

Full Length Research Paper

Indigenous knowledge on medicinal plants used in and around Robe Town, Bale Zone, Oromia Region, Southeast Ethiopia

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A study on medicinally important plants in and around Robe town, Southwest Ethiopia was been carried out to document the medicinal plants and the associated knowledge in the area. Thirty informants with age range between 18 and 70 years took part in this study. Semi-structured interview was used to collect the data from the informants. The collected data was then analyzed using micro-soft excel spread sheet 2007 and summarized by descriptive statistical methods. Fifty five medicinally important plants were documented from the study area. The medicinal plants comprised of 33 families and 49 genera. Fabaceae was 30.4% followed by Solanaceae (21.7%) dominated the family distribution. Herbs are the most harvested (45.4%) plant habits followed by shrubs (30.9%) and trees (21.8%). Leaves are the most (52.7%) important plant parts used for medicinal value. Oral (47.3%) is the most common administration method used by the local people of the area. Crushing dominates (60%) the preparation method of the medicine. The practice on the use of traditional medicine is common in the study area. Conservation practices and awareness on the use of the medicinally important plants is suggested.

Key words: Indigenous knowledge, medicinal plants, semi-structured interview, Robe Town, Ethiopia.

INTRODUCTION

About 80% of the populations in developing countries rely on plants for their health care system (Hostettmann and Marston, 2002). The firm dependence on plant products for the treatment of human and livestock diseases might be have resulted from the lack of facilities and inadequate access to modern medicine (Tolossa et al., 2013). Furthermore, affordability and efficacy on treatment are contributing to the preference of medicinal plants than modern medicine (Yirga, 2010a). Like in other developing

countries, majority of the indigenous people in Ethiopia are also depending on traditional medicine (Kassaye et al., 2006).

Ethiopia is endowed with a diversified topography and climate favorable for diversified plant taxa. The country has an estimated 6000 species of vascular plants of which 10% are endemic (Yasin et al., 2015). Apart from the plant diversity, Ethiopia is also home for many languages, cultures and beliefs which in turn have

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contributed to the diversity of traditional knowledge and practices of the people (Limenih et al., 2015). Due to this, in Ethiopia there is a long history of using plants to treat different human and livestock ailments (Mesfin et al., 2014). Moreover, most of the Ethiopian population still depends on traditional medicine (Giday et al., 2009). This is because the growth and development of modern health care in Ethiopia has been very stunted and to date, its coverage is less than 50% of the population (Yirga, 2010b).

When compared to the role the practice play in the health system, the indigenous knowledge system in Ethiopia is not fully documented (Enyew et al., 2014). Due to deforestation and land degradation the medicinal plants together with the associated knowledge are at the risk of lost (D' avigdor et al., 2014). Furthermore, the local communities could face cultural changes due to the development activities in the areas where the communities live and this will lead to knowledge lose (Belayneh et al., 2012). The oral knowledge transfer between generations is also making the knowledge more fragile and the probability to be lost in the transfer process is high. Although the country has a written language, the knowledge on traditional medicine is not well documented and is transferred through words of mouth.

Although different studies have been made in different parts of the country, most of them are more general and do not focus on a specific Ethnic group or agro-ecological zone of the country (Yineger et al., 2008). This shows that documentation and conservation of medicinal plants and the knowledge of the society in specific agro ecological zones and specific ethnic group of the country is very important. Robe is one of the fast growing towns of Bale zone located in one of the biodiversity rich areas of Oromia region. In every corner of the town, it is very common to come across traditional healers selling their traditional medicines prepared from natural resources. On the other hand, the town is growing faster and the native people are facing cultural changes due to immigrants from different areas. Thus, unless the traditional knowledge is documented soon, the risk of traditional knowledge lose is expected. However, no related study has been conducted in the town so far. Therefore, this study was initiated to document the medicinal plants and the knowledge associated with medicinal plants in and around Robe town.

