

Inventory of Medicinal Plants in a Homestead Garden in Gwarandok, Abattoir, Plateau State, Nigeria

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-----ABSTRACT-----

A survey was conducted to obtain an inventory of medicinal plants and their identification in a homestead medicinal garden located in Gwarandok (Abattoir) in Jos South Area of Plateau State, Nigeria. The inventory was conducted through field visits where plants were tagged, identified and herbarium specimens collected. A total of one hundred and thirteen (113) plant species were recorded, these were distributed amongst thirty-eight (38) families. The families that recorded the highest plant species include Asteraceae (16), Fabaceae (15) and Euphorbiaceae (9). With respect to habit, the plant species were either trees, shrubs, herbs, climbers, or parasitic in nature. Regarding their source, some were wild growing while others were cultivated as of the time the survey was conducted. The survey has revealed a rich inventory of medicinal plants conserved and utilized by aTraditional MedicalPractioner(TMPer). This document can serve as reference material for teaching, research and conservation practices of medicinal plants.

KEYWORDS: Identification, Inventory, Homestead/Home Garden, Medicinal Plants, Traditional Medicine,

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I. INTRODUCTION

Plant species growing throughout the worldare said to have medicinal uses, processing active constituents that have direct action on the body (Chevallier, 2000). Chevallier (2000), further states that, wild plants offer a free and natural source of herbal remedies, thus require proper identification else, misidentification can result to poisoning.

Sofowora (2008) has defined a medicinal plant as a plant which one or more of its organs possesses substances that can be used for therapeutic purposes or which are precursors for manufacturing useful drugs. He further states that these include plants used medicinally in galenical preparations, those used for extraction of pure substances, food, spice (e.g. Ginger) and plants which produce perfumes which can be used medicinally.

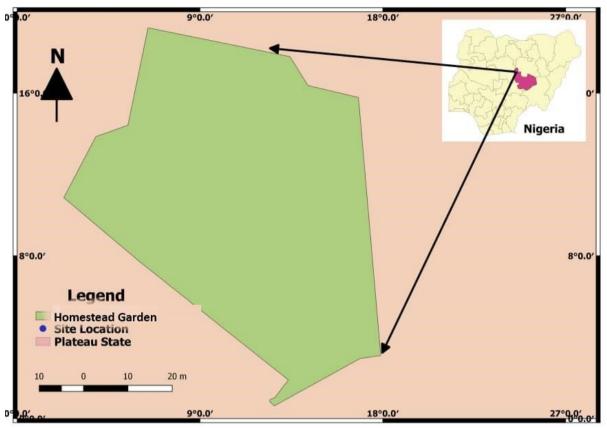
Sofowora also states that medicinal plants include microscopic plants (such as Fungi andActinomycetes) and fiber plants (such as Cotton, Flax and Jute, which are used for preparing surgical dressings)

Traditional medicine is the total combination of knowledge and practice, used in diagnosing or eliminating a physical, mental or social illness, relying on past experience and observation handed down from generations (Sofowora, 1982). The use of medicinal plants is common and widespread in Nigeria. Today, the society at large appreciates natural remedies which medicinal plants provide, compared to synthetic remedies (Kadiri, 2008).

Medicinal plants are sometimes added to food meant for pregnant and nursing mothers, for medicinal purposes (Okwu, 2001). Although the set backs on the use of medicinal plants may include misidentification and unwillingness to share expertise with people (Kunle, 2000; Sanusi, 2002; Sofowora, 1982), its advantages are that it complementsorthodox medicine, it is relatively cheap and it is a source of cheap starting products for the synthesis of known drugs. Thus, one of the major approaches in developing new drugs from plants is to examine the uses claimed for a traditional preparation.

A survey of medicinal plants in various zones of Nigeria has been conducted and this document is a useful tool for research and teaching purposes (Okujagu*et al.*, 2009).Some notable field guides / textbooks containing plant names, their descriptions and other educative information have been publishedAkobundu and Agyakawa (1987), Arbonnier (2004), Kurian (2016a) and Kurian (2016b).

Reports abound generally on the plants that have been documented to be used in treating various ailments. This paper presents a case study of a Homestead Garden in Gwarandok(Jos South Area of Plateau State) where biodiversity is conserved and the medicinal plants grown therein are harnessed for production of medicinal remedies for various ailments.



