IJMPR 2022, 6(2), 18-28

International Journal of Modern Pharmaceutical Research

www.ijmpronline.com

ISSN: 2319-5878
IJMPR
Research Article

SJIF Impact Factor: 5.273

ETHNOBOTANICAL STUDY OF TRADITIONAL MEDICINAL PLANTS USED TO TREAT HUMAN ILLNESS IN ISARA DISTRICT, GUDUMO NADA, SOUTHERN ETHIOPIA

Gizaw Bejigo*[1] and Kedire Erbo[2]

Ethiopian Biodiversity Institute Hawassa Biodiversity Center.

Received on: 11/01/2022

Revised on: 31/01/2022

Accepted on: 21/02/2022

***Corresponding Author**

Gizaw Bejigo

Ethiopian Biodiversity Institute Hawassa Biodiversity Center.

ABSTRACT

This ethnobotanical study was conducted in southern Ethiopia Dawuro zone Isara district at Gudumo-Nada sites. In this study 38 plant species belongs to 34 genera and 23 plant families were identified by 81 local community members for treatment of different human diseases. Asteraceae is the leading family (21.74%) followed by Lamiaceae (17.39%). The study shows that more medicinal plants (47.37%) were harvested from forest and herbs are most popular (55.3%) followed by shrubs (23.7%) plant habits. According to the result of this study leaves are more used part **(**26.32%**)** for traditional medicinal value followed by roots (15.80%). preference ranking of medicinal plants in the study shows Cyperus articulates scored the highest and first ranked indicting that it was the most effective in healing abdominal pain followed by Pentas schmperiana and the highest informant consensus factor value (0.91) was recorded by Tapeworm, Ascaris Lumbricoides and internal parasite disease categories.

KEYWORDS: Indigenous knowledge, traditional medicine, Traditional healers, Disease, Medicinal plants.

1. INTRODUCTION

Traditional medicine is defined as indigenous medicine that is used to sustain health by prevent, diagnose, and treat physical and mental illnesses. It different from modern medicine based on theories, beliefs, and experiences (WHO, 2012). Traditional medicine has been used for many years with great contributions made by practitioners to human health, mostly as primary health care providers at the community level and has maintained its popularity worldwide (WHO,2008). In addition its importance in health care, medicinal plants has enormous potential contribution to economic growth (WHO, 2003).

The indigenous peoples of different localities have developed their own particular knowledge of plant resource uses, management and conservation. As a result, indigenous medicine has become an integral part of numerous cultures in the world (Pankhrust, 2001). Traditional medical knowledge of medicinal plants and their use by indigenous cultures are not only useful for conservation of cultural, traditions and biodiversity, but also healthcare and drug development (Tamiru *et al.*, 2013). In the developing country about 60-85% of the population depend on traditional medicine (A.Sofowora, 1982). Plants have played a central part in combating different diseases in human and livestock in many indigenous communities, including Africa (Bussmann *et al.*, 2011). Traditional healers, and especially medicinal plant herbalists, in Africa have a detailed knowledge-base of traditional medicine (Moshi MJ *et al.*,2009), which is transferred orally from one generation to the next through professional healers, knowledgeable elders and/or ordinary people (Giday M *et al.*,2007).

In Ethiopia, the majority of the population that lives in the rural and the poor people in urban areas depend on mainly on traditional medicines to meet their primary health care needs (Sori *et al.*, 2004). Plant remedies are still the most important and sometimes the only sources of healing for nearly 80% of human and more than 90% in livestock population. Estimated floras of 6500 to 7000 species of higher plants are of medically important and out of these medicinal plants 12% are endemic to Ethiopia (Mengistu,2004). Traditional knowledge of medicinal plant in Ethiopia is not compiled (Giday *et al.*, 2003).The traditional knowledge in Ethiopia is passed orally from one generation to next and precious information can be lost because of lack of transmission this traditional medicinal plants knowledge (Pankhurst *et al.*, 2001). As a result, the need to perform ethno botanical researches and to document the medicinal plants and the associated indigenous knowledge must be an urgent task (Pankhurst, 2001; Hamilton, 2003). Therefore, this study was encouraged to document the traditional plants knowledge accrued by local community of Isara District Gudumo-Nada area

2. MATERIALS AND METHODS

2.1 Description of study area

Isara is one of the woredas in the Southern Nations, Nationalities, and Peoples' Region of Ethiopia. Part of the Dawro Zone, Isara is bordered on the south by the Omo River which separates this woreda from the Gamo Gofa Zone, on the west by the Konta special woreda, on the north by the Tocha, on the northeast by Mareka, and on the east by Loma Bosa. Towns in Isara include Bale.

