

Ethnomedicinal Survey of Some Plants Used for the Treatment of Various Ailments in Gumel Town, Jigawa State, Nigeria

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ABSTRACT

An ethnomedicinal survey was carried out to document medicinal plants used by the people of Gumel Town, Jigawa State, Nigeria. 100 questionnaires were distributed to herbal sellers and old people with traditional medicine knowledge. The result of the research reported 43 plants species belonging to 25 different families used by the people of the study area for the treatment of various ailments. Most of the plants reported belong to the family Fabaceae with 10 species followed by Malvaceae and Moraceae with 3, Apocynaceae, Meliaceae and Rubiaceae each with two species while the rest of the other families were represented with a single species each. Leaves and stem bark were recorded as the plant part mostly use in the treatment of various ailments. Most of the plants surveyed are trees (65.12%), others are shrubs (30.23%) while a few are herbs (4.65%). Some of the plants documented like *Azadirachta indica* and *Ziziphus abyssinica* are used in the treatment of more than one ailment. Majority of the traditional medicine practitioners were males of over 50 years of age and with no formal education. This is a serious problem that may lead to the disappearance of this important knowledge and so public awareness, further researches, documentation and preservation of the indigenous knowledge is recommended.

Keywords: Ethnomedicine, Medicinal plant, Pile, Ailment, Diarrhea.

INTRODUCTION

Ethnomedicine is the study of traditional medical practice which is concerned with the traditional or cultural understanding of health, diseases and illness. The practice of ethnomedicine is a multi-disciplinary system comprising the use of plants, animals and natural environment and has been the source of healing for people for millennia (Krippner, 2003). The use of traditional medicines has a strong cultural influence to the extent that, even in urban setting with modern healthcare facilities, people still consult tradition healers (Aiyelaja, 2006).

Plants used in ethnomedicine have a wide range of substances that can be used to treat infectious diseases (Aiyelaja, 2006). Knowledge of how these plants can be used against various diseases is expected to be accumulated in areas where the use of medicinal plant is still appreciated (Diallo, 1999). More than 80% of the world population relies on traditional medicine for their primary healthcare (WHO, 2003). In Addition, out of the 150 most used drugs in the US, 57% of them contained at least one major compound currently or once derived from plants (Grifo, 1997). This makes ethnomedicinal study imperative not only to the next generation but also for pharmaceutical industries for the development of new drugs.

REVIEW OF LITERATURE

Healing with medicinal plants is a very old practice. Since ancient time, people look for medicinal plants in search for rescue from their diseases. The connection between man and his search for medicinal plants dates from the far past, of which there is ample evidences from different sources (Biljana, 2012). The oldest written evidence of medicinal plants usage was found on Sumerian clay slab from Nagpur, approximately 5000 years old. It comprised of over 250 plants species, some of them alkaloid such as poppy and mandrake (Kelly, 2009). Historically in Nigeria traditional medicine, hundreds of plants species have been used for many years in the practice of herbalism. Many Nigerians use traditional medicine for their health needs.

The knowledge of traditional medicine in Nigeria and most African countries is kept within the family circle and is passed from one generation to another. In many instances, knowledge of medicinal plants is considered secretive and only family members or relatives are taught about it (Kinsley, 1996). Some healer gained the knowledge through communicating with other healers about the plants they use and how to administer them (Kinsley, 1996). In general, healing knowledge tends to be a closely guarded family secret and is handed down through kinship.

It should be noted that modern medicinal drugs are in so many instances derived from plant species that have been useful as traditional medicines some of which include Poppy an antibacterial produce from *Papaver orientale*, Morphine which is a painkiller extracted from *Papaver somniferum* and anti malaria (artemisinin) from *Artemisia annua*. Several reviews on approaches for selecting plants as candidate for drug discovery have been published (Phillipson and Anderson, 1989; Harvey and Jain, 2000).

The administration of medicinal plants remains in the hands of native doctors, who are mostly old people in the rural areas. There is fear that with the passage of time, this traditional healing system may become

extinct, because old people with the knowledge might die without transferring it to the future generation who are engrossed with modernity. To ensure that future generation of Jigawa State, Northern Nigeria and Nigeria as a whole has access to at least some of this traditional healing system, this research is undertaken to capture and document information on the plants used traditionally as medicine by the indigenous people of Gumel town, Gumel Local Government Area of Jigawa State.