II. MATERIALS AND METHOD

Study Area

The Medicinal garden is located on longitude $09^{0}87^{l}N$ and latitude $008^{0}88^{l}E$ with average elevation of 126 m and a total area of 3,636 sqm, and is presented on the map above.

Located in Gwarandok, Jos South Area of Plateau state. The land is both a combination of Inselbergs (Rock outcrops) and flat land. The Inselbergs also serve as a habitat for some of the plants in the medicinal garden.

Method

Through field surveys, the medicinal plants in the herbal garden were pointed out by the traditional practitioner, tagged, numbered and recordedon the checklist. Herbarium specimens of the plants were collected and pressed.

Plant identification was carried out on the field with the help of a human guides. Herbarium specimens were deposited at the Herbal Garden and the Herbarium of the department of Plant Science and Biotechnology University of Jos.

Digital images of plants were also obtained to be used for further research and documentation purposes.

III. RESULTS

Table 1 shows plant species recorded at the medicinal garden, their English names, Families, Habits and Sources (whether they are wild growing or cultivated).

The results of the study revealed a list of 113 plant species belonging to 38 families. The most prominent families include Asteraceae, Fabaceae, Amaranthaceae, Moraceae, Euphorbiaceae, Rutaceae and Poaceae (Figure 1). The most species rich family is Asteraceae, which recorded a total of 16 plant species closely followed by Fabaceae with a total of 15 plant species.

Most of the plant species listed in the inventory are believed to possess various medicinal uses and thus able to cure a number of illnesses based upon preparation and administration.