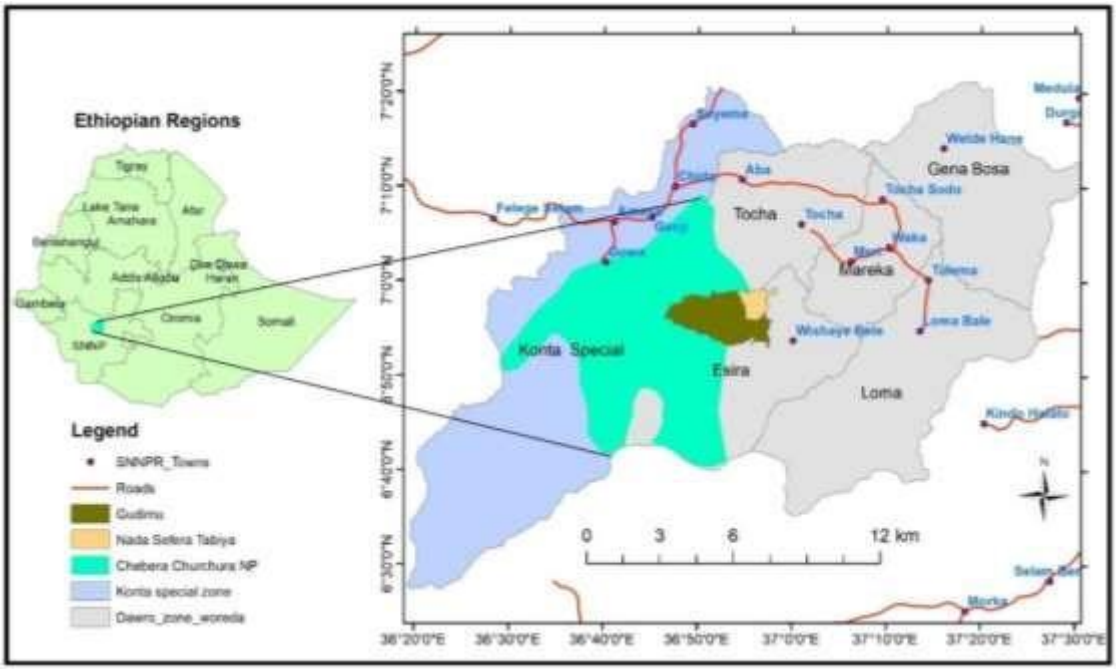

Figure 1: Location Map of the study area.

2.2 Selection of Study Sites (kebeles)

A reconnaissance survey of the study was conducted on selected keels of the Isara woreda by the recommendation from the woreda stakeholders Thus, the study carried on Gudumo-Nada and surrounding.

2.3 Selections of participants

From the site of the study 70 local community and 11 traditional healers totally 81 participants were selected with different ages (above 30 years) with the help of stakeholders of the Isara wareda, and interviewed as key informants. The selected healers were well-known in the community due to their long practice in providing services related to traditional health care to the community.

2.4 Ethnobotanical Data collection.

Ethno botanical data was collected on the by using both qualitative and quantitative data collection based on descriptive field survey design and The data was focuses on medicinal plants local names, habits, the habitats, diseases treated, parts used, preparation methods, prescribed amount, conservation practices, ways of indigenous knowledge transfer, way of management, and additional uses.

2.5 Plant Specimen Collection and Identification

The medicinal plants were collected from home gardens and natural vegetation during the field walks and all of information about the plant can be listed and identification was done by using various volumes of the Flora of Ethiopia and Eritrea (Hedberg *et al.*, 2006).