MATERIALS AND METHODS

The Study Area

Gumel town is situated some 127 KM Northeast of Kano State, Nigeria and lies about 26KM south of Nigeria's boarder with Niger Republic.

Collection of Data

Extensive fieldwork was carried out in August, 2013. Data collected were derived from questionnaire administration. One hundred questionnaires were distributed randomly to herbal sellers and old people with traditional medicine knowledge. Verbal discussions were held with those of them that cannot write in order to enumerate their ethno-medicinal knowledge. The verbal discussion was held in Hausa language because most of the respondents have no formal education. Questionnaire distributed had two sections. Section 'I' captured the bio-data of the respondents for information on demographic characteristics, section 'II' identified the plants used for treating various ailments by the respondents including information on the recipe preparation and administration. The respondents were both men and women of various ages. Only those plants species cited by at least three respondents were reported in this research.

Collection and Identification of Plants

Plant species reported to treat ailments were collected and they were identified in the Department of Biology, Jigawa State College of Education Gumel with the help of relevant and standard literatures (Gbile, 2002).

Analysis of Data

Frequency and percentage were used to analyze the socio-demographic data of the respondents. Relative Frequency of Citation (RFC) of citation was determining using the formula:

$$RFC = \frac{F_s}{N}$$

Where F_s is the number of respondents that cited a particular species and N is the total number of the respondents. Relative Frequency of Citation depicts how significant particular plants specie is (Sulaiman *et al.* 2015).

RESULT AND DISCUSSION

Table 1.0 Socio-Demographic Information of the Respondents

Bio-data	Frequency	Percentage 100%)
Sex		
Male	82	82
Female	18	18
Age		
20-30	5	5
31-40	10	10
41-50	13	13
51-60	40	40
61-70	21	21
70 and above	11	11
Educational Status		
Tertiary	17	17
Secondary	33	33
Primary	5	5
No Formal Education	45	45
Occupation		
Civil servants	18	18
Farmers	26	26
Herbalist	34	34
Others	22	22

The Table 1.0 showed that most of the respondents are males (82%) and this corresponds to the findings of Ampitan (2013) who reported majority of traditional medicine practitioners (56%) in Biu Local Government Area of Borno State were men. This is because in Northern Nigeria, males are the one doing the activities of farming, hunting and marketing. Majority of the respondents (40%) fall between the age bracket of 51-60, and this shows that the ethnomedicinal knowledge of plants is mostly associated with older people and

this strikes a fear that the knowledge will become extinct sooner, because older people possessing the knowledge might die without transferring it to the future generation from which unfortunately only 5% of the respondents are between the age of 21-30. Most of the respondents (45%) had no formal education which may also contribute to the demise of these important traditional healing practices. The result also showed that most of the respondents from Gumel Local Government Area of Jigawa State are herb sellers (34%), farmers (26%), civil servants (18%) and others (22%).

Table 2.0: Enumeration of Plants Used for Ethnomedicine by the People of Gumel Local Government Area, Jigawa State.

