

# An Ethnobotanical Survey of Medicinal Plants Used for the Treatment of Typhoid Fever in Minna, Niger State

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## Abstract

An ethnobotanical survey was conducted from December 2011 to April 2012 in Minna, Niger State, Nigeria. The survey was aimed at identifying and documenting medicinal plants used for the treatment of typhoid fever in 6 communities in Minna, Niger State. Ethnobotanical data were collected with the aid of a tape recorder and supported with a semi-structured questionnaire during the interview interactive session with the Traditional medical practitioners. The data obtained were further analyzed, collated and tabulated to give the botanical names, common names, local names, families and the parts of the plants used. The survey revealed a total of 49 plants species belonging to 31 families. The plants habit and habitat of collection showed that 63.34% of the medicinal plant species grow up to the height of a tree and are mostly found in the wild (53.57%). The survey also revealed that the leaves were the major parts used for herbal preparation. The main methods of preparation are decoction and infusion. The present study has established a data bank for some medicinal plants that are used in the management of typhoid fever in Minna Niger State, Nigeria.

**Keywords :** Ethnobotanical, Medicinal plants, Typhoid, Decoction, Management.

## 1. Introduction

The knowledge of traditional medicine is a custom which has preoccupied mankind since his creation from generation to generation to maintain health and wellbeing. Ethnobotanical surveys are important in order to understand the social-cultural and economic factors influencing ideas and actions concerning health and illness and also to get information on type of diseases and health problems prevalent among the people of a particular locality. Such studies, as suggested by Lawal *et al.* (2010), may help to provide the basic health care services needed to improve health challenges of the rural population. In the past two decades, there has been a global revival of interest in traditional medicine for the treatment of ailments that defile orthodox medicine principally because many diseases have defiled or developed resistance to conventional drugs. As a result of this, a lot of interest and attention have been drawn to the curative claims and norms (ethics) of herbal plants in different parts of the globe especially Africa and Asia (Awoyemi *et al.*, 2012).

Typhoid fever is an acute illness associated with fever that is most often caused by the bacteria *Salmonella typhi*. It can also be caused by *Salmonella paratyphi*, a related bacteria that usually leads to a less severe illness. It is known as an enteric fever transmitted through ingestion of food or drink that is contaminated by the faeces or urine of infected persons (Khan, 2010). Each year the disease affects at least 16 million persons world-wide, most of whom reside in the developing countries of Southeast Asia and Africa (CDC, 2003). The treatment of typhoid fever is done by the use of antibiotics, but increasing resistance rates to the primary agents used (ampicillin, chloramphenicol, co-trimoxazole as well as quinolones) have been associated with complications and increased severity of illness (Khan, 2012). The burden of typhoid fever remains high in impoverished settings, and increasing antibiotic resistance is making treatment costly. As such, the search for medicinal plants which are accessible, cheap and without any side effects used in Minna, Niger State as remedy for typhoid fever is worthy of documentation.

## 2. Materials and Methods

### 2.1 Study Area

This ethnobotanical survey was conducted in order to obtain relevant information about medicinal plants used in the treatment of typhoid fever in Minna, Niger state. The city of Minna is located on Latitude 9° 37' North and Longitude 6° 33' east and occupies an area of about 884 hectares. Six major locations in Minna were targeted. These were Ketteren gwari, Kpakungu, New Market, Bosso, Mobile fish market and Tunga. A selected sample frame of (at least) 10 interviews was administered in each of the selected location. The sample population was principally made of Traditional medicine practitioners (TMPs), Herbalist (also known as traditional healers), Elders with claims of medicinal plant knowledge, Herb sellers, House wives and Mothers.

### 2.2 Data Collection Procedure

The ethnobotanical Data obtained for this study were from interviews with the local people, conducted from

December 2011 to April 2012. The ethnobotanical survey which was aimed at identifying and documenting the useful medicinal plants used in the treatment of typhoid fever in Minna, Niger state involved mainly informants between the ages of 30 and 80 years. Data acquisition was successively collected using a semi-structured questionnaire guided tool and a tape recorder during the interview session to record data. The questionnaire was an integration of those designed by Sofowora (2008) and the information collection data formed by the Ministry of Health (Government Chemistry Laboratory) in Dar-es-salaam Tanzania (Adjanohoun *et al.* 1991).

