USE AND MANAGEMENT OF MEDICINAL PLANTS BY INDIGENOUS PEOPLE OF TOKE KUTAYE IN WEST SHAWA ZONE OF OROMIA REGION, ETHIOPIA

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As thesis research advisors, we hereby certify that we have read and evaluated this Thesis Entitled '**Use and management of medicinal plants by indigenous people of Toke Kutaye in West Shawa Zone of Oromia Region, Ethiopia.**' prepared under our guidance by **Abebe Geleta Negera.** We recommend that it be submitted as fulfilling the Thesis requirement.

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DEDICATION

I dedicated this thesis manuscript to my beloved wife Baleyinesh Seifu, my son Segni Abebe, and my daughter, Fenet Abebe for their love and dedicated partnership support, especially for their prayer in my academic success and life.

STATEMENT OF THE AUTHOR

By my signature below, I declare and affirm that this Thesis is the result of my own work. I have followed all ethical and technical principles of scholarship in the preparation, data collection, data analysis and compilation of this Thesis and that all sources or materials used for this thesis have been duly acknowledged.

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BIOGRAPHICAL SKETCH

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CSA	Central Statistics Agency
NBSAP	National Biodiversity Strategies and Action Plan
WHO	World Health Organization

ABSTRACT

The study of indigenous knowledge on utilization of native plants as source of Medicine is important to conserve useful them and preserve indigenous knowledge for next generation. This study was conducted to document indigenous knowledge and medicinal plants used by the people of Toke Kutaye district in four field campaigns. A total of 100 respondents (age≥27) were participated during ethnobotanical data collection. Ethnobotanical data were collected using semi-structured interviews, field observations and group discussions. Descriptive statistics was used to summarize ethnobotanical data. Further, Informant consensus factor (ICF), fidelity level and preference ranking were computed. Reulst showed that 79 medicinal plant species distributed in 77 genera and 46 families were documented in the study area. Of the recorded plant species, majority (49.37%) of them were reported to treat human ailments. From the total medicinal plant species, 26(32.9%) were herbs followed by shrubs 24(30.38%), trees 17(21.5%) climber11 (13.9%) and epiphytes 1(1.27%). The most frequently used plant part was leaf (34.25%) followed by root (13.01%). The most widely used method of preparation was pounding (48.9%) of the different plant parts. The common route of administration recorded was oral (45.9%) followed by dermal (28.7%) and through the eye (7.4%). Disease categories such as Head ache, fever, febrile illness and evil eye related diseases had relatively high ICF value. Olea europeae, Rytigynia neglecta and Buddleja polystachya had the highest fidelity level value, suggesting agreement between respondents on their efficiency to treat the diseases they are cited for. Therefore, further phytochemcal screening should be done on these plant species to look for the active components.

. **Key words:** Ethnobotany, Toke Kutaye, Informant Consensus factor, Traditional medicine

1. INTRODUCTION

Traditional medicine has remained as the most affordable and easily accessible source of treatment in the primary health care system of resource poor communities (WHO, 2001). Of course, traditional medicine is used throughout the world, as it is dependent on locally available plants, which are easily accessible and capitalizes on traditional wisdom repository of knowledge simple to use and affordable (Tesfaye and Sebsebe, 2009).

Particularly, traditional medicine has maintained its popularity in all regions of the developing world and its use is rapidly spreading in the industrialized countries. It includes as holistic knowledge and practices, oral and written functional and diagnosis, preventive and curative aspects of illness to promote total well beings (Behura, 2003). It is known that many countries in Africa, Asia and Latin America use traditional medicine to meet some of their primary health care needs. In Africa, up to 80% of the population use traditional medicine for primary health care (Kebede, 2006). The utilization of plants in the health care system was established as the principal means of treating various illnesses before the development of modern drugs (Dawit, 2001).

In developing countries, leaning to and favouring traditional medicinal plants is mainly due to inaccessibility of modern medicinal system, economic and cultural factors (Abbiw, 1996). Developing countries like Pakistan, India and Vietnam have identified potential usage of plants medicine and incorporated them into their overall health care system (Mirgisa, 1996). Among African countries, Ethiopia is one of the countries where about 60% of the plants are said to be indigenous with their healing potential (Bannerman *et al.,* 1983). Ethiopia has a diverse flora and some of these plants may have potential chemical compounds of therapeutic value to treat some disease (Kelbesa *et al*., 2004). In Ethiopia, the use of traditional medicine is wide spread and about 90% of its population uses it for health care (WHO, 2002).

In Ethiopia, medicinal plants have been used from time immemorial to treat different human and livestock ailments (Dawit, 2001; Haile et *al.*, 2008a). So far, in Ethiopia, plants of medicinal value are estimated to be over 700 species (Kebebew and Addis, 1996) and most of them are studied and

Confined to the south western region of the country (Abbink, 1995). There is a high expectation of enormous traditional knowledge and use of medicinal plant species in Ethiopia due to the existence of diverse cultures, languages and beliefs among the people. However, knowledge about the traditional medicinal plants is transferred through oral communications endangering the traditional indigenous knowledge (Abebe and Ahadu, 1993; Cunningham, 2001). Therefore, documentation of traditional knowledge on medicinal plants is of paramount importance in revealing locally important plant species for the discovery of modern drugs and conservation of plant resources (Tilahun and Mirutse, 2007). Since a few decades ago, such scientific studies have been under way by different researchers in some parts of Ethiopia (e.g., Belachew and Tamene, 2007). Ethiopia is the country with many diverse cultures that reflect the presence of many diverse tribes and ethnic groups. Eventhough ethnomedicinal studies on medicinal plants and documentations of the indigenous knowledge have been done in certain localities in Ethiopia, there was no ethnobotanical study conducted in Toke Kutaye District of Oromia region in West Shawa. This study is, therefore, designed to conduct ethnobotanical study of medicinal plants of Toke Kutaye District with the following objectives.

General Objective

- To investigate the use of medicinal plants by local people of Toke Kutaye District as a remedy for various human and livestock ailments

Specific objectives

- To collect, identify and document traditional medicinal plants used to treat human and livestock health problem
- To identify plants part used for medicinal purposes, their methods of preparations and their ways of administration in the study area.
- To identify the Use and Management of Medicinal Plants by local People of Toke kutaye District

2. LITERATURE REVIEW

2.1. Indigenous Knowledge on Medicinal Plants

Indigenous knowledge refers to accumulation of knowledge, rule, standards, skills and mental sets, which are possessed by local people in a particular area (Quanash, 1998). The immediate and intimate dependency of local people on natural resources resulted in the accumulation of indigenous knowledge that helps people to adapt to and survive in the environments in which they live. It is local knowledge that is unique to a given culture or society and the base for agriculture, health care, food preparation, environmental conservation and a host of other activities (Thomas, 1995). The complex knowledge, beliefs and practices generally known as indigenous knowledge develops and changes with time and space. Hence, such knowledge includes time tested practices that develop in the process of interaction of humans with their environments (Alcorn, 1984). Therefore, it is the result of many generations long year's experiences, careful observations and trial and error experiments (Martin, 1995). Indigenous knowledge is a body of knowledge built up by a group of people through generations of living in close contact with nature and it is cumulative and dynamic, it builds up on the historic experiences of people and adapts to social, economic, environmental, spiritual and political change. The quantity and quality of traditional knowledge differs among community members according to their gender, age, social standing, profession and intellectual capabilities. For instance, societies concerned with biological diversity will most interested in knowledge about the environment, this information must be under stood in a manner, which encompasses knowledge about the cultural, economic, political and spiritual relationships with the land. It provides a distinctive world view of which outsiders are rarely aware and at best can only incompletely grasp (Balick and Cox, 1996). Indigenous people of different localities have developed their own specific knowledge on plant resources, use management and conservation (Cotton, 1996). Thus, systematic application of indigenous knowledge is important for sustainable use of resources and sustainable development (Thomas, 1995). One of the widely used indigenous knowledge system in many countries is the knowledge and application of traditional medicine. Such knowledge, known as ethno medicinal knowledge involve traditional diagnosis, collection of raw materials, preparation of remedies in many countries including Ethiopia, pass from one generation

to the other generation verbally with great secrecy (Jansen, 1981). Such secret and crude transfer makes indigenous knowledge or ethnomedicinal knowledge vulnerable to distortion and in most cases, some of the lore is lost at each point of transfer (Amare, 1976). Hence, there is a need for systematic documentation of such useful knowledge through ethno botanical research.

2.2. Original Development of Traditional Medicine

Ethnomedicine encompasses studies that are concerned with the mutual relationships between plants and traditional people (Cotton, 1996). It deals with the documentation analysis and dissemination of knowledge on the interaction between biodiversity and human society and how biodiversity is valued in different societies as well as how it is influenced by human activities. Among the relationships of humans with plants, traditional knowledge on medicinal plants is one on which people depend for preparation of remedies. Traditionally people around the world possess unique knowledge of plant resources of their locality in terms of their use for food medicine and other uses (Martin, 1995). Since ancient times plants have been indispensable source of both preventive and curative traditional medicine for human being and livestock.

Historical accounts of traditionally used medicinal plants depict that different medicinal plants were in use as early as 5000 to 4000BC in china and 1600BC by Syrians, Babylonians, Hebrews and Egyptians (Derry *et al.,* 1999). Since then, the major system of traditional medicine, which originated from ancient china, has continued to develop not only in china but also in neighboring countries such as Japan, the Republic of Korea and Vietnam (WHO, 2007).

2.3. Traditional Medicine Practice in Ethiopia

Traditional practitioners mostly use herbs, spiritual healing, bone-setting and minor surgical procedures in treating disease. Most traditional medical traditions in Ethiopia rely on explanations of diseases that draw on both the mystical and natural causes of an illness and employ a holistic approach to treatment (Bishaw, 1991). Under the rule of Menelik (1865-1913) western medicine became more incorporated in to the Ethiopian medical system.