Botanical name	Family	Local name	Type	Part Used	RFC	Disease cured	Method of Preparation and Application
<i>Acacia nilotica</i>	Fabaceae	Bagaruwa	T	F	0.18	Pile	Decoction is used to make pap that is taken every morning at least for a week
<i>Adansonia digitata</i>	Malvaceae	Kuka	T	L	0.41	Pile	Powdered leaves in a soup
<i>Allium sativum</i>	Amaryllidaceae	Tafarnuwa	H	B	0.22	Cold	Bulb is taken when orally, as a condiment
<i>Albizia chevalieri</i>	Fabaceae	Katsari	T	SB	0.54	Stomachache	Soaked in water. Cupful of extract is taken orally for three days
<i>Anogeissus leiocarpus</i>	Combretaceae	Marke	T	SB	0.14	Pile	Soaked in water. Extract is taken for three days
<i>Azadirachta indica</i>	Meliaceae	Bedi/Maina	T	L/SB	0.27	Fever	Steaming
				F	0.	Insecticide	Fruit juice is affective against head lice
<i>Balanites aegyptiaca</i>	Zygophyllaceae	Aduwa	T	F	0.12	Pile	Fruit is taken orally
<i>Boerhavia diffusa</i>	Nyctaginaceae	Gadon	T	R/ L	0.04	Stomachache	Infusion from root and leaves is orally taken
<i>Boswellia dalzielii</i>	Burseraceae	Hano	T	SB	0.51	Pile	Decoction is orally taken for three days
<i>Cadaba farinose</i>	Capparaceae	Bagayi	S	R WP	0.09	Cancer Cancer	Powdered Root is taken with honey Powdered plant is taken in pap or water
<i>Calotropis procera</i>	Asclepiadaceae	Tumfafiya	T	R	0.07	Cancer	Grinded root are smeared to the cancerous area
				F		Ear infection	Droplet of fruit extract is applied to the affected ear
<i>Catunaregam nilotica</i>	Rubiaceae	Kwanarya	T	R	0.08	Snakebite	Powdered root is applied to affected area.
<i>Ceiba pentandra</i>	Malvaceae	Rimi	T	L	0.18	Diarrhea	Powdered leaves in water or milk
<i>Cissampelos owariensis</i>	Menispermaceae	Jibjar Kasa	S	R	0.04	Pile	Dried roots are soaked in water. Cupful of the aqueous extract is taken for three days
<i>Citrullus lanatus</i>	Cucurbitaceae	Kankana	S	F	0.46	Laxative	Taken orally
<i>Citrus aurantifolia</i>	Rutaceae	Lemun	T	F	0.41	Mouth rashes	Juice is applied to the area of the mouth affected
<i>Cochlospermum tinctorium</i>	Cochlospermaceae	Rawaya	S	R	0.08	Pile	Decoction is taken orally for three days
<i>Detarium microcarpum</i>	Fabaceae	Taura	T	B/F	0.14	Pile	Decoction and or fruit taken orally
<i>Entada abyssinica</i>	Fabaceae	Tawatsa	T	SB	0.07	Stomachache	Decoction is orally taken for three days
<i>Eragrostis tremula</i>	Poaceae	Komayya	S	Fl	0.03	Ear infections	Droplets of flower extract is applied to the affected ear
<i>Erythrina senegalensis</i>	Fabaceae	Munjirya	S	SB	0.04	Dysentery	Powdered stem bark is taken orally in pap
<i>Faidherbia albida</i>	Fabaceae	Gawo	T	SB	0.42	Body pain	Decoction is taken orally
<i>Ficus iteophylla</i>	Moraceae	Shirinya	T	L	0.03	Blood clotting	Powdered leaves is applied to the wound
<i>Ficus congensis.</i>	Moraceae	Baure	T	R	0.15	Arthritis	Grinded and applied to affected area
<i>Ficus thonningii</i>	Moraceae	Cediya	T	SB	0.07	Fever	Powdered bark in pap
<i>Glossonema boveanum</i>	Apocynaceae	Tarangida	S	L	0.06	Yellow fever	Grinded to powder and taken in pap or milk twice a day for three days
<i>Guiera senegalensis</i>	Combretaceae	Sabara	S	R	0.53	Pile	Decoction is orally taken for a week
<i>Hibiscus sabdariffa</i>	Malvaceae	Yakuwa	S	L	0.21	Blood tonic	Cooked as food
<i>Hyphaene thebaica</i>	Aracaceae	Goruba	T	F	0.11	Stomach pain	Taken orally
<i>Khaya senegalensis</i>	Meliaceae	Madaci	T	SB	0.60	Stomach ache	Decoction is taken orally for three days

<i>Jatropha curcas</i>	Euphorbiaceae	Cindazugu	S	WP	0.23	Body pain	Decoction is taken orally for three days
<i>Leptadenia hastate</i>	Apocynaceae	Tafaasa	S	L	0.20	Ulcer	Cooked as a food
<i>Mangifera indica</i>	Anacardiaceae	Mangwaro	T	SB	0.40	Jaundice and malaria	Boiled with fruit bark of pineapple. The decoction is orally taken for three days
<i>Mitracarpus hirtus</i>	Rubiaceae	Goga masu	H	WP	0.13	Eczema	Powdered mixed with lime juice is applied
<i>Moringa oleifera</i>	Moringaceae	Zogale	T	L	0.50	Nutrition aid Blood tonic	Cooked and taken as food Aqueous extract is orally taken once a day
<i>Nauclea diderrichii</i>	Rubiaceae	Tafashiya	T	SB	0.06	Ulcer	Decoction is orally taken for two weeks
<i>Parkia biglobosa</i>	Fabaceae	Dorawa	T	F	0.21	Dysentery	Small amount is taken orally once or twice
<i>Piliostigma reticulatum</i>	Caesalpinoideae	Kalgo	T	R	0.34	Pile	Root extract plus red potash is taken orally for a week
				SB	0.18	Headache	Powdered and orally taken with cold water
<i>Prosopis Africana</i>	Fabaceae	Kirya	T	SB	0.05	Fire burn	Powdered bark applied to the affected area
<i>Psidium guajava</i>	Myrtaceae	Guava	T	L/R	0.06	Dysentery	Decoction is orally taken for three days
<i>Senna occidentalis</i>	Fabaceae	Tafasar masar	S	L	0.16	Fever	Decoction is taken orally
<i>Vernonia amygdalina</i>	Compositae	Shuwaka	S	L	0.09	Fever	Decoction is taken three times a day
<i>Ziziphus abyssinica</i>	Fabaceae	Magarya	T	R	0.10	Stomachache	Decoction is orally taken
				L	0.07	Blood clotting	Powdered leaf is applied to the wound