### 2.3 Plant Collection and Herbarium Preparation

For each selected plant species collected, a record was made of its habitat in the area which were classified under wild and field under cultivation. The habit and the plant part(s) used were also recorded. The plant species were collected by the person who normally prepares the herbal remedy (informant) so as to avoid the collection of the wrong specimens through variation in local names (Sofowora, 2008). The collected plant species were then prepared according to standard procedures of herbarium specimen preparations and preservation (Francis, 2005). Photographs of the collected plant species were also made to facilitate their identification process. Final identification was made at the herbarium unit of the Department of Biological Sciences, Ahmadu Bello University, Zaria with the help of the Taxonomists in the unit; Mr Musa Muhammed and Mr U.S.Gallah.

### 3. Results

A total of 70 respondents were interviewed. The respondents were mainly Herbalists/Traditional medical practioners (TMPs) (50%), Herb sellers (19%), Elders (17%) and others (House wives and Mothers) (14%). The demographic survey of the respondents are presented in Table 1.

The entire survey of the respondents indicated that a total of 49 medicinal plant species from 31 families were collected. Botanical names, family, common names, vernacular names, Plant parts, habit/habitat and part(s)of plants mentioned are presented in Table 2.

**Table 1: Demographic survey of respondent on the Medicinal Plants used in the treatment of typhoid fever.**

Parameter	Specification	N (%)
Practice specification	Herbalists/Traditional medical practioners (TMPs)	35 (50)
	Herb sellers	13 (19)
	Elders	12 (17)
	Others	10 (14)
Sex	Male	30 (43)
	Female	40 (57)
Age (years)	1 - 20	0
	21 - 40	15 (21)
	41 - 60	31 (44)
	>60	24 (34)
Religion	Islam	61 (87)
	Christianity	9 (13)

