative
<i>Solanum macrocarpon</i> L.	+	-	Leaves are eaten to purify blood
<i>Solanum nigrum</i> L.	+	-	Leaves are eaten to improve blood supply
<i>Talinum triangulare</i> (Jacq.) Willd.	+	+	Leaves are eaten to help ease bowel decongestion and supply blood
<i>Telfaria occidentalis</i> Hook. F.	+	+	Leaves are used to increase blood supply
<i>Vernonia amygdalina</i> Del.	+	+	Leaves are used to treat skin rashes, pile and to purify blood

+: Represents Present and -: Represents absence

Table 4: Summary of information on domestication status, availability, habit and method of propagation of the indigenous vegetables studied

Parameters	Total no. studied (%)
Domestication status	
Cultivated	52.17
Wild	47.83
Availability	
Easily available	60.87
Difficult	30.43
Very difficult	8.70
Method of propagation	
Seed	34.78
Vegetative means	17.39
n/a	47.83
Habit	
Herb	52.17
Shrub	21.74
Climber	17.39
Tree	8.70

grew on their own in the wild without cultivation (Table 2). In addition, most of the vegetables were identified by the respondents to possess medicinal values (Table 3). About 52.17% were cultivated species while 47.83% were collected from the wild. Out of the species studied, 52.17% of the indigenous vegetables were herbaceous plants, shrubs (21.74%), climbers (17.39%) and trees (8.70%) (Table 4).

Informants stated that sun-drying was the mode of preservation of the vegetable when not consumed at once, but that they preferred to consume the vegetables fresh. Of all the vegetables identified, *Amaranthus viridis* and *Talinum triangulare* were the most frequently consumed vegetable vegetables were mostly abundant and cheaper during the rainy season (Table 3).

Only 60.87% of the indigenous vegetables identified in the study were easily available, 30.43% were available with difficulty and 8.70% very difficult to access except in the forest (Table 4). The respondents stated that the most of the vegetables especially the *Solanum* spp. were presently underutilized due to the fact that they were scarce and only cultivated along ridges by a few farmers who possess special interest in them. A few respondents stated that vegetable species such as *Solanum macrocarpon*, *Celosia argentea*, *Corchorus olitorius*, *Telfaria occidentalis* and *Basella alba* were sometimes cultivated in home gardens for easy access. Species from the families Solanaceae and Asteraceae make up 36.36% each, Amaranthaceae (27.27%), Cucurbitaceae, Euphorbiaceae, Tiliaceae and Malvaceae make up 18.18% each, while the remaining 4 families each made up 9.09% of the total number of vegetables reported in this study (Table 5).

Table 5: Vegetable species and frequency of occurrence

Families	Frequency of occurrence	Percentage
Asteraceae	4	36.36
Solanaceae	4	36.36
Amaranthaceae	3	27.27
Tiliaceae	2	18.18
Cucurbitaceae	2	18.18
Euphorbiaceae	2	18.18
Malvaceae	2	18.18
Basellaceae	1	9.09
Pedaliaceae	1	9.09
Portulacaceae	1	9.09
Urticaceae	1	9.09

DISCUSSION

The total number of indigenous vegetable species recorded in this study was slightly lower than that which was reported by some authors in several regions in Nigeria. Arowosegbe *et al.*¹³ and Nnamani *et al.*³ recorded 25 indigenous vegetables species growing in some communities in Ekiti and Ebonyi states respectively. The reason for the minimal difference in the number of vegetables recorded when compared with the present study may be due to the fact that Nnamani *et al.*³ considered plant species used as food spices alongside vegetables in the study area. In addition, Arowosegbe *et al.*¹³ also considered about 16 local government areas in their study while the present study purposively selected 6 local government areas based on the senatorial districts of the state.

Field observation revealed that the aged respondents were more familiar with the ethnobotanical knowledge of the identified species. This tends to suggested that the younger generation possess minimal knowledge of indigenous vegetables except for the popular Amaranth species. This was in agreement with the findings of Bvenura and Afolayan¹⁴ who stated that Amaranth species were very popular and abundant in South Africa. It was therefore necessary to educate the younger generation about the nutritional and medicinal values of these indigenous vegetables as this will help to facilitate their incorporation into their daily diets. A proper documentation of adequate information on indigenous vegetables will also prevent the loss of knowledge about them.