Numerous medical envoys from abroad, starting with the Italians and Russians were influential in building hospitals, providing medical training and participating in vaccination campaigns. However, most medical establishments primarily served the urban elites and foreign missionaries and were

concentrated in the major cities (Pankhurst, 1990). Ethiopians tends to rely more on traditional medicine. Conventional medical services remain concentrated in urban areas and have failed to keep pace with the growing population, keeping health care access out of reach for most Ethiopians living in rural. Because traditional medicine is culturally entrenched accessible and affordable up to 80% of the Ethiopian populations rely on traditional remedies as a primary source of health care (Pankhurst, 1990; Kebede *et al*., 2006).

From time immemorial, plants have been used as source of traditional medicine in Ethiopia to combat different ailments and human sufferings (Mirutse, 2001). Due to its long periods of practice and existence, traditional medicine has become an integral part of the culture of Ethiopian people (Pankhurst, 1995). About 80% of human population and 90% of livestock of Ethiopians are dependent on traditional medicine preparations of plant origin (national biodiversity strategies and actions plan, 2005). About 1000 identified medicinal plant species are reported in the Ethiopian flora, however, many other are not yet identified. Of these, about 300 species are frequently mentioned in many sources (Endashaw, 2007).

2.4. Traditional Medicinal Plants in Public and Livestock Health Care System in Ethiopia

The available modern health care services of the country are not only insufficient, but also in accessible and unaffordable to the majority (Haile, 2008a). This problem along with the rapidly increasing human population and cultural resistance towards the use of modern medicines made the majority of the people in Ethiopia to depend more on traditional medicines mainly of plant origin (Dawit, 2001). However, little investigation has been done in recent decades to enhance and develop the beneficial aspects of traditional medicine including related research and its gradual integration into modern health care system (Lambert, 2001). In Ethiopia as well as in most developing countries, animal disease remained one of the principal causes of poor livestock products. In Ethiopia conventional veterinary services have been playing a paramount role in the control and prophylaxis of livestock disease in the last three decades (Teshale *et al*., 2004). However, they cannot yet deliver complete coverage in preventive and curative health care practices because of inadequate supply of drugs and the high cost of drugs (Ermias, 2006). Ethiopia

with its diverse physio-geographic features has diverse flora, which is estimated to be between 6500 and 7000 species of vascular plants. Eventhough there are some common medicinal plants in traditional health care practice, only few species of medicinal plants have been identified and documented so far. A large number of medicinal plant species and associated ethno medicinal knowledge at Mana angetu district, Bale zone was documented when compared to the number of species reported for other regions in Ethiopia. This indicates that the area has a very high diversity of medicinal plant species and is a site for various traditional knowledge (Ermias, 2008). In this study area 230 medicinal plant species were used for treating human and/or/ livestock ailments.

According to Tesfaye *et al.,* (2009) a total of 120 medicinal plant species grouped within 100 genera and 47 families were identified in Konta special district of southern nation's nationalities and peoples regional state.Among Oromo ethnic group in south western Ethiopia 67 species of plants that belong to 65 genera and 35 families are used for traditional medicine (Haile *et al*., 2008a). In Zegie peninsula north western Ethiopia, 67 medicinal plants belonging to 64 genera and 42 families have been documented (Tilahun and Mirutse, 2007).

Tesfaye and Sebsebe (2009) documented 124 medicinal plants belonging to 107 genera and 42 families in Kafa zone Ethiopia. In Bench south western Ethiopia ethnic group, 35 medicinal plants species belonging 34 genera and 25 families were identified by (Mirutse *et al.,* 2009). According to Giday (2010a) a total of 27 species of medicinal plants were collected and identified in Darta district south eastern Tigria.

The Cheffa people utilize 83 medicinal plants for both livestock and human diseases treatment in south welo (Bayafers *et al.,* 2000). Ethnomedicinal survey of Berta ethnic group in Benishangul Gumuz revealed that peoples in the area use 40 plant species to treat different ailments (Tefari *et al.,* 2009). In Jimma zone, 39 medicinal plants were recognized for the treatment of various diseases (Balcha, 2003). Teshale *et al., (*2004*)* documented 77 medicinal plant species used by Borena pastoralists to treat or prevent a wide range of livestock diseases.

Majority of ethnomedicinal plants species are collected from the wild natural vegetation of different natural ecosystem (e.g. Forest, grass land, wood land, wet lands) (Endashaw, 2007). They are free resources to all who want to use them for the family to practicing traditional medicine or fo`r sales. According to Haile and Dilnesaw (2007), local healers in Sokoru district reported that traditional medicines are usefull for poor people who have little access and could not afford the cost of modern medicine. The inhabitant rely on wild plant not only for medicinal use but also for various purposes such as forage, fire wood, charcoal making, construction and wood (Ermias *et al.,* 2008*,* Giday*,* 2010b). The practice of traditional medicine in Ethiopia mostly harvest for medicinal importance are the shrubs, herbs, trees, and climber and plant parts used widely to treat human include roots, leaves, and seeds (Tena, 2008).

2.5. Threats and Conservation of Traditional Medicinal Plants in Ethiopia

Eventhough plants play a vital role in treating various human and livestock health care they are currently under pressure because of accelerated devastation of plant resources with lose of indigenous knowledge (Ensrmu *etal.,*1992*,* Giday*,*2010c). The current loss of medicinal plants and the associated indigenous knowledge in Ethiopia is due to natural and anthropogenic factors (Giday, 2010, Ermias *et al.,* 2008). Some medicinal plant species of Ethiopia are reported to have been threatened because of over harvesting for marketing as medicine. Among many medicinal plants in Ethiopia about 26 species are endemic and they are becoming increasingly rare and at the verge of extinction (Tesfaye and Sebsebe, 2009). Equally threatened is the knowledge base on which the traditional medical system is based as the ethno medicinal information is not documented and remains in the memory of elderly practitioner members of society since only a few young people are willing to acquire the knowledge. According to Fisseha *et al.,* 2009, less than 2% of them were ready to transfer their knowledge on incentive bases. Therefore, detailed information on the medicinal plants of Ethiopia could only be obtained when studies are under taken in the various parts of the country where little or no botanical and ethno botanical explorations have been made.

A good example of threatened species is *Tavarniera abyssinica* whose slender roots are swathed and small coiled bundles presented for market. *Tavarniera abyssinica* is a popular traditional medicine for what is known as sudden diseases (Endashaw, 2007). There are 40 species of *Aloe* where the sap of some species is used for medicinal food and cosmetic application and is widely

used internationally of these 20 species are endemic and 18 are threatened. Debela *et al.,* (2004) and Mirutse (2001) also stressed modern education as having an impact on the knowledge. They pointed out that those students who attended modern schools are showing unwillingness to learn from their parents, which is an evidence for the gradually disappearing traditional knowledge. Ethiopia has policies and strategies that support the development and utilization of plant resource in a suitable manner. The policies are reflected under various sectors including environmental protection, development of natural resources and diversification of the domestic and export commodities (Endashaw, 2007). The country also has developed policy and a guide line for intellectual property right protection of traditional medicine. The policy encourages and promotes the appropriate use and protections of traditional medicine knowledge in Ethiopia taking into account the need of the traditional medicinal knowledge holders and the communities who benefit in the development activities that support public efforts in meeting livelihood requirements.

3. MATERIALS AND METHODS

3.1. Description of the Study Area

The study was conducted in Toke Kutaye District West Shawa Zone of Oromia Region, Ethiopia. Toke Kutaye is located between $9^0$9'29''N-$9^0$20'50''N and $37^0$12'24" E-$37^0$27'55"E latitude and longitude, respectively. The altitude of the study area ranges between 1750m and 3057m above sea level. Its total land mass coverage is about 34,078 hectares and is subdivided into 30 kebeles of which three are the districts urban kebeles and the rest are rural (Toke kutaye District Agricultural office, 2016).The climate of the study area varies with altitude. Middle altitude (badda daree in local languages) (1750-2490 m.a.s.l) that covers about 72% of the area has temperature of 18^0C-20^0C and average rain fall of 1400mm per annum and high altitude areas (baddaa in local language) (2491-3057m.a.s.l) that covers about 28% of the area has temperature of 10^0C - 15^0C and average rain fall of 1900 mm per annum

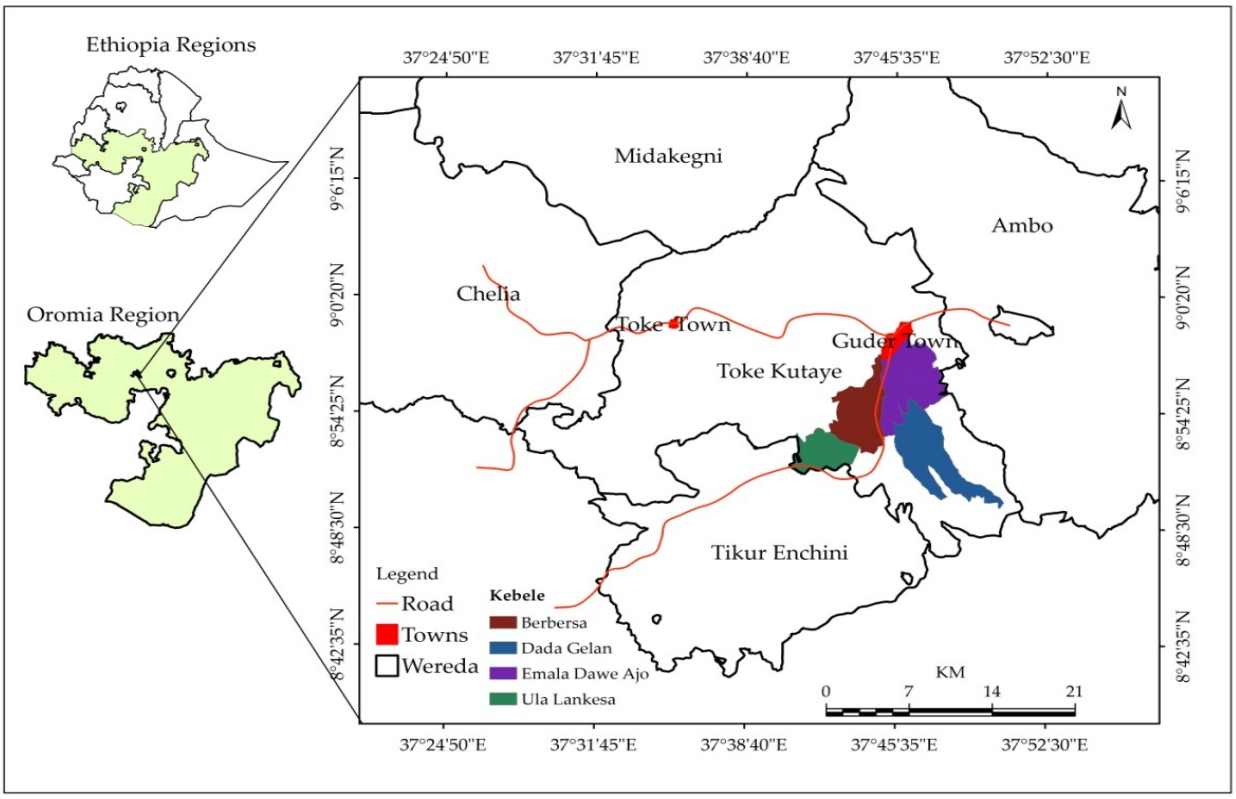

Figure 1. Map of the study area

3.2. Vegetation and Major Cultivated Crops

The vegetation of the study area consists of trees, shrubs, climbers, epiphytes, and herbaceous species. Some of the common plant species include *Olea europea*, *Juniperus procera*, *Calpurnea aurea*, *Acacia* spp, *Ocimum* spp, *Ficus* spp, *Phoenix reclinata*, *Carissa edulis*, *Podocarpus falcatus*, *Eucalyptus* spp, etc. Commonly cultivated crops in the study area include Barley