MATERIALS AND METHODS

Study area

The study was conducted in Robe town located at 430 km from Addis Ababa, the capital city of the country, Oromia region, Southeastern Ethiopia. The town is also situated in 7° 8' 0" North and 40° 0' 0" East position and serving as a capital city of the zone (Duressa et al. 2014).. The estimated population of the town is 73859 of them 37668 are males and 37191 are females. The town

has minimum and maximum temperature ranges between 9.42 and 21.16°C, respectively and minimum and maximum annual rainfall are 535 and 1018 mm, respectively (Figure 1) (Chala, 2012).

Method

Descriptive survey approach was employed in this study to record the medicinal plants in the area. The medicinal plants data were collected from the indigenous people in and around Robe town. Purposive sampling method was used to select the traditional healers. Recommendations from the local elders were considered to select the healers. Accordingly, 30 informants (25 males and 5 females) were systematically selected. The age ranges of the informants taking part in the study were between 18 and 70 years. The lower age limit was considered to be 18 years since informants below 18 years are not believed to have such indigenous knowledge. According to Martin (1995), semi-structured interview was used to collect the data from the informants. The informants were convinced upon the purpose of the research and each informant was requested for permission before the interview.

The interview prepared in English was translated into Afaan Oromo and Amharic, the local languages of the informants. After researchers obtain an oral consent from each informant, information concerning the traditional healers was collected. Medicinal plants information such as the plant local name, treated disease, and the use plant parts, preparation and route of administration were recorded from the informants. At the end of each interview, the researchers together with the traditional healers and local assistant carried out a field observation to observe and collect the reported medicinal plants. The collected specimens during field observation were pressed, dried and identified using different volume Flora books of Ethiopia and Eritrea. The collected data was analyzed by the descriptive statistical methods such as table, chart and percentages.

RESULTS

Fifty five medicinally important plants were documented from the study area (Table 3). The medicinal plants comprised of 33 families and 49 genera (Table 1). Fabaceae (30.4%) followed by Solanaceae (21.7%) and Asteraceae (17.4%) are dominant families in the area. Majority of the plants (85.45%) are used for the treatment of human ailments and the rest (14.54%) are used for both human and livestock. All of the medicinal plants are collected from the wild.

Plan habit

Herbs are the most (25. 45.4%) used plants in the area for medicinal purpose followed by shrubs (17. 30.9%), trees (12. 21.8%) and climbers (1.1.8%) (Figure 2).

Form of plant

Most of the medicinal plants in the area (31. 56.4%) are used in fresh form and both fresh (14. 25.4%) and dry (10. 18.2%) occupy the rest of the plant form (Figure 3).