2.6 Data analysis

All ethnobotanical data was entered into Excel spreadsheet 2007 and displayed by using descriptive statistical methods like percentage, frequency graphs and tables. Preference ranking was computed by following (M.Alexiades, 1996) to assess the degree of effectiveness of certain medicinal plants against most prevalent diseases in the area. Priority ranking of factors perceived as threats to medicinal plants based on their level of destructive effects (values 1-5 were given: 1 is the least destructive threat, and 5 is the most destructive threat).

The Informant consensus factor (ICF) was calculated for each category to identify the agreements of the informants on the reported cures for the group of diseases. The ICF was calculated as follows (Heinrich *et al.*, 1998).

$$ICF = \frac{Nur - Nt}{Nur - 1}$$

Were,
ICF- informant consensus factor
Nur- number of use citations in each category
Nt- number of species used

3. RESULTS AND DISCUSSION

3.1 Source and habitats of medicinal plants

In this study a total of 38 plant species belongs to 34 genera and 23 plant families were used by local community to cure 13 human diseases.(table 1). Asteraceae was the leading family with five species (21.74%) followed by Lamiaceae with four species (17.39%) in the study area. The result of this study shows that in this study site 47.37% medicinal plants were harvested from forest and 31.58% from backyard. This findings completely tells us wild plants are more source of traditional medicinal plants. The reports of different studies were conducted on medicinal plants in Ethiopia shows that, the most of medicinal plants are wild. For example the study conducted in mana angetu District. 90.43% of medicinal plants were harvested from non-cultivated areas (E. Lulekal *et al.*, 2008).Therefore, this study has similar findings in source of medicinal plants.

Table 1: Lists of medicinal plants used for treatment of human disease, local name, family name, scientific name, disease cured, habitat, plant parts, plant habits and conservation status.

Name of the plant			**Habitat**	**Disease cured by the plant**	**parts used**	**Habit**	Preparation and amount for human Adult	**conservation status**
Local name	**Family name**	**scientific name**						
Tinja	Piperaceae	*Piper capense*	F	Coldness appetizer	Seed	H	The dry seed grind and mix food or other drinks	Not threatened
Chawula	Rutaceae	Vepris dainellii	F	Coldness	Seed with is pod	T	The one pod of fruit with its seed grind and mix with food	Not threatened
Okashe	Zingiberaceae	*Aframomum korarima*	F/Fa	Abdominal pain	Seed	H	The half spoon dried powder of seed can be mixed with food ,and coffee, other drinks	Not threatened
Zengible	Zingiberaceae	Zingiber oficinale	Fa	Abdominal pain	Rhizome	H	The fresh rhizome grind then its one tea spoon with little salt put in a cup of	Rare
Bursa	Asteraceae	*Echinops kebericho*	B y	Abdominal pain Coldness Bit of snake	Root	H	The half spoon of dried powder boiled drink with coffee	Nearly threatened
Bidara	Cyperaceae	Cyperus articulatus	By	Abdominal pain Coldness	Rhizome	H	The rhizome can be dried than grind and boiled with coffee then drink	Not threatened

Shilare	Koseret	Dibo	Ocha	Natro	Disa	Tselot
Apiaceae	Verbenaceae	Apiaceae	Myrtaceae	Asteraceae	Lamiaceae	Rutaceae
Foeniculum vulgare	*Lippia adoensis*	*Coriandrum sativum*	*Syzygium guineense*	*Artemisia absinthium*	*Plectranthus ornatus*	Ruta chalepensis
Fa	By/F	Fa	F	By	Gr/Fa	By
Coldness	Appetizer	Appetizer	Spleen and uterus infection	Coldness	Coldness Common cold	Abdominal pain
Leaf seed	Leaf	Leaf seed	Root	Leaf	stalk	Leaf
H	S	H	T	H	H	S
The seed or new leaf grind and boiled with coffee then drink The powder of seed mix	The fresh leaves putted in milk and the powder of dried leaves mix with food	The powder of the leaf of root mix with food, coffee or tea then eat or drink	The roots grind mix with one cup of water and boiled then drink.	Three buds grind and boiled with local coffee(leaves of coffee) then drink	Grind the stalk boiled with water one drink one cup of it per morning	The fresh three buds can be squeezed and mix with one
Nearly threatened	Not threatened	Not threatened	Not threatened	Not threatened	Not threatened	Not threatened