5/ NO	out 75% of the total number of families Plant species	Common Name	Family	Habit (Status at time of survey in Home Garden)	Sourc
	AbrusprecatoriusL.	Crab's eye	Fabaceae	Creeper	С
2	AchyranthesasperaL.	Devil's horsewhip	Amaranthaceae	Herb	W
3	AfzeliaafricanaSm.	Pod mahogany	Fabaceae	Tree	W
Ļ	Ageratum conyzoidesL.	Goat weed	Asteraceae	Herb	W
5	Albiziazygia(DC.) J.F. Macbr.	West African Albizia	Fabaceae	Tree	W
5	Althenantherasessilis(L.) R. Br. ex DC.	Dwarf copperleaf, Sessile joyweed	Amaranthaceae	Herb	W
,	AmaranthusspinosusL.	Spiny amaranth, Spiny pigweed	Amaranthaceae	Herb	W
	AmaranthusviridisL.	Slender Amaranth	Amaranthaceae	Herb	W
	Amorphophallus spp. BlumeexDecne.		Araceae	Climber	W
0	AnacardiumoccidentaleL.	Cashew	Anacardiaceae	Tree	С
1	Andrographispaniculata(Burm. F.) Nees.	King of bitters, Green chireta	Acanthaceae	Herb	С
2	AnnonamuricataL.	Soar sop	Annonaceae	Small Tree	С
3	Annona squamosa L.	Sugar Apple	Annonaceae	Small Tree	С
4	Asparagus officinalisL.	Asparagus	Asparagaceae	Creeper	W
5	Bidensoligoflora(Katt) Wild.	Abanacha	Asteraceae	Herb	W
5	BidensPilosaL.	Black jack, beggar ticks	Asteraceae	Herb	W
7	Bryophyllumpinnatum(Lam.) Oken	Miracle leaf	Crassulaceae	Herb	W
3	Carica papaya L.	Pawpaw	Caricaceae	Tree	Ċ
9	CajanuscajanL.	Pigeon Pea	Fabaceae	Shrub	Ĉ
)	Cassia rotundifolia(Pers.) Greene.	Round leaf Cassia	Fabaceae	Herb	W
ĺ	Catharanthusroseus(L.) G. Don.	Madagascar periwinkle	Apocynaceae	Herb	Ċ
2	ChrysanthellumindicumDC.	Widdagasear periwinkle	Asteraceae	Herb	c
3	<i>Chrysanthemum frutescens</i> (L.) Sch. Bip.	Paris daisy	Asteratceae	Herb	W
, 1	<i>Citrus limon</i> (L.) Osbeck	Lemon	Rutaceae	Tree	C
+ 5				Tree	C
	CitrusxparadisiMacfad.	Grape fruit	Rutaceae		C
) ,	Clerodendrummyricoides(Hochst.) R. Br. Ex	т. : I	Lamiaceae	Shrub	***
7	Cnidoscoluschayamansa(Mill.) I. M. Johnst.	Tree spinach	Euphorbiaceae	Shrub	W
3	ConyzaaegyptiacaL.	Horseweed	Asteraceae	Herb	W
9	CocusnuciferaL.	Coconuts	Arecaceae	Tree	С
0	CorchorusolitoriusL.	Jew's mallow (bush okra)	Malvaceae	Herb	W
1	Crinum spL.		Amaryllidaceae	Herb	W
2	CrotolariajunceaL.	Brown (Indian) hemp	Fabaceae	Herb	W
3	CucumismetuliferousE. Mey	Spiked melon	Cucurbitaceae	Climber/Creeper	W
4	Curcuma longaL.	Tumeric	Zingiberaceae	Herb	С
5	Cyphostemmavogelii(Hook. F.) Desc.		Vitaceae	Climber/Creeper	W
5	Cymbopogoncitratus(DC.) Stapf.	Lemon grass	Poaceae	Grass	С
7	Dactylocteniumaegyptium(L.) Willd.	Egyptian crowfoot grass	Poaceae	Grass	W
8	DesmodiumospriostreblumDesv.	Tick clover	Fabaceae	Herb	W
9	DichrostachyscinerealWight et Arn.	Sicklebush	Fabaceae	Shrub	W
)	Dracaena fragrans(L.) Ker Gawl.	Happy plant	Asparagaceae	Grass	W
1	<i>Dysphonia ambrosioides</i> (L.) Mosyaki& Clements.	Mexican tea	Amaranthaceae	Herb	W
2	Eleusineindica(L.) Gaertn.	Wiregrass	Poaceae	Grass	W
3	Emilia coccinea (Sims) G. Don.	Scarlet tassel flower	Asteraceae	Herb	W
4	<i>Erythrinasigmoidea</i> Hua	Flame tree	Fabaceae	Tree	W
5	Euphorbia heterophyllaL.	Painted Euphorbia	Euphorbiaceae	Herb	W
6	Euphorbia hirtaL.	Asthma Weed/plant	Euphorbiaceae	Herb	W
7	Euphorbia hyssopifoliaL.	Hyssop leaf	Euphorbiaceae	Herb	С
8	Euphorbia latrifoliaShem. & Thom.		Euphorbiaceae	Herb	W
9	Euphorbia poisoniiPax.		Euphorbiaceae	Shrub	W
)	FicuscoronataSpin.	Creek sand paper fig	Moraceae	Tree	W
1	FicusglumosaDelile.	Mountain fig	Moraceae	Tree	W
2	FicusovataVahl.	U	Moraceae	Tree	W
3	Ficussp	Sea almond tree	Moraceae	Tree	W
Ļ	Ficus sp.	Common wild fig	Moraceae	Tree	W
5	GomphernacelosoidesMart.		Amaranthaceae	Herb	w
5	Hibiscus sabdariffa L.	Zobo or Roselle	Malvaceae	Herb	č
7	<i>Hyptissuaveolens</i> (L.) Poit.	Pignut	Lamiaceae	Shrub	w
8	IndigoferaerectaThunb.	Indigofera	Fabaceae	Shrub	W
o 9	JatrophacurcasL.	Physic nuts	Euphorbiaceae	Tree	W
0	JatrophacurcasL. JatrophagossipifoliaL.		Euphorbiaceae	Tree	W
) 1		Black physic nut	Meliaceae		C W
	Khayasenegalensis(Desr.) A. Juss	African mahogany		Tree	
	Langaugalata C M	Win and at the last			
23	LaggeraalataS. Moore Lantana camaraL.	Winged stem laggera Tickleberry	Asteraceae Verbenaceae	Herb Shrub	W W

About 75% of the total number of families obtained registered less than 5 numbers of plant species each.