Concerning the purpose of the medicinal plants, majority

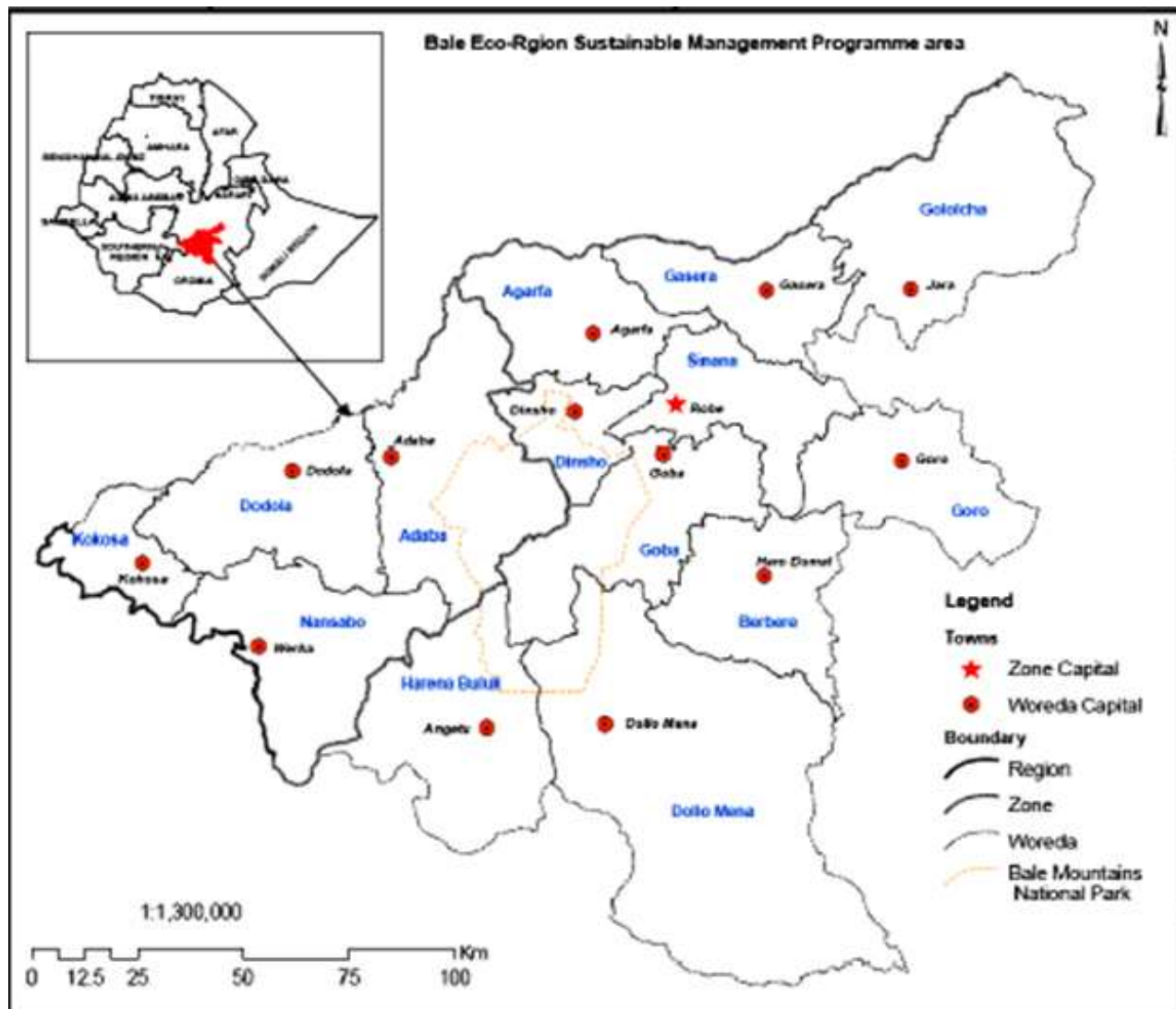


Figure 1. Map of Bale Zone. Source: Duressa et al. (2014).

of them (47.85.4%) are used for the treatment of the human disease, while the others (8.14.5%) are used for both human and livestock diseases (Figure 4).

Plant parts used

Leaf is the most harvested plant part (29.52.7%) in the study area for medicinal value followed by seed (9.16.4%), root (8.14.5%), stem (4.7.3%), root and leaf (2.3.6%), fruit (2.3.6%) and bulb (1.1.8%) (Figure 5).

Administration method

The administration method in the area is dominated by oral method (26.47.3%) followed by dermal (19.34.5%). Oral and dermal (6.10.9%), nasal (3.5.4%), and oral and

nasal (1.1.8%) also occupied the rest administration method (Figure 6).

Preparations methods of medicinal plants

Of the preparation methods recorded in the study area, crushing accounts for the largest (33.60%) preparation. Chewing (8.14.5%), boiling (7.12.7%), squeezing (5.9.1%), smoking (1.1.8%) and pasting (1.1.8%) are also the other common methods of preparations (Table 2).