RFC=Relative Frequency of Citation, T=Tree, S= Shrub, H=Herb, Fl=Flower, F=Fruit, L=Leave, SB=Stem bark, R=Root, T=Tuber and WP=Whole plant

Table 2.0 showed plants used for ethno-medicinal practices in the study area each with the type of disease it cures, part of the plant used and the method of using the plant. The plants local name (in Hausa Language), English name and botanical name were also recorded.

The table shows a total of 43 plants species belonging to 25 different families commonly found and used by the people of Gumel town for the treatment of common ailments. The result showed most of the plants used in the study area belongs to the family Fabaceae with 10 species followed by Malvaceae, Moraceae and Rubiaceae with 3 species each and then Apocynaceae, Meliaceae and Combretaceae each with two species while each of the other families were represented with a single species. This agrees to the findings of Sulaiman *et al.* (2015) in which they found out that the family Fabaceae was the dominant family with 25 species out of 50 families used to treat various illness associated with maternal healthcare in Katsina state, Nigeria.

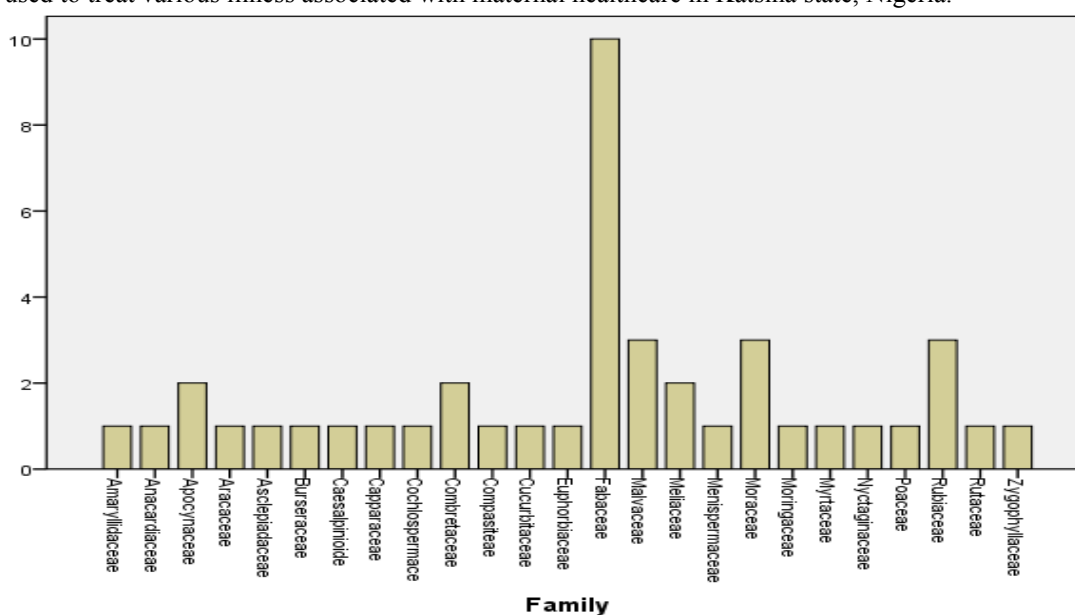


Fig. 1.0 Distribution of plant families used for Ethnomedicine in Gumel, Jigawa State, Nigeria.