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65 Luffacylindrica(Linn.) M.J. Roem. Luffa Sponge Cucurbitaceae Climb	
66 MangiferaindicaL. Mango Anacardiaceae Tree	C
67 <i>Manihotesculenta</i> Crantz. Cassava Euphorbiaceae Shrub	
68 Margaritariadiscoidea(Baill.) G. L. Webster Pheasant berry Phyllanthaceae Shrub	
69 MorindacitrifoliaL. Noni Rubiaceae Shrub	
70 Moringa oleifera Lam. Drum stick tree or Moringa Moringaceae Small	
71 <i>Mormordicacharantia</i> var. <i>muricata</i> Willd. Cucurbitaceae Climb	
72 <i>Mormordicabalsamina</i> L. Cucurbitaceae Climb	
73 <i>Morusrura</i> Mulberry Moraceae Shrub	
74 <i>Musa paradisiaca</i> L. Plantain Musaceae Herb	С
75 Musa sapientumL. Banana Musaceae Herb	С
76 <i>Nelsoniacanescens</i> (Lam.) Spreng. Tsamiyarkasa Acanthaceae Herb	W
77 <i>Ocimumgrattissimum</i> L. Clove basil Lamiaceae Shrub	
78 <i>Olaxsubscorpioides</i> Oliv. Olaceceae Shrub	
79 <i>Opuntiadilenii</i> (KerrGawl.) Haw. Prickly pear Cactaceae Shrub	
80 Parkiabiglobosa(Jacq.) R. Br. ex G. Don. African locust bean Fabaceae Tree	С
81 <i>Perseaamericana</i> Mill. Avocado Lauraceae Tree	С
82 Phaseolus vulgaris L. Common beans Fabaceae Climb	
83 PlectranthusneochilusSchltr. Mosquito bush, Fly bush Lamiaceae Herb	С
84 <i>Phyllanthusamarus</i> Shum &Thonn. Hurricane weed Phyllanthaceae Herb	W
85 <i>Phyllanthus spp.</i> Stonebreaker Phyllanthaceae Herb	W
86 PolyalthialongifoliaSonn. Indian mast tree/ Annonaceae Tree	С
Masquerade tree	
87 <i>Portulaceaoleraceae</i> L. Red root Portulaceaee Herb	W
88 <i>Prunusdomestica</i> L. Round plum Rosaceae Tree	С
89 <i>Psidiumguajava</i> L. Common guava Myrtaceae Tree	С
90 Senegaliaataxacantha(DC.) Kyal&Boatwr. Flame Thorn Fabaceae Shrub	
91 Sennaobtisifolia(L.) H.S. Irwin &Barneby Chinese senna Fabaceae Herb	W
92 Sennaoccidentalis(L.) Link. Coffeesenna Fabaceae Herb	W
93 SansevieriatrifasciataPrain. Snakeplant Asparagaceae Herb	W
94 Setariabarbata(Lam.) Kunth Corn grass Poaceae Herb	W
95 SidaurensLinn. Nettle-leaved sida Malvaceae Herb	W
96 SolanumaethiopicumL. Garden egg Solanaceae Herb	С
97 SolanumlycopersicumL. Tomato Solanaceae Herb	С
98 SonchusoleraceousL. Wild Lettuce Asteraceae Herb	W
8 ()	al Herb C
100 SpermacociverticulataLinn. Button weed Rubiaceae Herb	W
101 SteganotaeniaaraliaceaHochest. Carrot tree Apiaceae Small	
102 SterculiasetigeraDelile. Karayagum tree Malvaceae Tree	W
103 Syzygiumcumini(L.) Skeels. Blackplum Myrtaceae Tree	С
104 Tagetes sp. Marigold Asteraceae Herb	С
105 <i>Talinumtriangulare</i> (Jacq.) Wild Waterleaf Portulacaceae Herb	W
106TamarindusindicaL.TamarindCaesalpiniaceaeTree	С
107Tapinanthus sp.Mistletoe (Blume) Rchb.LoranthaceaeParasi	
108TephrosavogeliiHook.f.Fish Poison BeanAsteraceaeShrub	
109 <i>Terminaliacatappa</i> L. Indian almond Combretaceae Tree	С
110 <i>Tithoniadiversifolia</i> (Hemsl.) A. Gray Tree marigold Asteraceae Shrub	
111 TridaxprocumbensL. Coat buttons Asteraceae Herb	W
112VernoniaadoensisSch. Bip. ex Walp.AsteraceaeShrub	
113 VernoniaamygdalinaDelile. Bitter leaf Asteraceae Shrub	C C

W = Wild

 $\mathbf{C} = \mathbf{Cultivated}$

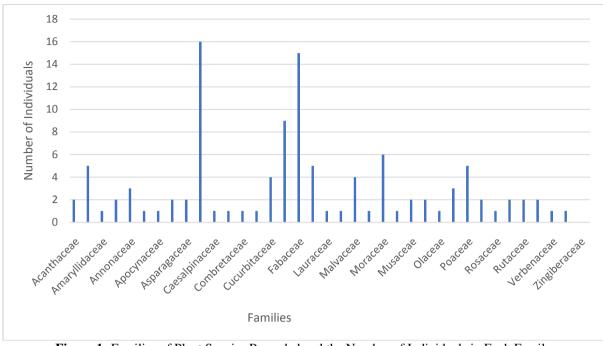


Figure 1: Families of Plant Species Recorded and the Number of Individuals in Each Family