DISCUSSION

Medicinal plant diversity

The result from the study area revealed that, the area is

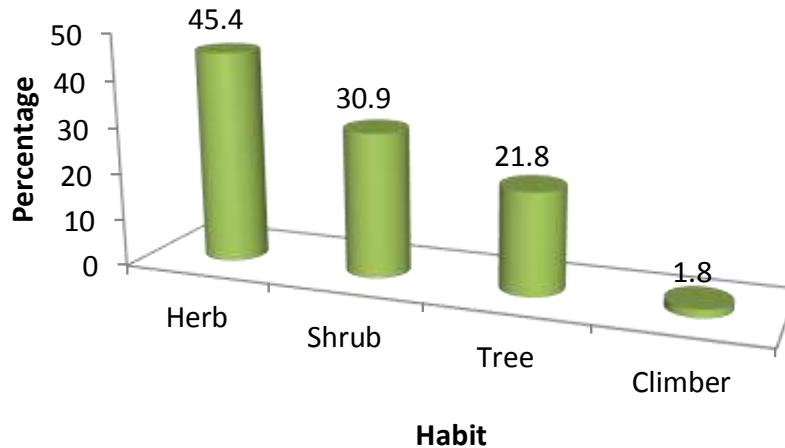


Figure 2. Growth forms (habits) of the medicinal plants.

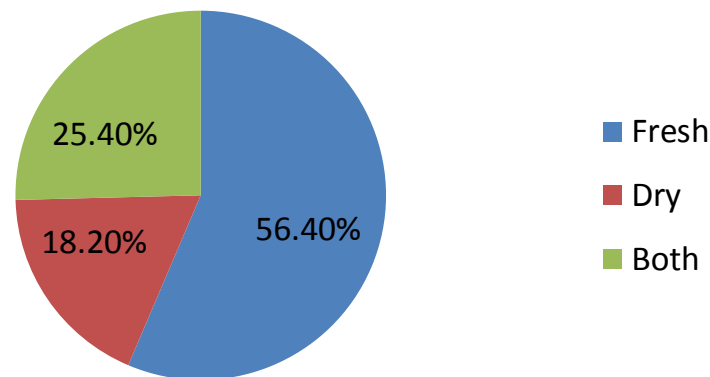


Figure 3. The plant form used in the in the area.

rich in traditional medicine. The family distribution in the study area shows that Fabaceae followed by Solanaceae dominated. The same results have also been documented in the studies carried out previously (Wondimu et al., 2007; Asefa and Abebe, 2014) in other areas in Ethiopia. Majority of the medicinal plants in the study area are used in fresh form. This may be due to the comfortable temperature and rainfall distribution which leads to the availability of fresh plants. On the other hand, traditional healers believe that fresh plants have more curing ability than the dry plants. Most of the medicinal plants recorded in the study area are used for the treatment of human ailments. This shows that the local people give more priority for themselves than animals. All of the medicinal plants documented for medicinal value are collected from the wild. This is may be due to the secrecy nature of traditional knowledge. Of the total medicinal plants documented in this study, 11 were mentioned by Bekele and Reddy (2015), 8 mentioned by Tolesa (2007), 7 mentioned by Getaneh and Girma (2014), 7 mentioned by (Enyew et al., 2014), 1 mentioned

by Maryo et al. (2015) and 1 mentioned by Assefa and Abebe (2014). Data on the knowledge transfer process shows poor relationship among the generations and the knowledge on the traditional medicine is in a verge of disappearing in the near future. Most of the young respondents interviewed in the study know very few or even no one. However, the reverse is true on the senior respondents. Even the way they explain the specific medicine is totally different. This may be either the elders are not properly transferring their knowledge or the young generations are not willing to receive the knowledge.