Zentela	Weswuse	Kankuuala	Seyido	Senafi	Sibika	Agope	Tumo
Polygonaceae	Fabaceae	Myrsinaceae	Rosaceae	Brassicaceae	Brassicaceae	Asteraceae	Alliaceae
rumex nepalensis	*Indigofera arrecta*	*Embelia schimperi*	*hagenia abyssinica*	*brassica nigra*	*lepidium sativum*	*Artemisia afra*	*Allium sativum*
Gr/Rs	Gr/Rs	F	F	By	By	By	By
Abdominal pain	Abdominal pain	Tapeworm	Tapeworm	coldness	Coldness	Abdominal pain	Coldness Common cold
Root	Root	Seed leaf	Flower	Leaf stem	seed	Leaf	All part
H	S	T	T	H	H	S	H
The fresh root grind mix with water then filter and drink	The fresh root grind then mix with one glass of water then filter and	The dried seed /leaves/grind and mix with a glass of water than drink	Seed contain part dried and grid then mix one glass of water, milk, or	One spoon of the seed or root powder mix with milk,	Drink one spoon of seeds with a cup of coffee/tea at morning and	Three to five buds can grind, mix with one glass of water	One patch grind and mix with two spoon of honey eat early morning before food
Not threatened	Not threatened	Not threatened	Nearly threatened	Rare	Nearly threatened	Nearly threatened	Not threatened

Mitishiya	Anka	Timbaho	Donkiya	Damakase	Denderisa	Gera
Pittosporaceae	Euphorbiaceae	Solanaceae	Lamiaceae	Lamiaceae	Malvaceae	Asteraceae
Pittosporum viridiflorum	*Croton macrostachyus*	*Nicotiana tabacum*	*Ocimum americanum*	*Ocimum lamiifolium*	*sida rhombifolia*	*Vernonia amygdalina*
F	F	F	F/By	F/By	Gr/Rs	F
Abdominal pain	Wound	Eye pain	Appetizer	Eye pain	Abedomenal pain	internal parasite
bark	Leaf-Sap	Leaf	Leaf	Leaf	Root	Leaf
T	T	H	S	S	H	S
The bark can be grind, mix with half glass of water, boil then drink .	Three droplets of sap from bud on wounded area two times per day /morning and night/	The dried leaves grind and mixed with half cup of water filter the	Grind with red paper mix with food then eat	The sap from the leaf drop near to the sick eye	The root grid mix with one cup of water drink	The fresh leaf grind then mix with one cup water and drink before food
Not threatened	Not threatened	Not threatened	Not threatened	Not threatened	Not threatened	Not threatened

Zembo	Kindichu	Qumeto	Indode	Delisha/gesa/	Mitmita	Idame	Shinkurt
Arecaceae	Malvaceae	Lamiaceae	Phytolaccaceae	Commelinaceae	Solanaceae	Asteraceae	Alliaceae
Phoenix reclinata	Sida schimperiana	*Leonotis ocymifolia*	*Phytolacca dodecandra*	*Commelina benghalensis*	*Capsicum annuum*	*Acmella caulirhiza*	*Allium cepa*
F	Rs	F/By	F/Rs	F/Rs	Fa	Gr	Fa
Abdominal pain Diarrhea	Abdominal pain	Teeth pain	Gonorrhea	Wounds	Ascariasis	Teeth pain	Coldness
Fruit	Leaf	Flower	Root	Stem sap	fruit	flower	All part
T	S	H	S	H	H	H	H
The fruit part from the seed dried mix with one glass water than drink during	The leaf grid mix with one cup water drink	The fresh flower chewed by sick teeth side of the mouth during	One spoon grid fresh root and mix with a glass of milk then drink for 5-7 days after food(	The sap extracted and dropped on wounds of the skin	The fruit grid and eat with food	The flower chewed in mouth of sick teeth side during pain	The parts grid mix with food and then eat
Not threatened	Not threatened	Not threatened	Not threatened	Not threatened	Not threatened	Not threatened	Not threatened