The study also revealed that vegetables were mostly consumed fresh but sun-drying is employed as a major method of preservation. Also findings from this study showed that the vegetables are not only consumed for their nutritional values but also for their beneficial health effects. Previous study by Ayodele¹⁵ documented 28 medicinally important leafy vegetables in southwest Nigeria. Similarly, Oselebe *et al.*¹⁶, Bvenura and Afolayan¹⁴ as well as Arowosegbe *et al.*¹⁷ asserted that rural dwellers consume

vegetables not only to complement their starchy diets but also for their important health benefits. Respondents attested to the fact that they usually feel stronger and healthier after consuming vegetables on a constant basis. Vegetables are known possess antioxidant and free radical scavenging properties which help to fight degenerative diseases in the body. It is therefore important to note that the exploitative use of traditional leafy vegetable for food and medicine coupled with diverse agronomic practices and climatic changes call for their sustainable management and genetic conservation³. The indigenous vegetables have also been stated to provide income-generating opportunities¹⁸ especially to women farmers in rural areas.

The result of this study revealed that 47.83% of the indigenous vegetables identified were obtained from the wild. This habitat is being threatened by developmental and farming activities as agriculture is the major occupation among the rural dwellers of Ekiti State. Majority of the indigenous vegetables reported in this study are herbaceous plants that can be easily domesticated and cultivated in home gardens and farms so as to enhance their sustainable supply in the study area. Previous assertion by Della *et al.*¹⁹ revealed that the more closely related indigenous people are to their land, the higher the degree of usage of their natural plant resources.

Vegetables species such as *Solanum* spp., *Mryrianthus arboreus*, *Ceiba petandra*, *Cnidoscus aconitifolius* and *Launea taraxacifolia* were not easily available in the study area therefore efforts must be made to conserve them to ensure that these genetic resources are not eroded. Previous study by Ayodele⁹ suggested that a working cooperation among taxonomists, conservationists and geneticists will produce maximum results for biodiversity conservation. Heywood²⁰ also affirmed that conservation of any plant species is better addressed at its generic level so as to properly understand its biological diversity.

CONCLUSION

The present study therefore advocates the need for the development of gene banks in the study area and also calls for more research on the domestication potentials, nutritional and medicinal values of underutilized indigenous vegetables.

SIGNIFICANCE STATEMENT

The research is targeted at identifying the underutilized indigenous vegetables in the state and to further evaluate their domestication potentials in future research.

This study discovered the local people especially elderly ones rate indigenous vegetable as being highly nutritious and medicinal in nature. They stated that they are mostly beneficial to the body when grown without additives such as fertilizer and herbicides. However, they do not consider their cultivation as a means of generating high income hence are only cultivated alongside tubers and other cash crops and not singly on a large scale. This attitude has reduced the availability of varieties of vegetable species available to the people since only one or two popular species are mostly consumed. This study will help the researcher to uncover the critical areas that needs intervention such as the reasons behind the underutilization of majority of the vegetable species that many researchers were not able to explore. Thus a new theory on conservation techniques and sensitization on the importance of vegetables in diets especially among the younger generation may be arrived at.