(*Hordeum vulgare*), Wheat (*Triticum* spp), broad bean (*Vicia faba*), Teff (*Eragrostis tef*), field pea (*Pisum sativum*), Nug (*Guizotia abyssinica*) and *Sorghum bicolor*.

3.3. Ethnobotanical Data Collection

Reconnaissance survey was conducted to purposively select four Kebeles namely Deda Gelan (1750-2310 masl), Berbersa (2311-2490m.a.s.l), Emala Dawe Ajo (2491-3857masl),Ula lankesa (2858-3057m.a.s.l). These kebeles were purposively selected to represent different altitudinal ranges. Moreover, access to modern medical facilities and availability of traditional medicine practitioners were considered for their selection based on preliminary information obtained from the locals.

For ethnobotanical data collection, respondents were selected from the district. Totally, 100 respondents (aged ≥27), which are ordinary residents (non-traditional healers) and all available traditional healers as key informants were considered. Key informants were purposively selected based on the information gathered from the local people while other respondents were randomly selected. Data collection methods were through semi-structured interviews, group discussions, and guided field walks with key informants for field observations. Key informants were first interviewed individually to mention about the local names of the plants they use to treat diseases, diseases treated, part(s) of plants used, methods of preparation of remedies, route of application of the remedies and dosage. Similar procedure was also applied with randomly selected non-practitioners of traditional medicine. Further group discussions were made with key informants on the entire mentioned medicinal plants and field visit was made with them for onsite observation of the plants. Voucher specimens were collected, pressed, and dried for identification. For some species, preliminary identification was done in the field using illustrations. In addition, further identification of all specimens was done by comparison with authentic specimens, illustrations and taxonomic keys from Flora of Ethiopia and Eritrea, and with the assistance of experts at Haramaya University Herbarium. The identified specimens were deposited in Haramaya University Herbarium.

3.4. Data Analysis

A descriptive statistical method (e.g., percentage and/or frequency) was employed to summarize ethnobotanical data.

Informant consensus factor (ICF) was calculated for categories of ailments to identify the agreements of the informants on the reported cures using the formula used by Rodrigo *et al.*, (2005) and Teklehaymanot and Giday (2007).

$$ICF = \frac{Nuc - Ns}{Nuc - 1}$$

Where, Nuc is the number of use citations in each illness category and Ns is the total number of species used by all informants for this illness category. The ICF values range from 0 to 1, with high values (i.e. close to 1) indicating that relatively few plants are used by a large proportion of informants, while low values (< 0.5) indicate that informants do not agree on the plant species to be used to treat a category of ailments(luiz *et al*, 2005).

Fidelity Level index (FL) was calculated using the following formula indicated in Alexiades (1996) as follows.

$$\mathbf{FL\ (\%) = \frac{IP}{IU} \times 100}$$

Where, IP is the number of informants independently suggested the use of a species to treat a particular disease category and IU is the total number of informants mentioned the plant for any major disease. FL is used to quantify the importance of a given species for a particular purpose in a given cultural group (Ermias *et al*., 2013; Ong and Kim, 2014).

Preference ranking (PR) was conducted for those plant species more frequently mentioned to treat most commonly cited disease (Rabies). In ranking exercise, 10 key informants were randomly selected and asked to rank plants based on their perceived effectiveness to cure the disease by assigning the highest value for the most efficacious plant and lowest value (1) for the least efficacious plant (Ong and Kim, 2014).

4. RESULTS AND DISCUSSION

4.1 Medicinal Plants of the Study Area

In this study, altogether 79 plant species distributed in 77 genera and 46 families were recorded to have medicinal values (Appendix 1 and 2). Of these, about 49.37% and 18.98% were reported to treat only human and livestock ailments, respectively. Different people from different parts of Ethiopia also reported most of the plant species reported as medicinal plants in this study as having medicinal properties. The fact that similar plant species are reported from different parts of the country for medicinal properties may suggest the genuine therapeutic potential of these medicinal plants and information flow between different localities of the country on some medicinal plants. For example, 30 species of these medicinal plants were identified by Endalew (2007), 25 species of medicinal plants were identified by Etana (2007), 35 plant species were identified by Mengistu (2010) and 20 plant species were identified by Moa (2010). The majority of medicinal plant species were obtained from wild vegetation 35 (44.3%) followed by edge of agricultural fields 15

(18.99%), home gardens12 (15.19%), road sides 11 (13.92%) and crop fields 6(7.59%) (Figure 2). Similar pattern was reported by Mirutse (1999) in his study of medicinal plants of the Zay people who live at the shore of Lake Ziway in Ethiopian rift valley. This result shows that with reduction of wilderness, the availablility of medicinal plants appears to be decreasing. Richness of medicinal plants at the edge of agricultural fields was second to that of wild vegetation, suggesting protection efforts made by individual farmers around their farm lands for various purposes. Since number of medicinal plant species obtained from home gardens was also high, a well-designed home gardening may be a promising activity of maintaining diverse species in the study area. Family Asteraceae was represented by highest number of species (7 species) followed by Fabaceae (5 species), Solanaceae(4 species), Rutaceae , Lamiaceae, Rubiaceae, Euphorbiaceae (3species each); Vitaceae, Poaceae, Myrsinaceae, Moraceae, Rosaceae, Malvaceae,Cucurbitaceae and,Amaryllidaceae(2 species each) and the remaining families were represented by one species each.

Figure2**.** Habitat distribution of Medicinal plants

4.2 Plant Habit, Part(s) used and preparation methods

Analysis of growth forms of these medicinal plants showed that herbs constitute the largest category 26 (32.9%) followed by shrubs 24(30.38%) and 17(21.5%) tree species. Climbers and epihytes constituted 11(13.9%) and 1(1.27%), respectively (Figure 3). Similar habit distributions of medicinal plants have also been reported by some researchers previously (e.g., Bayafers, 2000; Debele, 2001; Njau, 2001; Endalew, 2007). The results of this study suggest that medicine can be obtained from all sorts of plant life forms on terrestrial habitat. People of study area use different plant parts in sole or in mixture for the preparation of traditional medicine. The most cited plant parts for medicine was leaf 50 (34.25%) followed by root 19(13.01%), root and leaves mixed 4 (2.74%). Other plant parts were also reported for preparation of traditional medicine. For example,

bark 8(5.48%), seed 6(4.12%), fruit 5 (3.42%), sap 5(3.42%), stem 2(1.37%), bulb, 2(1.37%). This is in accordance with some previous studies conducted in different parts of the country (e.g., Mirutse, 1999; Bayafers, 2000, Dawit 2001; Endalew 2007). According to Dawit and Ahadu (1993) herbal preparation that involves roots, rhizomes, bulbs, barks, stems or whole parts have negative effects on the survival young of the mother plants. In this study, plant parts such as root and seed/fruits that endanger the survival of plants were not reported much compared to leaf. Therefore, with careful harvesting of the leaves, most of the reported plants can be used sustainable. Pounding (powdering) was the most frequently reported method of traditional medicine preparation in the study area. Plant materials are used in fresh or dried form for the preparation of remedies from a single plant or mixture of structures from different plants. This fact has also been reported by other researchers previously (e.g., Mirutse, 1999; Bayafers, 2000; Dawit, 2001).

Figure 2.Habit of medicinal plants

4.3 Dosage and Administration methods of the remedies

Based on the responses of the key informants, the amount of remedies prescribed varies from individual to individual healer. However, they all agree that the amount to be prescribed depends on age and conditions such as pregrancy. Lack of specified dosage actually may cause some side effects and can be considered as drawback of traditional medicine practitioners. In general, the amount of traditional medicine to be administered for certain duration will be given by estimating the age, physical strength of the patient and the severity of the diseases. According to the respondents, remedies are either taken internally or applied topically. Oral uptake of remedies was the dominant route of application reported while topical application is done on the skin (Appendix 1and2).

4.4. Informant consensus factor (ICF)

All cited human diseases were categorized into 10 categories: namely, mouth and gastrointestinal relate diseases; skin and subcutaneous tissues related diseases; Head ache , fever, febrile illness and evil eye related diseases, Genito-urinary system problem; problems of the respiratory system, connective tissues; problems of the sensorial system; and malaria and rabies diseases (Table 1). Over all, ICF values for all categories were found to be lower as compared to many other

literatures (e.g., Tilahun and Mirutse ,2010) suggesting that people in the study area rarely communicate about the remedies for the diseases. However, Disease categories such as Head ache, fever, febrile illness and evil eye related diseases had high ICF values (0.35), followed by skin and subcutaneous tissues related diseases (0.19), mouth and gastrointestinal related diseases(0.1) and swelling and haemorrhoid (0.06).