Gerchicha	Fabaceae	*Entada abyssinica*	F	Diarrhea Wounds	Seed Leaf	T	The root grid mix with one cup water the drink for diarrhea also the	Not threatened
Dawuridama	Rubiaceae	Pentas schimperiana	Fa	Bone fracture, Abdominal pain	Seeds leaf	H	The fresh buds / leaf/ grind mix water ,filter, and boil by sun for five minutes then drink	Not threatened

NB. F=forest, By= backyard, Gr=grazing land, Rs road side, Fa= farm land Coldness (Bered in Amharic) = Dry cough with headache

3.2 Medicinal plant habits, parts used and conservation status

3.2.1 Medicinal plant habits

The results of this study shows (Figure 2) that in the study area herbs are most popular (55.3%) followed by shrubs (23.7%) (fig1) This findings are similar with the findings reported by (R. Regasa *et al.*, 2017) that indicates herbs were the most frequently used plants categories.

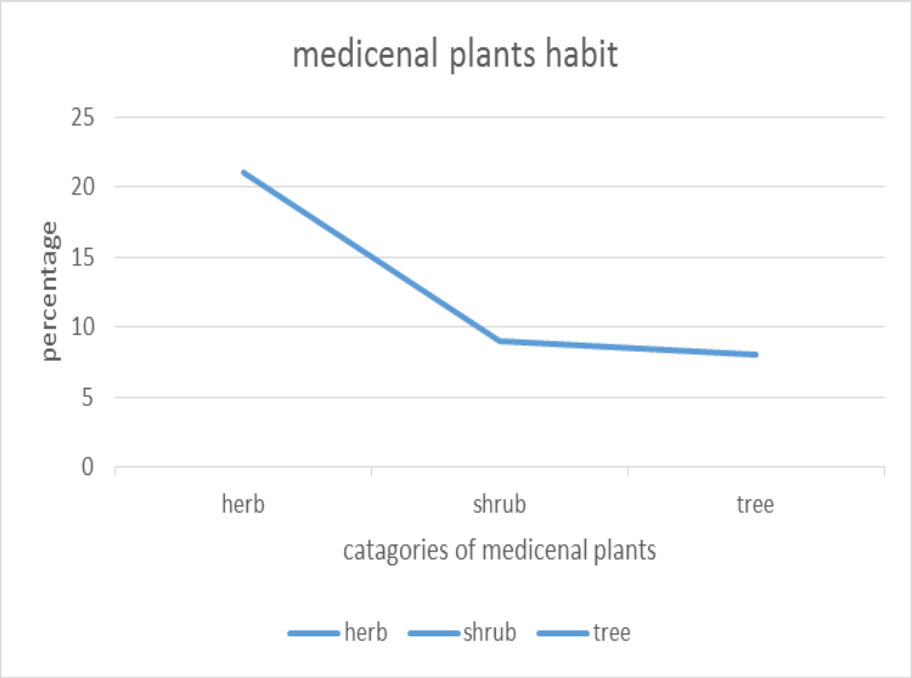

Figure 2: medicinal plant habits.

3.2.2 Medicinal plant used parts

As a result shown in figure 3, leaves are more used part (26.32%) of the medicinal plants followed by roots (15.80%) in the study area. The findings of different studies agree in this findings. For instance, The findings of ethno botanical study reported by (T. Hailemariam Bekalo *et al.*, 2009) indicates that leaves are the most commonly used and accounted 34.2% of the total, followed by roots (30.9%).