N = number of respondents; % = percentage of respondent

**Table 2: Medicinal plants used in the Treatment of Typhoid Fever in Minna, Niger State**

Botanical names/Authority	Common Names	Vernacular names	Plant Parts	Habit/Habitat
<b>Amaranthaceae</b>				
<i>Alternanthera sessilis</i> (L.) DC	Sessile joy weed	Maikai dubu <sup>h</sup> , Masantogi <sup>n</sup> , Dangunro <sup>y</sup> .	WP	H/ C
<b>Anacardiaceae</b>				
<i>Anacardium occidentale</i> L.	Cashew	Kashew <sup>h</sup> , Okpo kpo <sup>i</sup> , Eko nasara <sup>n</sup> , Kaju <sup>y</sup>	SB,L	T/ C
<i>Mangifera indica</i> L.	Mango	Mangworo <sup>h</sup> , Mungoro <sup>n</sup> , Mangoro <sup>y</sup> , Mangolo <sup>i</sup> .	SB,L	T/ C
<i>Spondias mombin</i> L.	Hog plum	Tsadar masar <sup>h</sup> , jinjerechi <sup>n</sup> , Akika <sup>y</sup> , Jinkara <sup>i</sup> .	SB,L	T/ W
<b>Annonaceae</b>				
<i>Annona senegalensis</i> Pers.	African custard apple.	Gwandar daji <sup>h</sup> , Nungberechi <sup>n</sup> , Abo <sup>y</sup> , Uburu-ocha <sup>i</sup>	SB,L	S/ W
<i>Enantia chlorantha</i> Oliv.	African yellow wood	Awopa <sup>y</sup> , Dokita -igbo <sup>y</sup>	SB,L	T/ W
<b>Apocynaceae</b>				
<i>Alstonia boonei</i> De Wild.	Pattern wood	Ahun <sup>y</sup> , Egbu <sup>i</sup>	SB,L	T/W
<i>Plumera rubra</i> L.	Temple tree, Frangipani.	Karya <sup>h</sup> .	L	T/C
<b>Asclepiadaceae</b>				
<i>Calotropis procera</i> (Ait.)Ait.F	Sodom Apple	Tumfafiya <sup>h</sup> ,Epuko <sup>n</sup> ,Bomubomu <sup>y</sup> ,Otokwuru <sup>i</sup>	L	S/C
<b>Asteraceae</b>				
<i>Chromolaena odorata</i> (L.) R.M. King & Robinson	Siam weed	Ekpe gbakun <sup>n</sup> , Akintola <sup>y</sup> , Obiarakara <sup>i</sup> .	L	T/ C,W
<i>Vernonia amygdalina</i> Del.	Bitter leaf	Shìwáákáá <sup>h</sup> , ,Tsula <sup>n</sup> , Ewuro <sup>y</sup> , Olubo <sup>i</sup>	L	S/ C
<b>Balanitaceae</b>				
<i>Balanites aegyptica</i> (L.) Del	Soap berry tree, Desert date.	Aduwaa <sup>h</sup> , Aduwa <sup>n</sup> , Budare <sup>y</sup> , Enyi-ndi-mmuo <sup>i</sup> .	L	T/ W
<b>Bromeliaceae</b>				
<i>Ananas comosus</i> (L) Merr.	Pineapple	Abarbaa <sup>h</sup> , ope- oyinbo <sup>y</sup> , Akwu olu <sup>i</sup> .	UF	H/ C
<b>Burseraceae</b>				
<i>Commiphora kerstingii</i> Engl.	NA	Hánà gobara <sup>h</sup> , Enagunbochi <sup>n</sup> .	SB	T/ W
<b>Caricaceae</b>				
<i>Carica papaya</i> Linn.	Pawpaw	Gwanda <sup>h</sup> , Okworo- beke <sup>i</sup> ,Ibepe <sup>y</sup> , Konkeni <sup>n</sup> .	L	T/ C
<b>Combretaceae</b>				
<i>Anogeissus leiocarpus</i> (DC) Guill. & perr.	Axle wood tree	Marike <sup>h</sup> , kukunchi <sup>n</sup> , Ayin <sup>y</sup> , Atara <sup>i</sup>	SB	T/ W
<i>Terminalia avicennioides</i> Guill. & perr.	NA	Báushè <sup>h</sup> , kpace <sup>n</sup> , Edo <sup>i</sup> , Idin <sup>y</sup>	L	T/ W
<b>Cucurbitaceae</b>				
<i>Citrullus colocynthis</i> (Linn) Schrad	Bitter gourd, Wild gourd.	Kwartowa <sup>h</sup> , Egwusi <sup>i</sup> , Baara <sup>y</sup> .	F	H/ C,W
<b>Euphorbiaceae</b>				
<i>Alchornea cordifolia</i> (Schum. & Thonn.) Muell.Arg.	Christmas bush	Bambami <sup>h</sup> , Dzudzanci <sup>n</sup> , Ipa <sup>y</sup> , Ububo <sup>i</sup> .	L	T/ W
<b>Fabaceae</b>				
<b>Caesalpinoideae</b>				
<i>Daniellia oliveri</i> (Rolfe) Hutch. & Dalz.	Ilorin balsam	Maje <sup>h</sup> , Kadaura <sup>h</sup> , Ozabwa <sup>i</sup> , Danchi <sup>n</sup> , Iya <sup>y</sup> .	SB	T/ W
<i>Detarium microcarpum</i> Guill.& perr.	Tallow tree	Taura <sup>h</sup> ,Gungorocho <sup>n</sup> , Ogbobo <sup>y</sup> ,Ofu <sup>i</sup> .	L	T/ W
<i>Piliostigma thonningii</i> (Schum.) Milne –Redh.	Wild bauhinia	Kalgo <sup>h</sup> ,Okpoatu <sup>i</sup> , Bafin <sup>n</sup> , Abafe <sup>y</sup>	L	S/W
<i>Senna occidentalis</i> L.	Negro Coffee	Râi dòdòrè <sup>h</sup> , Gaya <sup>n</sup> , Rere <sup>y</sup> ,Okamo <sup>i</sup>	L	S/ C,W
<b>Papilionoideae</b>				
<i>Eriosema psoraleoides</i> (Lam) G. Don.	NA	Taba jiki <sup>h</sup> , Egwagutagi <sup>n</sup> , otili <sup>y</sup>	L	S/W