Table 1. Informant consensus Factors of major categories of human diseases

Disease categories	n_t	n_{ur}	ICF
Head ache, fever, febrile illness and evil eye related diseases	12	18	0.35
Skin and sub cutaneous tissues related diseases	18	22	0.12
Mouth and gastro-intestinal related diseases	20	22	0.10
Swelling and hemorrhoid	17	18	0.06
Genitourinary system problem	5	5	0
Problems of the respiratory system and throat infection	6	6	0
Problems of nerves system	3	3	0
Skeletal, muscle and connective tissues	3	3	0

Problems of the sensorial system	3	3	0
Malaria and rabies	12	12	0

4.5. Fidelity level Index

Fidelity Level (FL) is useful for identifying the inhabitants' most preferred species in use for treating certain ailments. Fidelity level values in this study varied from 53.3% for *Croton macrostachyus* reported to be used for many diseases to 100% for *Olea europeae, Rytigynia neglecta* and *Buddleja polystachya* that were reported to treat single disease (Table 2). The medicinal plants that are widely used by local people to treat several unrelated ailments have less fidelity level value while those that are used for single or few ailments have high fidelity level. High FL could also be an indication of efficiency of the reported plant to cure a specific ailment.

Table 2. Fidelity level index of most common uses of medicinal plants

Species	Used to treat	NP	N	FL
Olea europeae	Haemorrhoide	1	1	100%
Rytigynia neglecta	Haemorrhoide	1	1	100%
Buddleja polystachya	Eye disease	2	2	100%
Verbascum sinaiticum	Blotting, diarrhea, urinating problem	12	15	80%
Ocimum forsklei	Eye disease, febrile illness, head ache	21	29	72.41%
Brucea antidysentrica	Arthropod parasite infection, rabies, malaria	12	17	70.6%
Calpurnia aurea	Snake bite, Arthropod external parasite, wound	19	27	70.4%
Allium sativum	Malaria, stomach ache, blotting	14	20	70%
Ricinus communis	Anthrax, ulecertic lymphagete, blotting	17	25	68%

Phtolacca dodecandra	Liver problem, gonorrhea, haemorrhoide, rabies, hyena bite	10	17	58.8%
Cucumis ficifolius	stomach ache, febrile illness, skin infection, blackleg, blotting, haemorrhoide	19	16	56.3%
Croton macrostachyus	Evil eye, gonorrhea, febrile illness, head ache, haemorrhoide, rabies, lymphatic swlling	8	15	53.3%

4.6 Preference ranking of medicinal plants used to treat Rabies

When there are different species prescribed for the same health problem, people show preference to one over the other. In this study, some cited human diseases were reported to be treated by multiple of plant species. Of these diseases, rabies is a communicable disease reported to be treated by 6 plant species. Therefore, preference ranking of these 6 medicinal plant species that were reported as effective for treating rabies was conducted after selecting 10 key informants .

The informants were asked to compare the given medicinal plants based on their efficacy ,and to give the highest number (6) for the medicinal plant, which they thought most effective in treating rabies and the lowest number (1) for the least effective plant in treating rabies. *Croton macrostachyus* stood first among the six plant species, hence is the most effective medicinal plant to treat rabies followed by *Brucea antidysenterica*, *Phytolacca dodecandra*, *Scandoxus multiflorus*, *Justica schimperriana* as 2^{nd} ,3^{rd} ,4^{th} ,and 5^{th} ,respectively,where as *Rumex nevosus* was found to be the least preferred species (Table 3). This indicates that though people have alternative plant species to treat a given disease, they do have preference to one over the other based on their long time experience on the relative curative power of the plants.futher pharmacological test of this species against rabies might reveal promising results.

Table 3. Preferences ranking of six selected medicinal plants based on the Degree of their curative power of Rabies as perceived by informants.

Species	Respondents (R1-R10)										Total	Rank
	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	R_9	R_{10}		
Croton macrostachyus	6	6	4	5	6	6	5	6	4	5	53	1st
Brucea antidysenterica	3	5	5	4	3	5	6	4	5	6	46	2nd
Phytolacca dodecandra	4	2	2	6	5	3	3	1	2	4	32	3rd
Sccandoxus multiflorus	2	4	6	1	1	4	2	5	3	2	30	4th
Justica schimperiana	1	3	3	2	4	1	1	2	6	3	26	5th
Rumex nervosus	5	1	1	3	2	2	4	3	1	1	23	6th

5. SUMMARY, CONCLUSIONS AND RECOMMENATIONS

5.1 Summary and conclusions

Toke Kutaye district harbors diverse plant species. In this study, 79 medicinal plant species were recorded. Of these, 49.37% and 18.98% of the species were reported to treat human ailments and livestock only, respectively, while 31.65% of them reported to treat both livestock and human ailments. Majority of these medicinal plant species were obtained from wild 35(44.3%).

Analysis of growth forms of these medicinal plants showed that herbs constitute the largest category 26 (32.9%) followed by shrubs 24 (30.38%) and 17(21.5%) tree species. Leaves were the most frequently used plant parts followed by roots for preparation of human and livestock remedies Traditional medicine preparation mostly involved single plant. Route of administration was mainly internal in which oral administration is the common route followed by dermal (external application). Therefore ,awareness rising should be made among the healers so as to avoid erosion of the indigenous knowledge and to ensure its sustainable use. Further biological studies should also be conducted on the reported medicinal plant species of the study area so as to utilize them in drug development.

5.2 Recommendation

Based on the result of the study, the following recommendations are forwarded.

- Local people should be informed about the use value, management and conservation of plants of their locality.
- Local community must be aware of preserving indigenous knowledge on medicinal plants
- Indigenous people of the study area should be involved in conservation and management of plant resources.
- Recognition and intellectual property rights should be given to tradition healers either through certification or through organizing them in a community to popularize their indigenous knowledge on medicinal plants.
- Local people must be taught of growing medicinal plants in home gardens mixing with crops in the farm lands live fences.

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Appendix 1: List of Medical plants used to treat Human Health problems.

No	Scientific Name and Plant Habit	Local Name	Family Name	Health problem Treated	Part (s),used ,mode of preparations and Application	Route of application
1	*Accacia abyssinica* Hochst.ex.Benth: Tree*	Laaftoo **WV**	Fabaceae	Goiter	**Leaf**: Fresh leaf of Acaccia *abyssinica* is smashed and the sap injected into the skin around the swolled neck area.	Dermal
				Stomachea	**Bark** :One tea spoon of powdered bark is taken with tea every day for 3 days	Oral
2	*Albizia gummifera* (J.F .Gmel.) C.A Sm.**Tree**	Imala **WV**	Fabaceae	Evil eye	**Roo**t: Dried root of *Albizia gummiffera* and *Pterolobium stellatum* will be crushed together and the smoke of 3-4 spoon of the mixture will be inhaled.	Nasal
3	*Allium sativum* L .:**Herb**	Qulubbiadi i **HG**	Alliaceae	Malaria	**Bulb**: Bulb of *Allium sativum* and rhizome of *Ginger officinaleare* pounded together and eaten with honey.	Oral
				Stomachache	**Bulb**:Bulb of *Allium sativum* and seed of *Lepidium satidysent*erica pounded together and eaten with injera	Oral
4	*Artemissia abyssinica Sch.Bip*. e.x A .Rich .:**Herb***	Xiroo **WV**	Asteraceae	Epilepsy	**Leaf** :Fresh lea of *Artemissia abyssinica ,Brucea antidysenterica and cucumis ficifolius* are pounded together mixed with a tea cup of water and drunk	Oral
5	*Bersama*	Lolchiisaa	Fabaceae	Rheumatism	**Leaf: Fresh** leaf will be heated on fire and held on the	Dermal

	abyssinica Fresen **:Tree**	**WV**			affected area.	
				I n e s t i n a l parasite	**Stem**: Chopped young stem (34-5 pieces) will be cooked with common bean seed and before breakfast for 2 consecutive days.	Oral
				Hook worm	**Leaf** : Fresh leaf of *Bersama abyssinica* together with leaf of *Cheilanthes farinose* And root of *Amelocissus bombycina* will be chewed and the juice swallowed.	Oral
6	*B r u c e a antidysenterica* J.F.Mill .:**Shrub**	Qomonyoo **RS**	Simaroubaceae	Malaria	**Seed** :One raw seed will be eaten every month for prevention	Oral
				Rheumatism	**Leaf** :The leaf will be heated on fire and held on the affected area every night .	Dermal
				Rabies	**Root** : Root of *Brucea antdysenterica* pound with bark and root of C*roton macrostachyus* and root of *Rumex nervosus* drunk animals one cup of powder by mixed with local tella and to human 1-spoon given cup of coffer or chewed.	Oral
7	*Calpurni aurea* (Ait.)Benth :**Shrub**	Ceekaa **RS**	Fabaceae	Snake bite	**Leaf**: Fresh leaf *of Calpurnia aurea* will be smashed and 2-3 drops of the sap is taken orally.	Oral
				Skin rash	**Leaf**: The leaf of infusion is used to wash the affected body daily for a week.	Dermal
				Arthropod	**Leaf** :The leaf is ground along with barks of *Millettia*	Dermal

				external parasite (e.g., fleas, lice, bed bug, etc.)	*ferruginea* and sprayed on the area of problem (external human body part (s),clothes .rooms ,beds,etc.).	
8	*Capparis cartilaginea* Decne .: **Climber**	Goraa **WV**	Capparidaceae	Back pain	**Seed**: The seed (drived) is swallowed once a day for 3-5 days	Oral
9	*Carduus schimperi* Sch.Bip .ex .A.Rich :**Herb***	Qoratti Harree **RS**	Asteraceae	Febrile illness	**Leaf**: Of *carduus scimperi* pounded and given to human .Also, the juice will be creamed on body surface.	Oral
10	*Carissa spinarum L.:**shrub** *	Agamsa **WV**	Apocynaceae	Headache	**Leaf**:Dry leaf of *Carissa spinarum* will be smoked and inhaled through nostrilas	Nasal
				Stomach ache	**Lea**f:pounded leaf of *Carissa spinarum* will be mixed with honey and 2-3 teaspoons will be eaten before breakfast	Oral
				Evil eye	**Root**:Dries root of *Carissa spinarum* will be crushed and the smoke will be inhaled	Nasal
				Gonrrhea	**Roo**t:Fresh root of *Carissa spinarum* will be pounded mixed with local beer (tella) and one glass of it (-250ml) will be drunk for three days	Oral