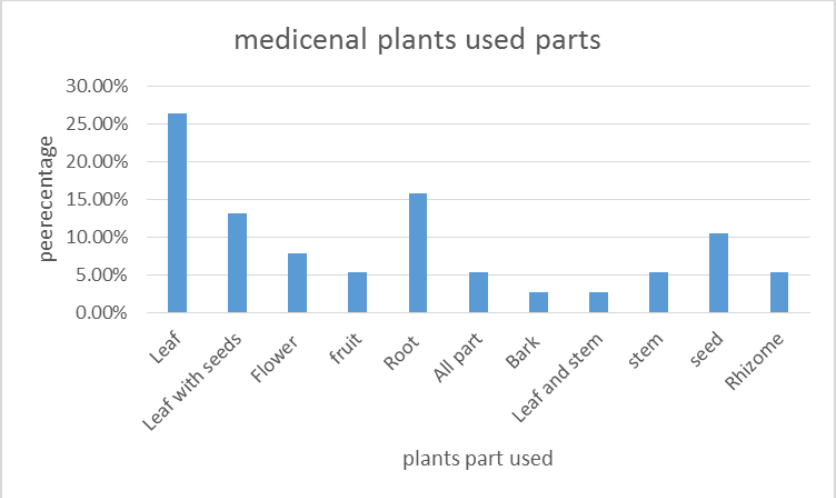

Figure 3: medicinal plants used parts.

3.2.3, Conservation status medicinal plants

Table 2: Summery of medicinal plants habits, used parts and conservation status.

	Characteristics	Frequency	Percentage
Habits	Herbs	21	55.3%
	Shrubs	9	23.7%
	Trees	8	21%
Plant parts	leaf	10	26.32%
	Leaf with seeds	5	13.16%
	Flower	3	7.89%
	Fruit	2	5.26%
	Root	6	15.80%
	All part	2	5.26%
	Bark	1	2.63%
	Leaf and stem	1	2.63%
	Stem	2	5.26%
	Seed	4	10.53%
	Rhizome	2	5.26%
Conservation status	Not threatened	31	81.58%
	Nearly threatened	5	13.16%
	Rare	2	5.26%

3.3 Preference ranking of medicinal plants

Preference ranking of medicinal plants of effective treatments abdominal pain Preference ranking of four (4) medicinal plants were mentioned as active for treating abdominal pain was conducted after selecting eight key participants. According to the conducted report abdominal pain was the most popular disease that healed by more traditional medicinal plants .As efficiency comparison results of participants showed in (Table 3) that *Cyperus articulates* scored the highest and first ranked indicting that it was the most effective in healing abdominal pain followed by *Pentas schmperiana.*

Table 3: Preference ranking of medicinal plants for treating abdominal pains.

Respondents (A-H)										
Medicinal plants C	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**Total**	**Rank**
Indigofera arrecta	4	5	4	3	4	5	3	3	31	3
Pentas schimperiana	5	5	4	4	3	4	5	5	35	2
Artemisia afra	5	4	3	3	4	3	3	4	29	4
Cyperus articulatus	4	5	5	5	3	4	5	5	36	1

3.4 The Informant consensus factor

As shown in table 4, Tapeworm, Ascaris Lumbricoides, other internal parasite disease categories have the highest informant consensus factor value (0.91). This result tells us those medicinal plants species used to treat in this diseases categories serve for specific health problems and need to be extremely careful additional pharm logical studies.

Table 4: Informant consensus factor groups of diseases in the study sites.

Groups of diseases	Number of species	Use citation	ICF
Eye pain, teeth pain, uterus infection, Spleen infection gonorrhea	6	23	0.77
Coldness, common cold	11	61	0.83
Abdominal pain	12	37	0.69
Tapeworm, Ascariasis, other internal parasite	4	33	0.91
Bone fracture, wounds snake bit	5	17	0.75
Diarrhea, loss of appetite	5	22	0.80

4. CONCLUSION

The results of this study revealed that Isara District has a great potential source of traditional medicinal plants to treat human hearth difficulties. Most of the collected medicinal plants were from the wild source and also not threatened. According to this study, community of Gudumo-Nada areas have very interesting indigenous cultural knowledge in the conservation of traditional medicinal plants in their initial source.

5. ACKNOWLEDGEMENTS

I would like to express my internal appreciation and gratitude to Ethiopian Biodiversity Institute Enhanced Management and Enforcement of Ethiopia's Protected Area Estate Project for cover all the financial support to conduct this study and Isara woreda people for their active participation during data collection.