It can be seen from the result that the leaves and stem bark were recorded as the plant part used the most with 11 entries in the treatment of various ailments followed by root with 11 entries. Other parts of the plants used include bulb, fruits and the whole plant. This corresponds to the findings of Ripunjoy and Indira (2001) in which they found leaves, bark of plants, roots, flowers and sometimes the whole plant as the most reported plant parts used by herbalists for the preparation of various medications in Tai-Khamyangs of Assam, India.

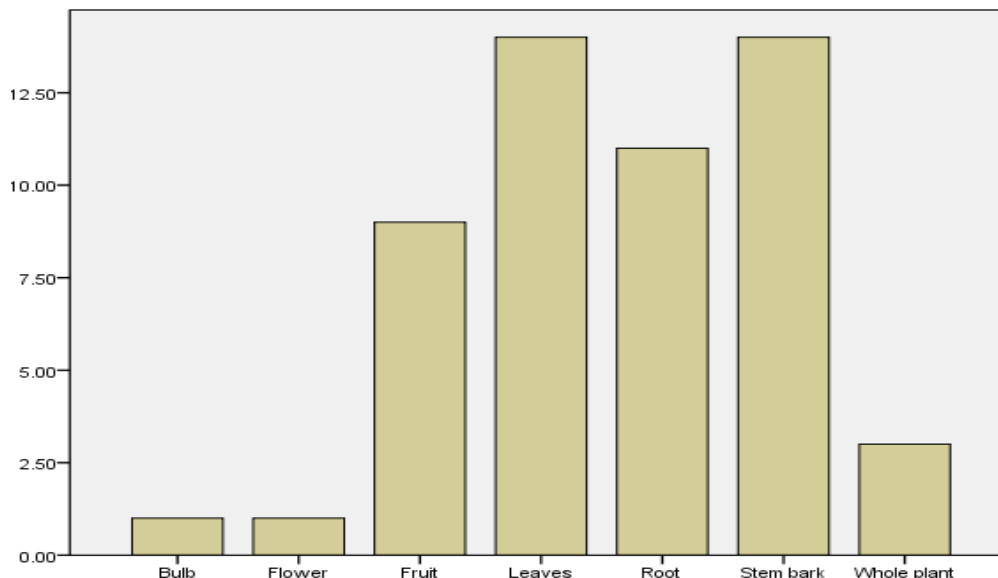


Fig. 2.0 Plants parts used for Ethnomedicine in Gumel, Jigawa State, Nigeria.

The result also showed that most of the plants used in ethnomedicinal practices in the study area are trees, while a few are shrubs. This is due to the fact that trees are usually available all seasons and in addition are not affected by seasonal variation as reported by (Albuquerque et al., 2007).

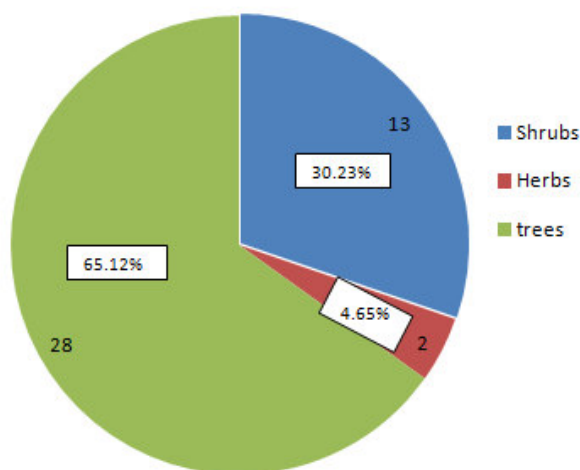


Fig. 3.0 Type of Plants used for Ethnomedicine in Gumel, Jigawa State, Nigeria

The study has demonstrated the relevance of traditional medicine in healthcare system. It has been found that traditional herbal medicines are still prevalent and used in the treatment of many diseases in the study area. Some of the plants documented like *Azadirachta indica* and *Ziziphus abyssinica* were used in the treatment and management of more than one ailment. The multiple use of a plant in the treatment of diseases was equally reported in the researches carried out by other workers (Gessler, 1995). *Khaya senegalensis* was reported to have the highest Relative Frequency of Citation which serves as an indicator of its significance to the people of the study area.

The use of most of the herbal describe in the study against pile, diarrhea and dysentery confirms the prevalence of these diseases in tropical Africa. Ehiagbonare (2007) reported that *Vernonia amygdalina* and *Azadiracta indica* can also be used in the treatment of fever, a result which corresponds to the one in this research. In their research, Fasihuddin and Ghazally (2003) noted that young leaves of *Psidium guajava* can be

stepped in hot water and the decoction can be taken to relieve dysentery a result that also corresponds to the findings of this research.