Plant habit and part used

The plant habit of the medicinal plants in the study area is dominated by herbs and this result is in agreement with those documented elsewhere in Ethiopia (Yineger et al., 2008; Teklay et al., 2013; Agisho et al., 2014; Getaneh and Girma, 2014). However, this finding is in contrary to the study conducted previously (Belayneh et al., 2012;

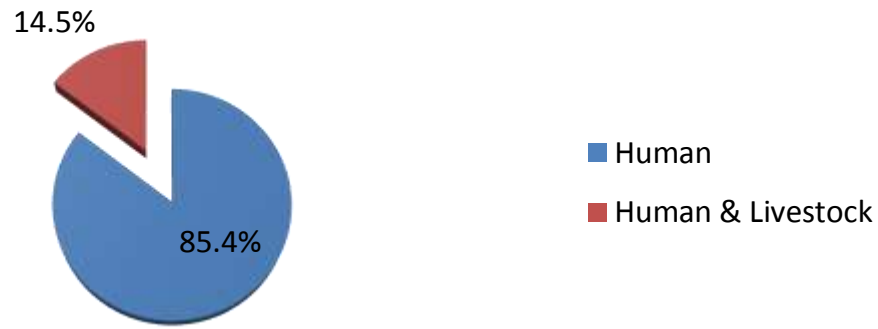


Figure 4. The purpose of the medicinal plants in the area.

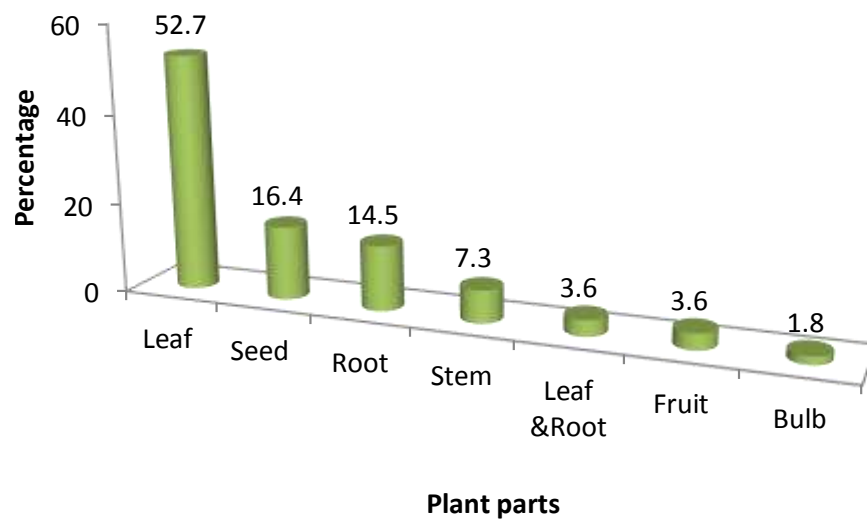


Figure 5. Plant parts used in the area.

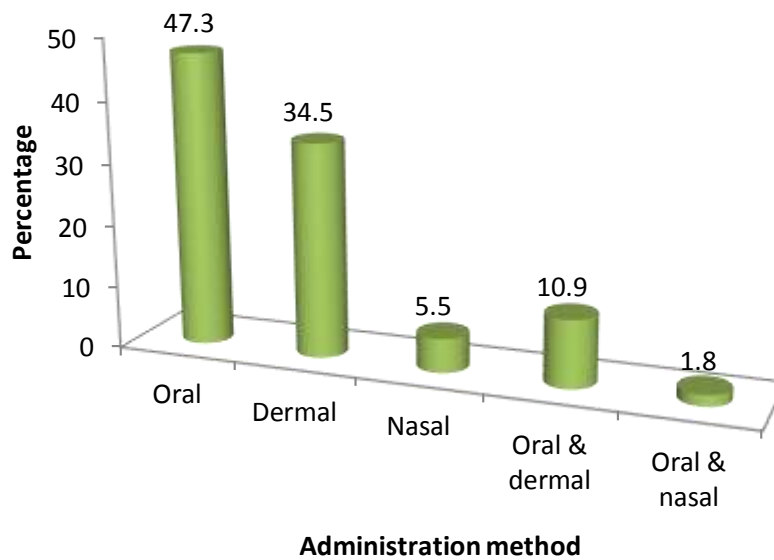


Figure 6. Administration method of the medicinal plants in the area.