Figure 2 shows the distribution of plants in different Habits at the medicinal garden. A large number of plants in the garden are herbaceous in nature, with a total of forty-nine (49) plant species (43%). Plants in the Garden that are trees are thirty (30) in number (27%), those represented as shrubs are twenty (20) in number (17.6%) while those which are creepers/climbers were eight (8) in number (8%) and also Five (5) grass species (4.4%) were recorded during the survey. Only one plant was recorded as being parasitic in nature, this was the mistletoe plant.

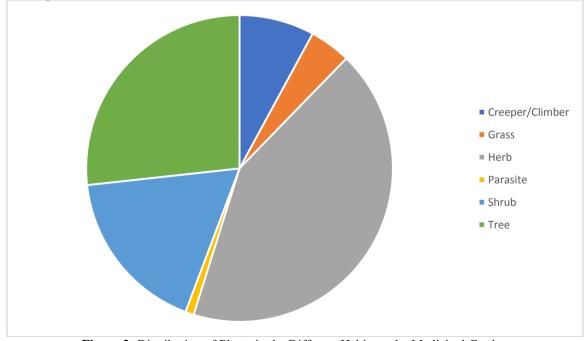


Figure 2: Distribution of Plants in the Different Habits at the Medicinal Garden

IV. DISCUSSION

When plants are identified and documented, the document serves as a reference material for research and learning purposes.

Quite a number of the plants inventoried at the medicinal garden have been documented in texts containing plant names and descriptions by Akobundu and Agyakawa (1987), Arbonnier (2004), Kurian (2016a) and Kurian (2016b)

A total of 113 plant species were collected and documented. Among these plant species includes *Citrus limon, Cymbopogoncitratus* and *Mangiferaindica* of which Kadiri (2008) noted to be respectively used to treat malaria, while *Ocimumgratissimum* is being used to control menstruation by the inhabitants of Lagos state, Nigeria.

The family Fabaceae had a total of 15 species, the second highest in the study. Fabaceae has been ranked third at a global level in terms of species richness after Asteraceae and Orchidaceae (Morales and Ladio, 2012). Although members of Fabaceae are mostly used as food and especially as dietary sources of protein as seen in *Glycine max, Phaseolus, Pisum sativum* and *Arachis hypogea*, Rahmen and Parvia (2014) recorded a list of 32 species to be used as medicinal plants by the local people of Rajashi, Bangladesh. Among the plants, they recorded are*Abruspretarius Cajanuscajan* which were also recorded in this study. According to Gao *et al.* (2010), Fabaceae has the second largest family of medicinal plants consisiting of about 490 medicinal plant species.

Emilia coccinea, Euphorbia heterophylla and *Tridaxprocumbens* which were recorded in this study have been tagged as potential sources of useful drugs due to their phytochemical constituents which include Tannins, Cardic glycosides, Steroidsand Phlobattannins (Edegora*et al.*, 2005).

Also, in this study are members of the family Asteraceae which include; *Ageratum conyzoides, Chrysanthemum indicum*, and *Tridaxprocumbens*to mention but a few. While these three plant species were recorded by Lakshman *et al.* (2014) to be useful in curing dermatological problems, *Ageratumconyzoides* and *Tridaxprocumbens*have been documented to also have woundhealing activities (Okunade. 2002; Suntar, 2014; Sharma *et al.*, 2014).

About 75% of the total number of families obtained in this study registered less than 5 species each. The low similarity indices in the diversity of the members of these families indicates that each of the ecological environments in the Homestead Garden offers a set of unique species, likely to correspond to the different sub-habitat types and availability of nutrients in the environment.

V. CONCLUSION

The survey has revealed One hundred and thirteen (113) identified plant species that are currently growing in the medicinal garden from which the Traditional MedicalPractitioner (TMP) harnesses plant parts for his herbal preparations.