11	*Catha edulis (Vah1) Forssk. ex.Endl. :**shrub****	Caatii **CF**	Celastraceae	Intestial parasite	**Leaf**: Fresh leaf and bark will be chewed and swallowed.	Oral
				Common cold	**Leaf** :The leaf of *Catha edulis* will be boiled with that of *Ruta chalepensis and* drunk	Oral
12	*Cheilan thesfarinose* (Forssk.) kaulf :herb *	Baala Ballesii **MAF**	Sinpteridaceae	Hook Work	**Leaf**: The leaf of *Cheilanthes farinose* will be chewed together with root of *Ampelocissus bombycinia* and the juice will be sawlloed.	
13	*Cirsuim vulgare* (savi)Ten :**Herb**	Kosorru Harree **RS**	Asteraceae	Skin infection	**Leaf** :Leaf of ,*Cirsuim vulgare* together with that of *Rumex nervosus* and *Juncus oxycarpus* will be mixed with wood ash and milk /butter ,heated together and creamed on the affected area for two weeks	
14	*Citrus aurantifolia* (Christm.) Swingle **Shrub***	Qomxaxxe (Loomii) **CF**	Rutaceae	Stmachche	**Fruit**: Fruit of *C*itrus *aurantifolia*, bulb of *Allium sativum* will be pounded together, mixed with honey and eaten with wheat bread.	Oral
				Nasal bleeding	**Fruit** :The juice of *C*itrus *aurantifolia* will be added into the nose or drunk	Nasal

Appendix 1 continued

15	*Clausena anisata* (Wild.)Benth .:**shrub ***	Ulumayii **WV**	Rutaceae	Skin Infection	**Leaf** :Leaf of *Clausena anisata*,together with that of *solanecio gigas* and *Justcia schimperiana* will be pounded together ,and creamed on skin	Dermal
16	*Clematis hirsute* per. Guill. **Climber***	Hidda fiitii **WV**	Ranunculaceae	Tonsillitis	**Leaf**: leaf of *Clematis hisuta* will be crushed and pressed ,rapped with clean cloth and tied on the neck	Neck \Dermal
				Diffuse cutaneous Leshmaniasis	**Leaf:** The leaf of *Clematis hirsute* crushed with leaf of *Justice schimpera* are creamed at affected area and also sniffed without touched of nose for 3-days to half minute.	Dermal \Nasal
				Lymphatic swelling	**Leaf**: leaf of *Clematis hirusuta* and *Lagenaria siceraria* will be crushed together and tied on swelling.	Neck
17	*Coffea arabica* L**.:shrub ***	Buna **CF**	Rubiaceae	Diarrhea	**Seed** :Powder of roasted coffee bean will be eaten or drunk before breakfast for 2-3 days	Oral
18	*Cordia africana* Lami .:**Tree***	Weddessa **HG**	Boraginaceae	Wound	**Leaf**: Leaf of *Cordia africana* will be burned and its ash mixed with butter will be creamed on the affected part.	Dermal
19	*Coriandrum sativum* L .**Herb ***	Dimbilaal **HG**	Apiaceae	Diffuse Cutaneous Leshmaniasis	Leaf: The leaf of *Coriandrum sativum* pound with leaf of *Croton macrostachyus* and *Rumex nervosus* creamed on pain area for 2-3 days.	Dermal

20	*Croton macrostachy*us Del :**Tre**e	Bakkanisa **WV**	Euphobiaceae	Lymphatic Swelling	**Leaf:**Drived leaves of *Croton macrostachyus* and *Premna schimper* will be be powdeded and 2-3 teaspoons of the powder will be mixed with alcohol or coffee and drunk	Oral
				Evil eye	**Root:** Chopped roots of *Croton macrostachyus* and *Carissa spinarum* will be smoked and inhaled	Nasal
				Febrile illness	**Leaf**: Leaf *Croton macrostachyus* and *Ocimum forskolei* are fumigated.	Oral/Nasal
				Gonrrhea	**Bark**: Bark of *Croton macrostachyus* and *Vernonia amygdlina* will be powdered together; 3-4 tea spoons of the powder will be taken with tella.	Oral

Appendix 1 continued

	Headache	**Leaf**: leaf of *Croton macrostachyus* and *Ocimum forskolei* will be smashed and sniffed.	Nasal

			Haermorrhoide		**Lea**f:The fresh leaves of *Croton macrotachyus* and *Cucumis ficifolius* will be pounded together and creamed	Dermal
			Rabies		**Roo**t:Root of *Croton macrostachyus* pound with leaf of *Hypericum revelutum* and given to cattle according to their age ,for example for big animal 2 cups of powder with 1-bottle of local tella but for calf1-cup .For human root of *Croton macrostachyus* ponded together with root of *Scandoxus multiflorus* by mixing with water half of cup given on 9th day after infected	Oral
			Diffuse Cutaneus Leshmaniassis		**Leaf**: the fresh leaf of *Croton macrostachyus* will be pounded with leaves of *Ricinus communis* and *Epilobium hirstus* heated on fire being rapped up with the leaf of *Croton macrotaschyus* and sniffed, also creamed.	
21	*Cucumis ficifolius* A.Rich :**Climber**	Hiddi Holaa **RS**	Cucurbitaceae	Stomach ache	**Roo**t: Apiece of root of *Cucumis ficifolius* will be chewed with salt and swallowed.	Oral
				Febrile illness	**Root**:Root of *Cucumis ficifolius* together with the leaves of *Ocimum gratissimum* and *Calpurnina aurea* will be pounded and drunk with acup of	Oral

					coffee	
				Wound	**Leaf**: leaf of *Cucumis ficifolius* will be smashed and 2-4 Drops of the sap will be added to the wound	Dermal
				Epilepsy	**Bark:** Dried bark and leaf of *Cucumis ficifolius* will be powdered together then mixed with alcohol, and one cup is taken by human.	Oral
				Haemorrhiode	**Leaf**: The leaf of *cucumis focifolius* will be pounded with fresh leaf of croton Macrotschyus mixed with butter and applied on the affected area unti cured	Dermal

Appendix 1 continued

22	*Cynodon dactylon* (L.)pers .:**Herb**	Coqorsa **RS**	Poaceae	Snake bite	**Entire plant**: The entire above ground parts of *Cynodon dactylon* will be crushed, mixed with butter and rubbed on to the skin part bitten by the snake.	Dermal

				Wound	**Entire plant**: The whole plant will be crushed finely and sprayed over the wound every night for some days.	Dermal
23	*Datura stramonium* L.:**Herb**	Asangira **MAF**	Solanaceae	Wound	**Leaf** :The is pounded and applied (put)on affected Area once a day for 2-5 days	Dermal
				Headache	**Seed**: Seed of *Datura stramonium* and will be powdered together put on head for 9-days.	Dermal
24	*Dichrocephala Integrifolia (L.f) O.Kuntze* :**Herb**	X a b b a Giddi **MAF**	Asterceae	Febrile illness (Michi)	**Leaf**: leaf of *Dichrocephala interifolia* together with that of *Croton macrostachyu s*and *Ocimum forskolei* will be smashed and sniffed.	Nasal
25	*Ekebergia Capensis sparm* :**Tree***	Somboo **HG**	Meliaceae	Wound	**Bark:**Bark of *Ekebergia capensis* will be powdered and applied on to the wound	Dermal
				Haemorrhode	**Sap**:sap exudates of *Ekebergia capensis* is directly applied to haemorrhoid	Anal
26	*Embelia schimperi* Vatke .**:Shrub***	Haanquu **RS**	Myrsinaceae	Intestinal Parsite (Tape worm)	**Seed:**Dry seeds of *Embelia schimperi* will be powdered and mixed with water and 2cups of mixture will be drunk	Oral
					Leaf : Leaves and seeds of *Embelia schimperi* together with the leaves of *Croton macrostachyus* will be pounded mixed with a glass of water and drunk	Oral

27	*Englerina wood fordiodes* (Schweinf.)M. Gilbert **Epiphyte**	Digaluu **RS**	Loranthaceae	Diarrhea	**Leaf**:Leaf of *Englerina woodfordiodes* is pounded and mixed with water then with one cup of local tella is given to human	Oral
28	*Epilobium hirsutum*L **:Herb**	Ashufee **MAF**	Onargraceae	Diffuse Cutaneous Leshmaniasis	**Leaf**: The leaf of *Epilobium hirsutum* put in firwe by taking away from fire and by rubbing creamed on pain area.Also leaf of *Epilobium hirsutum* pounded with fleshyleaf of *Croton macrostachyus* and *Ricinus communis* are creamed for both human and cattle.	Dermal

Appendix 1 continued

29	*Eucalyptus globules* Labill .:**Tree**	Bargamo adii **HG**	Myrtaceae	Cough	**Leaf**:The leaf and young branches will be biled in water and the steam will be inhaled during bed times .	Nasal
30	*Euphorbia apliphylla pax* : **Tree***	Adamii **WV**	Euphorbiacea e	Gonorrhea	**Sap**: Four to six drops of collected sap will be mixed with a cup of wheat flour, baked and eaten to the empty stomach for 5 days.	Oral
				Breast ulcer	**Stem**: stem of *Euphorbia apliphylla* is creamed and fumigated to ulcerated breast.	Dermal