Table 1. Taxonomic diversity of the medicinal plants in the study area.

Family	Number of genera	Percentage	Number of species	Percentage of species
Fabaceae	6	12.2	7	12.7
Solanaceae	3	6.1	5	9.1
Asteraceae	3	6.1	4	7.3
Oleaceae	2	4.1	2	3.6
Euphorbiaceae	2	4.1	2	3.6
Rutaceae	2	4.1	2	3.6
Cucurbitaceae	2	4.1	2	3.6
Rosaceae	2	4.1	2	3.6
Other 15 families	27	55.1	29	52.7
Total	49	100	55	100

Table 2. The preparation methods of the traditional medicine in the study area.

Method of preparation	Number of preparations	Percentage
Crushing	33	60
Chewing	8	14.5
Boiling	7	12.7
Squeezing	5	9.1
Smoking	1	1.8
Pasting	1	1.8

Bekele and Reddy, 2015) in which shrub is the most commonly used plant habit for medicinal value followed by herbs. Leaf is the most harvested plant part in the study area. This result is in line with the work of other studies (Wondimu et al., 2007; Yirga, 2010c; Mesfin et al., 2013; Regassa, 2013) where as another study by Asefa and Abebe (2014) in Benna Tsemay district of southern region and a study by Limenih et al. (2015) Dega Damot district of Amhara region of the Ethiopia documented that, root is the dominant plant part collected for medicinal purpose which is in disagreement with this study finding. Unlike roots using leaves for medicinal purpose has a very less effect on the survival of the mother plant.

Preparation and administration methods

The majority of the medicines (60%) in the area are prepared through crushing and this report is in line with the study carried out in Fiche town of Oromia region by Enyew et al. (2014). In the preparations of the medicines, different additives like honey, milk, water, coffee and tea will be used to reverse adverse effect of the traditional medicines such as vomiting, itching and diarrhea. The same result was also documented elsewhere in Ethiopia (Yirga, 2010a, b, c). Most of the prepared medicines are administered orally in the area followed by dermal. This

may be due to the fact that the local people perceive that the medicines taken through mouth are more effective than the other body parts. The study agrees with work of Limenh et al. (2015). Concerning the dosage of the medicine, the local people use tea cup as a measuring instrument and they simply order the same for most of the patients but pregnant and children. For the children the traditional healers order half of the cup and for the pregnant women they prohibited some of the medicines.

Conclusions

Although the modern medicine is growing from time to time, traditional medicine is still playing a great role in the treatment of different ailments. In the study area, 55 medicinally important plants were recorded indicating that the area is rich in traditional medicine. As the study result indicates, most of the medicinal plants documented are used for the treatment of human ailments. This may be due to the fact that human diseases are more common in the area than livestock diseases. Leaf is the most commonly harvested plant part and this is an opportunity for the plants as leaf has less effect on the mother plants survival compared with root. Majority of the medicinal plants administered through mouth due to the believe medicine swallowed via mouth can easily cure the disease.

Table 3. Medicinal plants used for the treatment of different diseases in and around Robe town.