<i>Erythrina senegalensis</i> DC.	Senegal coral tree	Minjirya <sup>h</sup> , Eshecibgan <sup>n</sup> , Ologun sheshe <sup>y</sup> , Echiechi <sup>i</sup>	SB,L	T/W
<b>Lamiaceae</b>				
<i>Ocimum gratissimum</i> L.	Tea bush	Daidoya ta gida <sup>h</sup> , Tanmotswangi-wawagi <sup>n</sup> , Efinrin <sup>y</sup> , Nehonwu <sup>i</sup>	L	S/ C
<b>Lythraceae</b>				
<i>Lawsonia inermis</i> (L)Keay	Henna	Lalle <sup>h</sup> ,Lali <sup>n</sup> ,Lali <sup>y</sup>	L	S/C
<b>Malvaceae</b>				
<i>Gossypium hirsutum</i> L.	Cotton	Auduga <sup>h</sup> ,Lulu <sup>n</sup> ,Ela-owu <sup>y</sup>	L	H/C
<b>Meliaceae</b>				
<i>Azadirachta indica</i> A. Juss	Neem Tree	Dogonyaro <sup>h</sup> ,Nimu <sup>n</sup> ,Oke oyinbo <sup>y</sup> .	SB,L	T/C
<i>Khaya senegalensis</i> (Desr.) A.Juss	Mahogany	Madaci <sup>h</sup> , Wuchi <sup>n</sup> , Oganwo <sup>y</sup> , Ono <sup>i</sup>	SB,L	T/ C,W
<i>Pseudocedrela kotschy</i> (Schweinf.) Harms.	NA	Tònáá <sup>h</sup> , Emi-gbegi <sup>y</sup>	R	T/ W
<b>Moraceae</b>				
<i>Ficus platyphylla</i> Del.	Flake Rubber Tree	Gamji <sup>h</sup> ,Gbagun <sup>n</sup> ,Afomo <sup>y</sup> .	L	T/ W
<b>Myrtaceae</b>				
<i>Eucalyptus camadulensis</i> Dehn	River Red Gum	Turaren turawa <sup>h</sup> ,	L	T/ C,W
<i>Psidium guajava</i> Linn.	Guava	Goiba <sup>h</sup> , Goyiba <sup>n</sup> , Guafa <sup>y</sup> , Ugwoba <sup>i</sup> .	SB,L	T/ C
<b>Olacaceae</b>				
<i>Ximenia americana</i> L.	Wild Olive	Tsaada <sup>h</sup> , Igo <sup>y</sup>	SB,L	T/ W
<b>Palmae</b>				
<i>Cocos nucifera</i> Linn.	Coconut Palm	Kwakwa <sup>h</sup> , Yikunu Kpauta <sup>n</sup> , Agbon <sup>y</sup> ,Akibeka <sup>i</sup> .	F	T/ C
<b>POACEAE</b>				
<i>Cymbopogon citratus</i> (DC.) Stapf.	Lemon Grass	Isauri <sup>h</sup> ,Eto Lemu <sup>n</sup> ,Ewe tea <sup>y</sup> , Iriru- Oyibo <sup>i</sup> .	L	G/ C
<i>Sorghum bicolor</i> (L.)Moench	Sorghum	Dawa <sup>h</sup> , Eyi Kpan <sup>n</sup> , Oka baba <sup>y</sup> , Oka maajali <sup>i</sup> .	S,L	G/C
<b>Polygalaceae</b>				
<i>Securidaca longependunculata</i> Fres.	Violet Tree	Uwar magunguna <sup>h</sup> , Sanya <sup>h</sup> , Jechi <sup>n</sup> , Kyiritoo <sup>y</sup> ,Ofodo <sup>y</sup> .	SB,L,R	T/ W
<b>Rhamnaceae</b>				
<i>Ziziphus abyssinica</i> Hochst.	NA	Magariya kura <sup>h</sup> , Dangodi <sup>n</sup> .	SB,R	T/ W
<b>Rubiaceae</b>				
<i>Gardenia aqualla</i> Stapf and Hutch	NA	Gáudè <sup>h</sup>	R,L	S/W
<i>Morinda lucida</i> Benth.	Brimstone Tree	Oruwo <sup>i</sup> , Eze ogu <sup>i</sup> .	SB,L	T/ W
<i>Nauclea latifolia</i> J. E. Smith.	African Peach	Tafashiya <sup>h</sup> , Gbashi <sup>n</sup> ,Egbesi <sup>y</sup> , Adi <sup>i</sup>	SB,L	T/ W
<b>Rutaceae</b>				
<i>Citrus aurantifolia</i> (Christm) Swingle	Lime	Lemun tsami <sup>h</sup> , Lemu bakagi <sup>n</sup> , Osan wewe <sup>y</sup> , Afofanta <sup>i</sup>	F	T/ C
<i>Citrus paradisi</i> Macf	Grape fruit	Furuntu <sup>h</sup> , Furuntu <sup>n</sup> , osan gerepu <sup>y</sup> , Oroma orji <sup>i</sup> .	F	T/ C
<b>Sapindaceae</b>				
<i>Blighia sapida</i> (konig)	Akee apple	Gwanja kusa <sup>h</sup> , Yilanchi <sup>n</sup> , Isin <sup>y</sup> , Okpu <sup>i</sup>	L	T/ C
<b>Tiliaceae</b>				
<i>Grewia mollis</i> Juss	Raisin	Dargaji <sup>h</sup> , Rwarwanchi <sup>n</sup> , Oraigbo <sup>y</sup> .	SB	S/W
<b>Verbanaceae</b>				
<i>Vitex doniana</i> Sweet	Black plum	Dinya <sup>h</sup> , Dinchi <sup>n</sup> , Oriri <sup>y</sup>	SB,L	T/ W
<b>Zingiberaceae</b>				
<i>Zingiber officinale</i> Roscoe.	Ginger	Tsita mai yatsu <sup>h</sup> , Tsutafu <sup>n</sup> ,Atale <sup>y</sup>	Rh	US/ C