				Intestinal Parasite (Ascaries)	**Sap**: 2-3drop of *Euphorbia apliphylla* sap is backed with teff and given to human.	Oral
31	*Ficus sur Forssk.* :**Tree ***	H a r b u u **WV**	Moraceae	Skin infection	**Sap**:sap from *Ficus sur* will be creamed on affected skin	Dermal
32	*Ficus vasta* Forssk. **Tree***	Qilxuu WV	Moraceae	Haemorrhoide	**Sap:**Sap from *Ficus vasta* and powdered root of *Pterolobium stellatum* are mixed together and creamed to the external haemorrhoide.Also the leaf of *Ficus vasta,Justica dodecandra,Rhamnus prinoides* are pounded and given by alcohol or tea, for big man measured by 3-ring of small finger in cup for children in small amount is given until cured.	Anal/Oral
33	*F o e n i c u l u m v u l g a r e* L . :**Shrub**	Insilaala **RS**	Apiaceae	Urinating Problem	**Leaf**: leaves of *Foeniculum vulgare, vebascum sinaitcum, Catha edulis, and cucumis ficifolius* wii are boiled in water together and drunk.	Oral
34	Gindia glauca (Frsen.) Gilg.**Shrub***	Qaqaroo **MAF**	Thymelaeceae	Kidney problem	**Root**:Root of Gnidia glauca will be powdered and mixed with teff flour baked and eaten	Oral
35	H a g e n i a a b y s s i n i c a (Bruce)J.F.Gmel.: **tree ***	Heexoo **WV**	Rosaceae	Haemorrdiode	**Leaf**:The leaf of *Hagenia abyssinica* together with that of *phytolacca dodecandra,Ficus vasta ,Justica schimperiana,Dodonaea angustifolia,and Rhamnus prinoides* will be pounded and taken	Oral

					with tea or local alcoholic drink(e.g tella)	
36	*Juncus oxycarpus E. Meyerex kunth:* **Herb***	Aladduu **WV**	Cyperaceace	Skin fungal Infection	**Leaf**: leaf of *Juncus oxycarpus* together with that of *Rumex nervosus* will be mixed with ash and wood ash and heated on fire with milk or butter. Then the mixture will be applied on the skin as cream.	Dermal
37	*Justicia schimperiana* (Hochst.ex Nees)T.Anders :**Shrub**	Dhumuga **HG**	Acanthaceae	Rabies	**Root and Leaf:** Root and Leaf of *Justica schimperiana* will be pounded together, mixed with water and drunk.	Oral
				Gonorrhea	**Root**:Root of *Justicia schimperiana* together with leaf of *Erythrina brucei* will be pounded and drunk	Oral

Appendix 1 continued

38	*Kalanchoe petitiana* A.Rch.:**Herb***	Bosoqqe **WV**	Crassulaceae	Nasal bleeding	Root and Leaf of *kalanchoe petitiana* will be powdered and sniffed	Nasal
				Lymphatic swelling	**Root and leaf** :Root and leaf *Petitiana* will be powdered together and taken with coffee	Oral
39	*Lagenaria siceraria* (Molina) Standi**.Climber***	Buqqe Hadha **MAF**	Cucurbitaceae	Malaria	**Fruit:** The sap from ripe *Lagenaria siceraria* fruit will be mixed with water and drunk before break fast.	Oral
				Skin rash (ringworm)	**Fruit:** inner part of fresh fruit of *lagenaria siceraria* willbe rubbed against theaffected skin.	Dermal
				Ear disease	**Leaf:**Fresh leaf of *Lagenaria siceraria* will be	Ear canal

					squeezed and its juice will be droped into the ear for 3-days	
40	*Lantana camara* L. **:Shrub***	Kusaye **WV**	Verbenaceae	Fungi	**Leaf:** FreshLeaf of *Lantana camera* is directly rubbed onaffected skin.	Dermal
41	*Mentha aquatic* L.**Herb***	Baala Lagaa **MAF**	Lamiaceae	Diffuse Cutaneous Leshmanias is	**Leaf:**Leaf of *Mentha* aquatic and leaf of *clematis hirsute* ,*Rumex nervosus* are rubbed together and creamed affected,and also sniffed without touched nose for half minuet until 3 days	Dermal/nasal
42	*Mikaniopsis clematoides*(Sch.bip. ex. A. Rich.) **:Climber**	Hidda Kalalaa **WV**	Menispermaceae	Wound	**Leaf**:Leaf of *Mikaniopsis clematoides* will be pounded and a small amount applied on the wound	Dermal
43	*Nicotiana tabacum* L. :**Shrub**	Tambo **HG**	Solanaceae	Headache	**Leaf:** Dried and powdered leaf of *Nicotiana tabacum* will be Sniffed.	Nasal
44	*Ocimum basilicum* L.:**Herb***	Gosabila **CF**	Lamiaceae	Headache	**Leaf**:leaf of *Ocimum basilicum* will be crushed and sniffed	Nasal
				Malaria	**Leaf**: leaf of *ocimum basilicum* and bulb of *Allium sativum* pbulb will be poundede together and eaten with honey	Oral
45	*Ocimum forkolei* Benth .:**Herb***	Hancabi	Lamiaceae	Febrile illness	**Leaf:** Leaf infusion will be smelled.	Nasal

		WV		Headache	**Leaf**: leaf of *Ocimum forkolei* together with that of	Nasal
					Carissa spinarum and Ocimum basilicum will besmashed and sniffed.	
				E y e disease	**Leaf**: leafof *Ocimum forkolei* together with that of *Premna schimper, Vernonia amygdalina, Acacia abyssinica, and Cynodon dactlon* will be crushed and squeezed to put drops of the juice in to the eye.	

46	*Olea europaea* L. **Tree***	E j e r s a **WV**	Oleaceae	Haemorrhoide	**Bark:** The bark will be heated on fire held on the pain area.	Dermal
47	*Olinia rochetiana* A.Juss.:**Tree***	Soolee **WV**	Oliniaceae	Tooth ache	**Leaf:** fresh leaf of *Olinia rochetiana* and root of *cucumis ficifolius* will be smashed and held on diseased tooth for few minutes.	T o o t h surface
48	*Pentas schimperiana* (A.Rich.) vatke. :**Herb***	Maxann ee **RS**	Rubiaceae	Nasal bleeding	**Leaf**: Freshly squeezed leaves are inhaled through nasal opening.	Nasal
				Diarrhea	**Root**: Root of *Pentas schimperiana* will be chewed with salt and swallowed.	Oral
				Febrile illness	**Leaf**: leaf of *Pentas schimperiana* will be smashed and sniffed.	Dermal

				Skin infection (ring)	Leaf: leaf of *pentas schimperiana* is immersed in hot water and rubbed to the affected skin of human.	Dermal
	Periploca linearifolia Quartin Dill .& A.Rich :**Climber ***	Annanoo **WV**	Asclepiadaceae	Gonorrhea	**Sap**: Five seven drops collected, baked with one cup of wheat powder and eaten to the empty stomach for 5 day.	Oral
50	*Phytolaccadodecandra* L'Hert: **Shrub**	Handodee **WV**	Phytolaccaeceae	Liver problem	**Root**:Crushed root of *Phytolaccaa dodecandra* will be mixed with water and drunk	Oral

Appendix 1 continued

				Gonorrhea	**Roo**t: Roots of *Phytolacca dodecandra* and *croton macrostachys* will be powdered together and drunk with coffee.	Oral
				Haemorrhoide	**Leaf:** of *Phytolacca dodecandra*, together with that of *Ficus vasta*, *Justica schimperiana, Dodonaea angustifolia, and Rhamnus prinoides* will be pounded and drunk with alcohol or tea.	Oral
				Rabies	**Root**:Dried root of *phytolacca dodecandra* will be powdered drunk with locally made alcohol (Areke)	Oral
51	*P r e m n a*	Urgessa	Lamiaceae	Tooth ache	**Root:** Root of *premna schimperi* will be chewed	Oral

	schimperi .**Tree**	**WV**			and the solution is allowed to be in contact with disease tooth.	
52	*Pterolobium Stellatum* (Forssk.)Brenan:**Shrub***	Arangama **WV**	Fabaceae	Evil eye	**Root:**Root of *Pterolobium stellatum* and root of *Ruta chalepensis* will be powdered together and sniffed	Nasal
				Head ache	**Root**:Root of *Pterolobium stellatum* and root of *Ruta chalepensis* will be powdered together and sniffed	Nasal
				Epilepsy	**Root**: Root of *Pterolobium stellatum* is dried powdered and one spoon of the powder is mixed with half cup of local alcohol and given to human.	Oral
				Tooth ache	**Leaf**: leaf of *Pterolobium stellatum, croton macrostachyus, vernonia amygdalina and Carissa spinarum are macrostachyus* and heated in fire and put on infected teeth.	Tooth surface
				Intestinal .parsite eg,Tape worm	**Root**:Root of *Pterolobium stellatum* is dried and powdered,mixed with water.Thee spoon is given per a day for three days	Oral
53	*Rhamnus prinoides* L'Hert	Geshoo **HG**	Rhamnaceae	Skin fungal Infection	**Leaf**: leaf of *Rhamnus prinides* will be pounded and applied on the affected part.	Dermal

	.:**Shrub***					

54	*Rumex nervousus* Vahl.:**shrub**	Dhangaggoo **MAF**	Polygonaceae	Rabies	**Root:**The root of *Rumex nevosus* together with that of *phytolacca dodecandra,Brurea antidysenterica,croton macrostachyus* will be pounded together1 tea spoon will be drunk with coffee	Oral
				Diffuse cutaneous Leshmaniasis	**Root and Leaf :**Root and leaf of *Rumex nervosus* together with the leaves of *Clematis hirsute ,and Mentha aquaqtic* will be pounded together and are rubbed together and creamed on cattle breast ulcer,but for human without touching nose sniffed .	Dermal
				Skin infection	**Root**: Root of *Rumex nervosus* is dried and powdered 3-4 teaspoons of the powder will be mixed butter and creamed on affected skin.	Dermal
55	*Ruta chalepensis* L. :**Herb***	Cilatama **MAF**	Rutaceae	Cough	**Leaf**: Leaf of *Ruta chalepensis* pounded with *Schefflera abyssinica* and eaten with injera.	Oral

				Cough	**Leaf:**Leaf of *Ruta chalepensis* pounded with bulb of *Allium sativum* mixed with soup and taken	Oral
				Stomachache	**Leaf**: Leaf of *Ruta chalepensis*, together with that of vernoni *amygdalina* and bulb of *Allium sativum* will be pounded and drunk with coffee or tea before breakfast.	
56	*Rytigynia neglecta*(Hiern) Robins :**shrub***	Mixoo **MAF**	Rubiaceace	Haemorrhoide	**Leaf**: The leaf of *Rytigynia neglecta* together with that of *Phytolacca dodecandra*, *Ficus vasata, Justica schimperiana, Dodonaea angustifolia, and Rhamnus prinoides* will be pounded and drunk with local alcohol or tea.	Oral
57	*Scandoxus multiflorus* (Martyn)Raf.: **Herb***	Qulubi Warabesa **MAF**	Amarylidaceae	Rabies	**Bulb**: Bulb of *Scandoxus multiflorus* will be pounded with bark of *Croton macrostachyus* and put in cold water for 1-night then by filtering one cup given to human.	Oral
58	*Sida tenuicarpa* Vollesen: **Herb***	Mokotee **MAF**	Malvaceae	Haemorrhoide	**Leaf:**The leaf of *Sida tenuicarpa* together with leaf of *Hagenia abyssinca,Rytigynia neglecta ,phytolacca dodecandra,Ficus vasata, Justica schimperiana,Dodonaeaangustifolia,and Rhamnus prinoides* will be pounded and 2 spoon of powder drunk with local alcohol or tea .	