Scientific name	Local name (Or/Am)	Habit	Dt		Pu	Mp	Am
<i>Taverniera abyssinica</i> A. Rich.	Dingetegna	S	Abdominal (megagna)	pain	R	Crushed root will be drunk	Oral
<i>Commiphora myrrha</i>	Qumbi	T	Evil eye, poisonous of snake		S	For evil eye smoking the dried part and for snake bite chewing and spraying in the affected area	Oral and dermal
<i>Nigella sativa</i>	Tikurazmud	H	Headache, disease	sudden	S	Crushed seed drunk or applied	Oral and dermal
<i>Solanum anguivi</i> Lam.	Yeayitembuay	S	Nose bleeding		L	Squeezed leaf inserted in to the nose	Nasal
<i>Rumex nepalensis</i>	Shabbe	H	Dandruff		L	Crushed and mixed with vaseline and apply	Dermal
<i>Olea europaea</i>	Weyira	T	Wound		L	Oil from leaf pasted on the wound area	Dermal
<i>Garcinia livingstonei</i> T. Anders	Abuqurxo	S	Teeth ache		S	Chewing	Oral
<i>Embelia schimperi</i> Vatke	Hanquu	T	Ascaris		F	Chewing and drinking	Oral
<i>Artemisia abyssinica</i> Sch. Bip. ex A. Rich	Chiqugn	H	Evil eye		L	The crushed leaf to be smell as well as put around	Nasal
<i>Senna petersiana</i> (Bolle) Lock	Udussaliim	S	Magic, animal diarrhea, rabis disease		R	Chewing for human and crushing for animals via mouth	Oral
<i>Calpurnia aurea</i> (Ait.) Benth.	Ceekataa	S	Dandruff, ascaris		L	Dried and crushed mixing with Vaseline and pasted	Dermal
<i>Anthemistigrensensis</i> J. Gay ex A. Rich.	Barfeelii sifaayii	or S	For headache	emergency	R	Dried and crushed by mixing with coffee then drink	Oral
<i>Embeliaschimperi</i> Vatke	Enqoqo	S	Koso		F	Crushed and mixed with banana and drunk	Oral
<i>Clausenaanisata</i> Willd. Hook.f. ex Benth.	Ulmayii	S	Snake bite, rabis		L	Crushed leaf will be filtered and used	Oral and dermal
<i>Coccinia abyssinica</i> (Lam) Cong.	Ancootee	H	TB		R	Crushed and eat as a food	Oral
<i>Cordia africana</i>	Waddessa	T	Spider poison		L	The leaf is crushed and rubbed on the affected area	Dermal
<i>Cucurbita pepo</i> L.	Buqee /dabaaqula	H	Tape worm		Sd	The seed coat will be removed and boiled. Finally eaten with salt	Oral
<i>Lens culinaris</i>	Misir	H	Spider poison		Sd	The healer chew the seed and vomit it on the affected area	Dermal
<i>Allium cepa</i>	Qullubbiadii	H	Cough, malaria, headache		B	The bulb of garlic is crushed and mixed with butter and eat	Oral and dermal
<i>Nigella sativum</i> L	Absuudaquraa ch	H	Abdominal pain, cough		Sd	For cough, the seed either chew or boil with milk and drink. For abdominal pain mix with milk and drink	Oral
<i>Sesamum orientale</i> L.	Saliixa	H	Abdominal pain		Sd	The crushed seed boiled and mixed with water and sugar then drink	Oral
<i>Commicarpus sinuatus</i> Meikle	Kantoma	S	Wound, tumor disease		L	The fresh leaf boiled and then rubbed	Dermal

Table 3. Cont'd.