### Keys

NA- Not available

Vernacular names are indicated as h- hausa, n- nupe, y- yoruba, i- igbo.

Parts used represented as WP- Whole Plant; SB- Stembark; L- Leaves; UF- Unripe fruit; F- Fruit; Rh- Rhizome; R- Root.

Habit denoted as H- Herb; T- Tree; S- Shrub; G- Grass; US- Underground stem.

Habitat denoted as C- Cultivated or W- Wild.

### 4. Discussions

The rural and urban communities in Nigeria highly recognize traditional medicines but the accurate knowledge

of these plants and their medicinal properties are known only by few individuals in the community. Those with this knowledge are elders as reported in table 1. It can be presumed that the younger generations are not eager to acquire this knowledge owing to the wrong belief that the practice is only for illiterate and old people. The continuation of this trend might lead to the loss of traditional knowledge on medicinal plants.

Plants are more easily recognized by their local names in every part of the world. These local names play a vital role in ethnobotanical study of a specific tribe or region (Singh, 2008). Respondents interviewed gave local names of plants in recipes for treating typhoid fever. The local names mentioned were authenticated with their respective botanical names using standard texts. Although local names are not recommended directly for scientific accounts of plants as they lack uniformity and consistency (Singh, 2008), yet they may certainly be considered as a useful tool for obtaining useful information on plants. Local names provide means of reference by local people in a particular area. Information gathered showed that increasing number of people are turning to herbal remedies for prevention and cure of various diseases. The 49 medicinal plant species mentioned were represented by all plant forms, Trees (63.34%) were found to be the most used plants followed by, shrubs (22.45%), herbs (8.16%), grass (4.08%) and underground stem (2.04%) respectively. The Plants obtained from the wild represented 53.57% while those cultivated made up 46.43%. The plant leaves are important ingredient in traditional treatment of typhoid fever as it is the component that featured most in many herbal preparations which were in agreement with Adekunle (2008). Members of Family Fabaceae played a dominant role in terms of the number of medicinal plants species recorded, Plant species in this family are commonly used as food as well as medicine as reported in the works of Joudi and Bibalani (2010).

Most recipes involved either a single plant or the combination of different plants and parts in the preparation of the herbal remedy. It is believed that some plants enhance the action of other herbs (Alexandros, 2007). The common extractive solvents used were water, beverages, pap and fermented maize water either by maceration, decoction, boiling or a cold concoction mixture. The mode of administration, dosage was imprecise. From this study, it was also observed that the dose of the herbal remedy used is dependent on disappearance of the symptoms. Most of the respondents believe that herbal remedies can be consumed as much as possible, but they are ignorant of the toxic effects of most of these herbs.

Some of the plants revealed in the survey have been cited in the ethnobotanical survey of some African countries ( Mann *et al.*, 2007; Adekunle, 2008; Ogbole and Ajayejoba, 2010; Soladoye *et al.*, 2010; Idowu *et al.*, 2010; Oni, 2010).