59	*Snowdenia polystachiya* (Fresen.) Pil.:**Herb***	Muujjaa **MAF**	Poaceae	Skin infection (Fungal)	**Entire above ground part:**Above ground part will be crushed and rubbed against the affected skin	Dermal

Appendix 1 continued

60	*Solanum marginatum* L.f :**Herb***	Hiddi Horii **RS**	Solanaceae	Tonsillitis	**Fruit**: Fruit liquid content of *Solanum* marginatum and bulb of *Allium sativum* are pounded together and given to human with honey for 2-3 days.	Oral
				Skin infection (jock itch)	**Fruit**: Fruit liquid content of *Solanum marginatum* morning daily creamed on affected skin area until cured.	Dermal
61	U*rtica simensis* Steud .:**Herb***	Gulgubbe **MAF**	Urticaceae	Fever	**Leaf**:The dried leaf will be powdered and1 teaspoon of the powder will be drunk with tea every day for 5days	Oral
62	*Verbascum Sinaiticum*Benth. :**Herb**	Gurra Harree **MAF**	Scrophulariaceae	Diarrhea	**Leaf:** Leaf of *Verbascum sinaiticum* will be powdered and for cattle 2-3 spoon with one bottle of water and for human one Spoon with cup of water given as pain is seen.	Oral

				Urinating problem	Leaf of *Verbascum sinaiticum* together with that of *Chata edulis,cucumis ficifolius,*and *Foeniculum vulgare* will is boiled in water and drunk	Oral

Appendix 1

63	*Vernonia amygdalina* del.:**Shrub**	Eebicha **HG**	Asteraceae	Tooth ache	**Leaf:**Fresh of *Vernonia amygdalina* and bulb of *Allium sativum* will be chewed	Oral
				Stomach ache	**Leaf:**Leaf of *Vernonia amygdalina* together with bulb of *Allium sativum*and Rhizome of Giger officinalewill be pounded and eaten with honey	Oral
				Intestinal Parasite	**Leaf**:The leaf infusion will be made and drunk before breakfast.Food and water will not be taken until 5 hours since then	Oral
				Malaria	**Leaf:**Crushed leaves of *Vernonia amygdalina* concocted with leaves of *Ruta chalepensis* .one cup is served as a drink for 3-5 days with cold water in the morning	Oral
64	*Zehneria scabra. (L.f.)*	**Hidda**	**Asteraceae**	Tonsillitis	**Leaf:**Leaf of *Zehneria scabra* mashed and	Dermal

	sond **:Climber ***	**a d i i WV**			after drying will be mixed with butter and put on the head	

*= plant species used only for human ailments

Appendix 2: List of medicinal plants used to treatlivestock health problems.

	Scientific name and plant habit	**Local Name**	**F a m i l y Name**	**Disease Treated**	**Part(s) used,mode of preparations and Application**	**Route of application**
65	*Albizia gummifera (J.f.Gmel.)* C.A.sm**.:Tree**	Imala	Fabaceae	Black leg	**Root**: Root of *Albizia gummifera* will be powdered and mixed with water and a glass of the concoction will be given to cattle.	Oral
				L y m p h a t i c swelling	**Root:**Root of *Albizia schimperiana* will be powdered and the powder is cover with clean cloth and tied to the neck of cattle	Neck
66	*Allium sativum L.* :**Herb**	Qulubbii Adii	Alliaceae	Blackleg	**Bulb**:bulb of *Allium sativum* will be crushed with roots of *Cucumis ficifolius, Brucea antidysenterica,Vernonia amygdalina ,Ruta chalepensis*,leaves of *Justica ,schimperiana and Rhoicissus tridentate* mixed with half altter of cold water and given to cattle.	Oral

				Pasturolosis	**Bulb: Bulb** of *A.sativum* together with roots of *Brucea antidysenterica, croton macrostachyus and permna resinoa* will be pounded mixed with water given to cattle.	Oral
				Blotting	**Bulb**: The bulb (10 pices in number) will be pounde together and given twice a day for 3-5 days.	Oral
67	*Ampelocissus bombycina* (bank.) Planch.:**Climber***	Buqee Seexanaa **WV**	Vitaceae	Anthrax	**Leaf:** Leaf of *Ampelocissus bombycina* with leaf of *Croton macrostachyus* and Justicia *schimperiana* are dried together and pounded ,then creamed an affected area.	Dermal
68	*Bersama abyssinica* Fresen .**:Tree**	Lochisa		Arthropod pest infestation	**Roo**t: root of *Bersama abyssinica* will be powdered and sprayed on cattle skin.	Dermal
69	*Brucea antidysenterica* J.F.Mill. :**Shrub**	Qomonyoo	Simaroubaceae	Rabies	**Roo**t: root *Brucea antidysenterica* will be pounded with bark and root of *Croton macrostachyus,* roots of *Rumex* n*ervosus*, *Phytolacca dodecandra* and *Justicia schimperiana* drunk animals one cup of powder with one bottle of local tella and for human 1-spoon given by coffe.	Oral
				Arthropod	**Leaf**:leaf of *Brucea antidyseterica* will be	Dermal

				external parasite(e.g.,mites,fly) infestation	pouderd mixed with water and used to wash cattle, donkey, mule or hourse	

Appendix 2 contunued

70	*Buddleja polystachya* Fresen: **Tree***	Hanfarre **HG**	Loganiaceae	Eye disease	**Leaf:** The leaf of *Buddleja polystachya* will be pounded into fine powder; the Juice is extracted and applied to the eye in drops, at night times.	Through The eye
71	*Calpurnia aurea* (Ait.)Benth :**Shrub**	Ceekaa	Fabaceae	Skin rash	**Leaf**: leaf of *Calpurnia aurea* together with that of *Croton macrostachyus* and *Justicia schimperiana* will be pounded and used to wash skin of cattle.	Dermal
				Snake bite	**Leaf**: leaf of *Calpurnia aurea* is smashed and 3-4 drop of the sap is given orally to cattle and 2-3 drop to human.	Oral
				Wound	**Leaf:** leaf of *Calpurnia aurrea* is smashed and rubbed on affected area	Dermal
72	*Capparis Cartilaginea* Dence.	Goraa	Capparidaceae	Rabies	**Root**: root of *Capparis cartilaginea* together with that of *Phytolacca dodecandra,Brucea*	Oral

	:**Climber**				*antidysenterica* and *Croton macrostachyus* will be pounded and given to cattle	

Appendix 2 contunued

73	*Capsicum annum* L. :**Herb***	Qaaraa **CF**	Solanaceae	Blotting\Black leg	**Fruit**: Fruit will be crushed together with roots of *Cucumis ficifolius, Brucea antidysenterica, Vernonia amygdalina, Allium sativum, Ruta chalepensis,* and leaves of *Justicia schimperiana* and *Rhoicissus tridentate* mixed with water and given to cattle.	Oral
74	*Cirsiumvulgare*(savi)Tea:**Herb**	Kosorruharree	Asteaceae	Trapanosomiasis	**Root:** Dry root *Cirsium vulgare* will be powdered mixed with water and given to cattle.	Nasal
				Diffuse cutaneous Lashmaniasis	**Root:** Dry root *Cirsium vulgare* will be powdered mixed with water and given to cattle.	Oral
75	*Croton macrostachyus* Del.:**Tree**	Bakkanisa	Euphorbiaceae	Skin infaction	**Leaf**: leaf of *Croton macrostachyus* will be crushed with that of *Brucea*	Dermal

					antidysenterica and used to wash the skin.	
76	*Cucumisficifolius*A.Rich**.:climber**	H i d d i Holaa	cucurbitacea	Blotting&Black leg	**Root** root of *Cucumis ficifolius* together with that of *Brucea antidysenterica, Vernonia amygdaliana, Allium sativum,Ruta chalepensis*, leaves of *Jucicia schimperiana* and *Rhoicissus* tridentate will be crushed, mixed with water and given to cattle.	Oral
				P a s r u r e l l o s i s Gorosisu	**Roo**t: Root of *Cucumis ficifolius* together with that of croton macrostachyus, *Alliumsativum, Prena schimperi, Brucea antidysenterica, and Maesa lancolata* will be pounded, mixed with water and given to cattle.	
77	*Cynodon dactylon* (L.)pers. :**Herb**	Coqorsa	Poaceae	Eye disease	**Leaf**:The leaf of *Cynodon dactylon* together with that of *Vernonia amygdalina,Acaciaabyssinia,Mikani opsis clematoides ,Ocimum forskolie* and root of *Engleria wood fordioges*	Through the eye

					will be smashed and the juice will be added into the eye	

Appendix 2 contunued

78	*Datura stramonium* L. **Herb**	Asangira	Solanaceae	Wound	**Leaf:** The leaf is pounded and applied (put) on affected area once a day for 2-5 days.	
79	*Dichrocephala integriffolia* (L.f)O.Kutze	Xabba gidi	Asteraceae	Eye disease	**Leaf:** leaf of *Dichrocephala integrifolia* together with that of *Acacia abyssinica,Ocimum forskolei,Premna schimperi ,Mikaniopsis clematoides* will be pounded and the liquit part will be dropped into the eye .	
80	*Dodonaea angustifolia* L.f :**Shrub***	Ittacha **WV**	Sapidaceae	Wound	**Leaf:** Dried leaves of *Dodonaea angustifolia* will be powdered and dusted on the wound.	
81	*Englerina woodfordiodes* (schweinf.) M Gilbert :**Epiphyte**	Digaluu	Lornanthceae	Eye disease	***Roo***t: The root of *Englerina wood fordiodes* will be pounded and the liquid part will be added into the eye.	
82	*Erythrina brucei* Schweinf .:**Tree***	Walensuu **WV**	Fabaceae	Eye disease	**Root**: Root of *Erythrina brucei* and leaf of *Premna schimperi* will be pounded together and 4-6 drop of the liquid extract is added to cattle eye.	