<i>Hagniaabyssinica</i>	Heexoo	T	Ascaris, hookworm, tape worm	Sd	Dried and crushed seed filtered and mixed with water and drink	
<i>Lepidium sativum L.</i>	Fexo (ፈኖ)	H	Wound	Sd	Crushed seed mixed with water and apply in the wounded area	Dermal
<i>Phytolaccadodecandra L' Her</i>	Andoodee	S	Gonorrhea, disease	liver L	Crushed leaf filtered and eat	Oral
<i>Rutachalepensis L.</i>	Tenadam	H	Stomach ache	L & R	Crush and eat	Oral
<i>Moringastenopetala</i>	Shiferaw	T	Blood pressure	L	Crush and mixed with 'beso' then drink	Oral
<i>Nicotianatabacum L.</i>	Tambo	H	Snake bite	L	Crush and drink	Oral
<i>Argemunmexicana</i>	Medafe	H	Wound	S	The milk from the stem applied on the affected part	Dermal
<i>Kalanchoepetitiana Rich.</i>	A. Anchrura	H	Tonsile, wound	L & R	The leaf boiled and apply	Oral & dermal
<i>Solanum incanum</i>	Hiddii	S	Bleeding of the gun and nose	Sd	Crushed and filtered seed is tight in the bleeding area	Dermal
<i>Croton macrostachyus Del.</i>	Bakkanniisaa	T	Ring worm	L	Leaf is crushed and drink	Oral
<i>Ocimumgratissimum L.</i>	Damakasse	S	Fibril illness or mich	L	Crushed leaf is filtered and used	Oral and nasal
<i>Indigoferaspicata Forrsk.</i>	Qorichhadhaa	H	Diarrhea, sudden disease	R	Chewing	Oral
<i>Cucumisprophetarum L.</i>	Yemidrembuay	H	Hemorrhoids	R	The boiled root apply on the affected area	Dermal
<i>Erythrinabrucei Schweinf.</i>	Waleenaa	H	Skin disease	L	Crushed leaf applied on the affected skin	Dermal
<i>Verbascumsinaiticum Benth.</i>	Yaheya Joro	T	Snake bite	L	chewing	Oral
<i>Senna septemtrionalis (Viv) Irwin & Barneby</i>	Samamakii	S	Stomach cleaning	L	The dry leaf is boiled with water and then before breakfast and after coffee	Oral
<i>Jasminum grandiflorum L.</i>	Tembelel	S	Bleeding via nose	L	The leaf crushed and put on the nose	Dermal
<i>Aloe pubescens</i>	Hammarreesaa	H	Blood clot	R	Crushed root is applied on the bleeding area	Dermal
<i>Eucalyptus globules Labill</i>	Barzafiiadi	T	Cough, mich	L	The leaf is boiled and the smoke	Dermal
<i>Linum usitatissimum</i>	Telba	H	Stomach ache	Sd	Crushed seed will be for drink	Oral
<i>Zehneriascabra Sond.</i>	Haregresaa	Cl	Chirt (fungus)	L	Squeezed leaf rub on the affected area	Dermal
<i>Galium aparinoides Forssk</i>	Ashkt	H	Quaqucha (fungus)	L	Squeezed and apply on the affected area	Dermal
<i>Cymbopogon martini (Roxb.) Wats.</i>	Tej-sar	H	Abdominal pain	L	The leaf will be squeezed and drunk	Oral
<i>Datura stramonium</i>	Astenagir	H	Dandruff	L	The crushed leaf pasted on the affected area (head)	Dermal
<i>Zingiber officinale L.</i>	Jingible	H	Abdominal sudden disease	pain, R	The root will be chew up or mixed with tea and drink	Oral
<i>Vernoniaadoensis</i>	Fereszeng	H	Mich	L	Squeezed leaf mixed with coffee and drink and apply	Oral and dermal
<i>Vernonia amygdalina</i>	Grawa	T	Worms, vomiting	L	Crushed leaf drunk	Oral
<i>Solanum americanum Miller</i>	Awt (አውጥ)	H	Almaze, alergic	L	Crushed leaf pasted on affected area	Dermal

Table 3. Cont'd.

<i>Euphorbia candelabrum</i> <i>Kotschy</i>	Adami	T	Cough	S	Smoke	Nasal
<i>Lobelia rhyncoptalum</i>	Gibra	T	STD	L	Crushed leaf for drink	Oral
<i>Chatha edulis</i> (Vahl) <i>Forssk. exEndl.</i>	Chat	S	STD	L	The crushed leaf boiled and drink	Oral
<i>Lippiaadoensis</i> Hochst. ex <i>Walp</i>	Koseret/ kusaye	S	Forgetting disease	L	The crushed leaf added with tea and drink	Oral
<i>Rhamnusprinoides</i> L <i>Herit</i>	Gesho	S	Skin disease	L	The leaf mixed with lemon, salt, and <i>aliumcepa</i> crushed then apply	Dermal

T=tree; S=shrub; H=herb; Dt=disease treated; PU=parts used; R=root; S=stem; Sd=seed; F=fruit; B=Bulb; L=leaf; MP=method of preparation; AM=administration method.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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