## 5. Conclusion

The present study has established a data bank for some medicinal plants that are used in the management of typhoid fever in Minna Niger State, Nigeria. These Plants could serve as potential sources of lead compounds for the development of new anti-typhoid drugs.

## REFERENCES

- Adekunle, M.F (2008). Indigenous uses of plants leaves to treat malaria fever at Omo Forest Reserve (OFR), Ogun State, Nigeria. *Ethiopia Journal of Environmental Studies*, 1(1): 31-35
- Adjanohoun, E, Ahiyi, M.R.A, Ake-Assi, L, Dramane .K, Eewude J.A, Fadoju S .O, Gbile Z.O, Goudote, .E, Johnson, C.L.A, Keita, .A, Morakinyo .O, Ojewole, J.A.O, Olatunji, A.O and Sofowora, E.A (1991). *Traditional medicine and pharmacopoeia: Contribution to ethnobotanical and floristic studies in Western Nigeria*. Organization of African Unity Scientific, Technical and Research Commission Lagos, Nigeria. 420pp.
- Alexandros, S.B (2007). Plants used traditionally to treat malaria in Brazil: the archives of Flora Medicinal. *J. Ethnobiol. Ethnomed.*3:18
- Awoyemi, O. K., Ewa, E. E., Abdulkarim, I. A. and Aduloju, A. R. (2012) Ethnobotanical assessment of herbal plants in southwestern Nigeria. *Academic Research International* 2(3): 50-57
- Centers for Disease Control and Prevention (CDC) (2003). *Travelers health. Preventing typhoid fever: a guide for travellers. Atlanta* (<http://www.cdc.gov/travel/disease/typhoid.htm>).
- Francis, R. W. (2005). *Use and Method of Making Herbarium Specimen* (Revised Edition). The Herb Society of America, USA. 3pp
- Joudi, L. and Bibalani, G.H (2010). Exploration of medicinal species of Fabaceae, Lamiaceae and Asteraceae families in Ilkhji region, Eastern Azerbaijan Province (Northwestern Iran). *Journal of Medicinal Plants Research*, 4(11): 1081-1084
- Khan, K.H (2010). Protective effect of *Embllica officinalis* against *S. typhimurium* through its antioxidant activity. *Recent Research in Science and Technology* 2(4): 29-36.
- Khan, K.H. (2012). Recent trends in typhoid research- A Review. *International Journal of Bioscience* 2(3): 110-120
- Lawal, I.O, Uzokwe, N.E, Igboanuyo, A.B, Adio, A.F, Awosan, E.A, Nwogwugwu J.O, Faloye, B, Olatunji B.P

- and Adesoya, A.A (2010). Ethnomedicinal information on collation and identification of some medical plants in Research Institutes of Nigeria. *Journal of Pharmacy and Pharmacology*, 4(1): 001-007.
- Mann, A., Amupitan, J.O., Oyewale, A.O, Okogun, J.I and Ibrahim, K. (2007). An Ethnobotanical survey of indigenous flora for treating tuberculosis and other respiratory diseases in Niger State, Nigeria. *Journal of Phytomedicine & Therapy*, 12:1-12.
- Ogbole, O.O and Ajaiyeoba, E.O (2010). Traditional management of tuberculosis in Ogun State of Nigeria: the practice and ethnobotanical survey. *African Journal of Traditional and Complimentary/ Alternative Medicine*, 7(1): 79-84.
- Oni, P.I (2010). Ethnobotanical survey of a fallow plot for medicinal plants diversity in Idena village, Ijebu-Ode, South-Western Nigeria. *Journal of Medicine and Plant Research*, 4(7): 509-516.
- Singh, H (2008). Importance of local names of some useful plants in ethnobotanical study. *Indian Journal of Traditional Knowledge*. 7(2): 365-370.
- Sofowora, A. (2008). *Medicinal Plants and Traditional Medicine in Africa*. Spectrum books Ltd. Nigeria. 142-145pp.
- Soladoye, M.O, Amusa, N.A, Raji-Esan, S.O, Chukwuma, E.C, Taiwo, A.A (2010). Ethnobotanical survey of anti-cancer plants in Ogun State, Nigeria. *Annals of Biological Research*. 1(4): 261-273.