REFERENCES

1. Odhav, B., S. Beekrum, U.S. Akula and H. Baijnath, 2007. Preliminary assessment of nutritional value of traditional leafy vegetables in KwaZulu-Natal, South Africa. *J. Food Compos. Anal.*, 20: 430-435.
2. George, P.M., 2003. *Encyclopedia of Foods*. Vol. 1., Humane Press, Washington, pp: 526.
3. Nnamani, C.V., H.O. Oselebe and E.O. Okporie, 2017. Aspect of ethnobotany of traditional leafy vegetables utilized as human food in rural tropical communities. *Anim. Res. Int.*, 7: 1110-1115.
4. Raghuvanshi, R.S., R. Singh and R. Singh, 2001. Nutritional composition of uncommon foods and their role in meeting micronutrient needs. *Int. J. Food Sci. Nutr.*, 52: 331-335.
5. Vorster, H.J. and W.S.J. van Rensburg, 2005. Traditional vegetables as a source of food in South Africa: Some experiences. *Afr. Crop Sci. Conf. Proc.*, 7: 669-671.
6. Reddy, K.N., C. Pattanaik, C.S. Reddy and V.S. Raju, 2007. Traditional knowledge on wild food plants in Andhra Pradesh. *Indian J. Tradit. Knowl.*, 6: 223-229.
7. Misra, S., R.K. Maikhuri, C.P. Kala, K.S. Rao and K.G. Saxena, 2008. Wild leafy vegetables: A study of their subsistence dietetic support to the inhabitants of Nanda Devi Biosphere Reserve, India. *J. Ethnobiol. Ethnomed.*, Vol. 4. 10.1186/1746-4269-4-15
8. Chweya, J.A. and P.B. Eyzaguirre, 1999. *The Biodiversity of Traditional Leafy Vegetables*. International Plant Genetic Resources Institute, Rome, ISBN-13: 978-9290434047, Pages: 182.
9. Ayodele, A.E., 1996. Ethnobotany, Conservation and Sustainable Development. In: *Essential Partnership, the Forest and the People: Proceedings of Workshop on the Rain Forest of South Eastern Nigeria and South Western Cameroon*, Obot, E. and J. Barker (Eds.), Cross-River National Park, Okwango Division, Nigeria, pp: 51-56.
10. Rakesh, K.M., S.R. Kottapalli and G.S. Krishna, 2004. Bioprospecting of wild edibles for rural development in the Central Himalayan mountains of India. *Mount. Res. Dev.*, 24: 110-113.
11. Kumar, A., 2013. Ethnobotanical study of wild vegetables used by rural communities of Kannauj district, Uttar Pradesh, India. *Emir. J. Food Agric.*, 25: 760-766.
12. Kayode, J. A.F. Odesola, M.J. Ayeni and S.B. Awoyemi, 2016. Survey of botanicals used as pesticides by the rural farmers of Ekiti state, Nigeria. *Int. J. Biol. Papers*, 1: 12-17.
13. Arowosegbe, S., M.K. Olanipekun and I.A. Adeloye, 2018. Ethnobotanical survey of indigenous leafy vegetables consumed in Ekiti state, Nigeria. *Eur. J. Biol. Med. Sci. Res.*, 6: 7-14.
14. Bvenura, C. and A.J. Afolayan, 2014. Ethnobotanical survey of wild vegetables in Mbashe and Nkonkobe municipalities, Eastern Cape Province, South Africa. *Acta Bot. Gallica*, 161: 189-199.
15. Ayodele, A.E., 2005. The medicinally important leafy vegetables of Southwestern Nigeria. *Ethnobotanical Leaflets*, Vol. 2005, No. 1.
16. Oselebe, H.O., C.V. Nnamani and E.O. Okporie, 2012. Ethnobotanical studies of traditional leafy vegetables and spices of Ebonyi State, Nigeria: Potentials for improved nutrition, food security and poverty reduction. *Anim. Res. Int.*, 9: 1485-1496.
17. Arowosegbe, S., S.D. Oyeyemi and O. Alo, 2015. Investigation on the medicinal and nutritional potentials of some vegetables consumed in Ekiti state, Nigeria. *Int. Res. J. Nat. Sci.*, 3: 16-30.
18. Schippers, R.R., 2000. *African Indigenous Vegetables: An Overview of the Cultivated Species*. Natural Resources Institute, UK, Pages: 214.
19. Della, A., D. Paraskeva-Hadjichambi and A.C. Hadjichambis, 2006. An ethnobotanical survey of wild edible plants of Paphos and Larnaca countryside of Cyprus. *J. Ethnobiol. Ethnomed.*, Vol. 2. 10.1186/1746-4269-2-34
20. Heywood, V.H., 1992. *Taxonomy, Biosystematics and Conservation*. In: *Conservation Biology-A Training Manual for Biological Diversity and Genetic Resources*, Kapoor-Vijay, P. and J. White (Eds.), The Commonwealth Science Council, Commonwealth Secretariat, London, pp: 95-101.