6. REFERENCE

1. A. Sofowora, medicinal plants and Traditional Medicine in Africa, John Wiley and Sons, New York, Ny, USA, 1982.
2. Bussmann WR, Swartzinsky P, Worede A, Evangelista P: Plant use in Odo-Bulu and Demaro, Bale region Ethiopia. JEthnobiolEthnomed, 2011; 7: 28.
3. E. Lulekal, E. Kelbessa, T. Bekele, and H.Yineger, "An ethnobotanical study of medicinal Plants in Mana Angetu District, southeastern Ethiopia" Journal of Ethnobiology and Ethnomedicine, 2008; 4: 10.
4. Giday M, Teklehymanot T, Abebe A, Yalemtsehay M: Medicinal plants of Shinasha, Agew-awe and Amhara peoples in northwest Ethiopia J. Ethnopharmaco, 2007; 110: 516-5 25.
5. Abebe D: Traditional medicine in Ethiopia.The attempt being made to promote it for effective and better utilization.SINET: Ethiopian Journal of science, 1986; 9: 61-69.
6. Hamiton A, C, Medicinal plants and conservation: Issues and approaches,UK: international plant conservation unit,WWF-UK, pandahoise, Catteshall Lane., 2003.
7. Hedberg I., Ensermu K., Edward S., demissew S., Persson E., Gentianacea.In: Flora of Ethiopia and Eritrea Vol.5.The national herbarium Addis Ababa, Ethiopia and Uppsala, Sweden, 2006.
8. Heinrich M, Ankl A, Frei B, Weimann C, Sticher O. Medicenal plants Mexico: Healer's Consensus and Cultureal Importance. Social Science and Medicine, 1998; 47: 1863-1875.
9. M.Alexiades, "Collecting ethnobotanical data. An introduction to basic concepts and techniques, "in selected guidelines for ethnobotanical research: A field manual M. Alexiades and J.W.Sheldon, Eds., PP,58-94, Botanical Garden, New York,NY,USA, 1996.
10. Mengistu A.K. The Effect of Herbal Preparation on staphylococcus aures and Streptococcus agalactiae isolated from clinical bovine mastitis (unPublished Msc thesis Faculty of veterinary medicine, AAU), 2004.
11. Moshi Mj,Otieno DF,Mbabazi PK, Weisheit A: The Ethnomedicine of the Haya people of Bugabo ward, Kagera Region, north western Tanzania.J Ethnobiol Ethnomed, 2009; 5: 24.
12. Pankhrust R. The status and Availability of oral and written Knowledge on traditional health care in Ethiopia In "The National Workshop on biodiversity Conservation and Sustanable Use of Medicinal plants in Ethiopia, 2001; 28: 01.
13. May, (Medhin Zewdu,and Anene Demisse, Eds), IBC,Addis Ababa, 1998; 92-106.
14. R. Regassa, T. Bekele, and M.Megersa, " Ethnobotanical study of traditional medicinal plants used to treat human alimentes by Halaba people, southern Ethiopia" Journal of Medicinal plants studies, 2017; 5(4): 36-47.
15. Sori T., Bekana M., Adunha G.,Kelbesa F. Medicinal plants in Ethnoveternary Practices of Borana pastoralists, Southern Ethiopia Int.J. Apple. Res. Vet. Med, 2004; 2: 220-225.
16. Tamiru F, Terfa W., Kebede E., Dadessa G., Kumar Roy. And Sorasa M. Ethno knowledge of plants used in dabo Hana District, West Ethiopia. Journal of Medicenal plants research, 2013; 7(40): 2960-2971. http:// www.academicjournals.org/JMPR
17. T,Hailemariam Bekalo ,S. Demissew woodomatas. and Z. Asfaw woldemariam'' An ethnobotanical study of medicinal plants used by local people in the lowlands of Konta Special Woreda, southern nations, nationalities and peoples regional state, Ethiopia'', 2009.
18. Journal of Ethnobiology and Ethnomedicine, 2009; 5: 26. doi:10.1186/1746-4269-5-26.
19. WHO (World Health Organization) Fact Sheet, Traditional Medicine, May 2003, Geneva. WHO," Traditional medicine,"2012, http://www.who.int/ mediacentre/factsheets/fs134/en, 2003.

20. WHO, "Traditional medicine, http://www.who.int /mediacentre/factsheets/fs34/en, 2008.