The plants therein have also been serving as specimens for teaching of medicinal plant related courses. Further conservation of the garden and formation of other resources from the data obtained would go a long way in developing the garden to become a learning Centre for studies in Herbal medicine, Phytomedicine and Economic Botany. Products from the research such as the Herbarium specimens can serve as good resources for teaching and research purposes. Furthermore ,textbooks, monographs, other teaching materials and further research (on utilization of the medicinal plants and their propagation) can emanate from thisbaseline data and strongly serve as vital tools for teaching and research purposes.

REFERENCES

- [1]. Akobundu, I.O., Agyakawa, C.W. (1987). A Handbook of West African Weeds. Oyo state, Ibadan. Nigeria: International institute of Tropical Agriculture. 556pp
- [2]. Arbonnier, M. (2004). Trees, shrubs and lianas of West African Dry Zones. London Pp 136-515.
- [3]. Chevallier, A. (2000). Encyclopedia of Herbal Medicine. DK Publishing Inc., New York. Pp 10, 288.
- [4]. Edeoga, H.O., Okwu. D.E., Mbaele. B.O. (2005). Phytochemical Constituents of some Nigerian Medicinal Plants. African Journal of Biotechnology 4(7): 685-688.
- [5]. Gao, T., Yao, H., Liu, C., Zhu, Y., Ma, X., Pang, X., Xu, H. & Chen, S. (2010). Identification of Medicinal Plants in the Family Fabaceae using a Potential DNA Barcode ITS2. *Journal of Ethnopharmacology* 130(1): 116-121
- [6]. Kadiri, A.B. (2008). Evolution of Medicinal Herbal Trade (Paraga) in Lagos State of Nigeria. *Ethnobotanical leaflets* 12: 677-681
- [7]. Kunle, O. (2000). The Production of Pharmaceuticals from Medicinal Plants and Their Products. *Nigerian Journal of Natural Products and Medicinal* 4:9-12.
- [8]. Kurian, J.C. (2016a). Healing Wonders of Plants Volume 1. China Zambia Adventist. 192pp
- [9]. Kurian, J.C. (2016b). Healing Wonders of Plants Volume 2. China Zambia Adventist. 200pp
- [10]. Lakshman, H.C., Tanzima, Y. & Gabriel, K.P. (2014). Herbs of Asteraceae and Their Ethno-medicinal Uses in Dermatological Problems. *Journal of Biological Sciences* 22:127-129.
- [11]. Morales, S. and Ladio, A. (2012). The usefulness of Edible and Medicinal Fabaceae in Argentine and Chilean Patagonia: Environmental Availability and other Sources of supply. Evidence-based Complementary and Alternative Medicine. Article ID 901918 http://dx.doi.org/10.1155/2012/901918
- [12]. Okujagu, T.F., Etatuuie, S., Eze, I., Salihu, I., Mbaoji, C., Audu, A.M., Oche, B., Anuoro-Dibia, C. & Chidebe, I. (2009). Medicinal Plants of Nigeria: North-East Nigeria. Nigerian Natural Medicine Development Agency ISBN 978-978-903-179-5.
- [13]. Okunade, A.L. (2002). Ageratum conyzoidesL. (Asteraceae). Fitoterapia 73: 1-16.
- [14]. Okwu, D.E. (2001). Evaluation of the Chemical Composition of Indigenous Spices and Flavouring agents. *Global Journal of Pure and Applied Sciences* 7(3): 455-459.

- [15]. Rahmen, A.H.M.M. & Parvin, M.I.A. (2014). Study of Medicinal Uses on Fabaceae Family at Rajshahi, Bangladesh. *Research in Plant Sciences* 2.1: 6-8.
- [16]. Sanusi, S. (2002). Relevance and Potential Hazards of Herbalism. Globalisation Biodiversity and Conservation. Proceedings of Botanical Society of Nigeria. Pp27-28
- [17]. Sharma, J., Gairda, S., Sharma, Y.P., & Gaur R.D. (2014). Ethnobotanical Plants Used to Treat Skin Diseases by TharuCommunit of District Udham Singh Nager, Uttarakh and India. *Journal of Ethnopharmacology*. 158: 140-206.
- [18]. Sofowora, A. (2008). Medicinal Plants and Traditional Medicine in Africa. Spectrum Books Limited, Ibadan, Nigeria. Pp 2-8.
- [19]. Suntar, I. (2014). The Medicinal Value of Asteraceae Family Plants in Terms of Wound Healing Activity. *Journal of Pharmaceutical Science* 39: 21-31.

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