Most of the plants part used in the study area are predominantly either decocted or grinded in to powdery form and then taken in a watery formulation. This remains the most common route of taking traditional medicine which is usually prescribed by the traditional healers. And in many instances the dose of administration of the traditional medicine were not prescribed and this represents a serious problem considering the fact that herbs, although therapeutic and considered safe may contain some toxic elements, particularly when they are taken at a high dose (Sulaiman *et al.*, 2015).

CONCLUSION

In this research, some plants of medicinal importance and more particularly used in ethno-medicine in the study area were surveyed and documented. Urbanization and reliance on modern drugs has played a role toward the disappearance of information on ethnomedicine. There is a strong need for collection and documentation of this knowledge. Sufficient study is needed for better utilization of ethno-bio resources and also the research provide the basis for practical analysis of the surveyed plants for pharmaceutical applications.

REFERENCES

- Aiyelaja A. A. and Bello O. A. 2006. Ethnobotanical Potentials of Common Herbs in Nigeria: A Case Study of Enugu State. *Educational Research and Review*, 1(1), 16-22.
- Albuquerque U. P., Patricia M. M., Alyson L. S., Julio M. M., Ernani M. F. L., Joabe M. and Janaina P. S. (2007). Medicinal Plants of Catinga Vegetation of NE Brazil, *Journal of ethnopharmacology*, 114(3), 325-354.
- Ampitan T. A. (2013). Ethnobotanical Survey of Medicinal Plants in Biu Local Government Area of Borno State, Nigeria. *Comprehensive Journal of Herbs and Medicinal Plants*, 2(1), 7 - 11,
- Biljana B. (2012). Historical Review of Medicinal Plants Usage. *Pharmacogn Rev.* 6(11), 6-12
- Diallo D. (1999). Botanical Survey of Herbal Drugs of Gourma District of Mali. *Journal of pharmaceutical biology*, 37, 80-91.
- Ehiagbenare S. E. (2007). Vegetative Propagation on Some Key Malaria Medicinal Plants in Nigeria. *Sd. Res Essay*, 2(2), 037- 039.
- Fasihuddin B. A. and Ghazally I. (2003). Medicinal Plants used By Kadazandusun Communities Around Crocker Range. *Review of Biodiversity and Environmental Conservation*, 4, 1-10.
- Gbile Z. O. (2002). Study on Medicinal Plants. A Lecture Delivered at the Meeting of the Nigerian Field Society, Ibadan. p. 8.
- Gessler M. C., Msuya D. E., Nkunya M. H., Mwasumbi L. B., Schar A., Heinrich M. and Tanner M. (1995). Traditional Healers in Tanzania: The Treatment of Malaria with Plant Remedies. *Journal of Ethnopharmacology*, 48(19), 131-144.
- Grifo F. and Rosenthal J. (1997). Biodiversity and Human Health. Island Press, Washington D. C. USA.
- Harvey A. and Jain S. K. (2000). Plant Products in Some Tribal Markets of Central India. *Economic Botany*, 56, 242-245.
- Kelly K. (2009). History of Medicine. *New York Facts on File*. 29-50.
- Kinsley A. (1996). *Health, Healing and Religion: A Cross Cultural Perspective*. Pearson Publishers, New York. pp. 198-201.
- Krippner S. (2003). Models of Ethnomedicinal Healings. Paper Presented at the Ethnomedicine Conferences, Munich, Germany, April 26-27 and October 11-12.
- Phillipson J. D. and Anderson L. A. (1989). Ethnopharmacology and Western Medicine. *Journal of Ethnopharmacology*, 25, 61-72.
- Ripunjoy S. and Indira B. (2001). Ethnomedicinal Practices Among the Tai-Khamyangs of Assam, India. *Ethno Med*, 5(1), 41-50.
- Sulaiman S.K., Mohd H. I., Muskhazli M. and Rusea G. (2015). Ethnobotanical Survey of Medicinal Plants Used for Traditional Maternal Healthcare in Katsina State, Nigeria. *South African Journal of Botany*, 97, 65-175.
- World Health Organization. Traditional Medicine, 2003, Fact sheet No. 134. <http://www.who.int/mediacentre/factsheets/fs134/en/>