				Lymphatic swelling	**Bark:** Bark of *Erythrina brucei* pounded with leaf of *Taclea nobilis* mixed with water and half aglass is given to the animal.	
83	*Eucalyptus globules* Labill.**:Tree**	Baargamoo adii	Myrtaceae	Cholera	Leaf: Leaf of *Eucalyptus globules* pounded, boiled and the liquid is added to wheat powder and given to hen.	Oral
84	* *Hibiscus macranthus Hochest.ex.A.Rich: Climber*	Hiddahincinnii WV	Malvaceae	Black leg (Bishooftu)	Root: Root of *Hibiscus macranthus* together with that of *Vernonia amygdalina, Allium sativum, Brucea antidysenterica, Ruta chalepensis* and *Capsicum pepper* and leaves of *Rhoicissus tridentate* and *Justica schimperiana* will be powdered together and given to cattle with water.	Oral
85	*Hypericum revolutum vahl* :**Shrub***	Hidhee **WV**	Guttiferae	Rabies	**Root and Leaf**: The root and leaf of *Hypericum revolutum* together with roots of *Rumex nervosus* and bark of *Croton macrostachyus* will be pounded together mixed with water and given to cattle.	Oral
86	*Justicia Schimperiana* (Hchst .ex Nees) T. Anders:S**hrub**	Dhumugaa	Acanthaceae	Black Leg	**Leaf and Root**: Leaf and root of*Justicia schimperiana* will be pounded with dried fruit of *Ricinus communis* mixed with water and given to cattle.	Oral
				Inestinal parasite	**Leaf**:pounded leaf of Justic*ia schimperiana* will be mixed with barely malt powder and given to the	Oral

					animal (cattle ,horse or donkey) to drink.	
				Blotting	**Leaf:**of *Justicia schimperiana* and bulb of *Allium sativum* ,root of *Brucea antidysenterica and vernonia amygdalina* are pounded together powdered and by mixed with water one is given to cattle.	
87	*Linum usitatissimum*.L :**Herb***	Talba **CF**	Linaceae	Retained Placenta	**Seed**:Seed of *Linum usitatissimum* is powdered and half a glass of the powder is dissolved in water and given to cattle	Oral
88	*Maesa lanceolata* Forssk.:s**hrub***	Abbayi **WV**	Myrsinaceae	Eye disease	**Leaf**: leaf of *Maesa lanceolata* together with that of *stephania abyssinica*, *Acaccia abyssinica and Cynododactylon* will be crushed and few drops of the fluid will be applied into the eye.	Through Eye
				Pasturolosis (Gorosisu)	**Root:**The root of *Maesa lanceolata,Allium sativum ,Brucea antidysenterica ,Croton macrostachyus ,Cucumis ficifolius* are pounded ,powdered with meat of porcupine (Xadde) given to cattle 1 –bottle for big, but half bottle for calf .	Oral
89	*Mikania capensis* DC.**:Climber***	Hidda Reeffa **WV**	Asteraceae	Rabies	**Root:** The root of *Mikania capensis* and Cucumis *ficifolius* will be powdered to together mix with water given to cattle.	Oral

90	*Mikaniopsis clematoides* (Sch.Bip.ex.) A.Rich .):**Climber**	Hidda Kalalaa	Menispermaceae	Eye disease	**Leaf** :leaf of *Mikanionpsis clematoides* together with that of *Premna schimperi* ,*Ocimum forskolei* ,*Vernonia amygdalina ,Acacia abyssinica*,and *Cynodon dactylon* will be smashed and squeeze to add few drops of the sap into the eye	Through Eye

91	*Nicotiana tabacum*L.:**Shrub**	Tamboo	Solanaceae	Blotting	**Leaf and loot:** Dry leaf and root of Nicotiana *tabacum* will be powdered, mixed with salt and given to cattle.	Oral
				Leeches Problem	**Leaf:** Dried and powdered, leaf of *Nicotiana tabacum* will be given to cattle to drink with water.	Oral
92	*Phytolacca dodecandra* L'Hert.:Shrub	Handodee	Phytolaccaceae	Hyena bite	**Root**: *Phytolacca dodecandra* root is smashed with its leaf, and tied on neck of cattle by clean cloth.	Neck
93	*Premni schimperi* Engl.:**Tree**	Urgessa	Lamiaceae	Eye disease	**Leaf:**Leaf of *Premna schimperiana* together with that of *Ocimum forskolei ,Vernonia amygdalina ,Acacia abyssinica,Cynodon dactylon* will be crushed squeezing and few drops will be added into the eye.	Through the eye
				Pasturolosis	**Root :**The root of *Premna schimperi* ,bulb of *Allium sativum* ,root of *Bruea antidysenterica* and *Cucumis ficifolius* are pounded ,powdered with meat of porcupine given to cattle 1-bottle for big animal but	Oral

					half bottle for calf.	
94	*Prunus africana* (Hook.f)Kalkm :**Tree***	Hoomii **WV**	Rosaceae	Wound	**Bark:** Bark will be powdered and dusted on the wound.	Demal

Appendix 2 cotinued

95	*Rhoicissus tridentate* (L.f) Willd& Drummed. :**Climber***	Hida fojoga **WV**	Vitaceae	B l o t t i n g \Black leg	**Root:**Root of *Rhoicissus tridentate* and root of *Vernonia amygdalina* ,Leaf of *Justicia schimperiana* ,root of *Allium sativum* ,*Brucea antidysenterica (*Qomonyo*),Ruta chalepensis(Cilatama) and capsicum* pepper(Qaraa)are pounded together powdered and given to cattle, also chewed.	O r a l \Nasal
96	*Ricinus communis* L.:**Shrub***	Qobboo **HG**	Euphorbiaceae	Anthrax	**Fruit** :Dried fruit of *Ricinus communis* will be powdered , mixed with a tea cup of water and given to cattle to drink	Oral
				E p i z o t i c lymphagitie	**Fruit:** Dried fruit of *Ricinus communis* is powdered and mixed with powdered bark of *Prunus Africana* are creamed to the affected skin of horse.	

				Blotting	**Root**:Root of *Ricinus communis* will be pounded with table salt ,mixed with cold water and ½ a tea cup will be given to cattle to dink.	Oral
				Actinomycosis	**Root**:Root of *Ricinus communis* is pounded with table slt and soil .One glass of the concoction is given to cattle ;half a glass is given to goat and sheep.	Oral
				Wound	**Fruit**:Dried fruit of *Ricinus communis* will be powdered and mixed with bark powder of *Prunus africana* and creamed on to the wound.	Dermal
97	*Salix mucronatha* Thunb.:**Herb***	A l a l t u u **WV**	salicaceae	J o i n t dislocation	**Leaf**: The leaf ground along with young stem, mixed with bread and given to the cattle in problem.	Oral
98	*Schefflera abyssinica* (Hochst.ex. A.Rich) :**Tree***	Harfattuu(Gata maa) **WV**	Araliaceae	Cough	**Leaf**:Leaf of *schefflera abyssinica* together with that of *Englerrin*a *woodfordiodes* will be pounded together and 3-4 drop of the exaudate is given to cattle .	Oral

				Ulceric Lympangite	**Bark** :Bark of *schefflera abyssinica* together with leaves of *Englerina woodfordiodes* and *calpurnia aurea* will be pounded and given to donkey to drink with water .	Oral
				Pasteurellosis	**Bark:** Bark of *Schefflera abyssinica* and leaf of *Enlerina woodfordiodes* pounded together and 2 cups given to cattle.	Oral
99	*Verbascum sinaiticum* Benth. *:Herb*	Gurra harreee	Scrophulariaceae	Blotting	Root: Root of *Verbascum sinaiticum together* with that of *Cucumis ficifolius, Brucea antidysenterica* and bulb of *Allium sativum* are bounded with table salt given to cattle by one bottle of cold water.	Oral
100	*Solanum Marginatum* L.f: **Herb**	Hiddi horii	Solanaceae	Snake bite	**Fruit:** snake poised goat eats fruit of *Solanum marginatum* against the poison.	Oral
101	*Vernonia amygdalina* Del . :**Shrub**	Eebicha	Asteraceae	Tooth ache	**Leaf**: To treat tooth ache leaves of *Vernonia amygdalina* are pounded with bulb of *Allium sativum* and put on area.	Oral /Tooth surface
				Blackleg\Blotting	**Root**:Root of *Vernonia amydalina* and leaf of *Justica schimperiana* ,root of *Allium sativum ,Brucea antidysenterica* (Qomonyo) ,*Ruta chalepensis (cilatama) and Capsicum*	Nasal

					annuum (Qaraa) are pounded together powdered and given to cattle ,also chewed.	

*=plant species used only for livestock ailments.

WV ,MAF,HG,RS and **CF** are Plant Habitats where**,WV,MAF,HG,RS** and CF represents Wild Vegetation,Margins of Agricultural Field,Home Garden,Rod Side And Crop Fields respectively.

7. APPENDIX

Appendix 1: List of Medical plants used to treat Human Health problems.

No	**Scientific Name and Plant Habit**	**Local Name**	**Family Name**	**Health problem Treated**	**Part (s)used, mode of preparations and Application**	**Route of application On**
1	*Accacia abyssinica* Hochst.ex.Benth: **Tree***	Laaftoo **WV**	Fabaceae	Goiter	**Leaf**: Fresh leaf of *Acaccia abyssinica* is smashed and the sap injected into the skin around the swollen neck area	Dermal
				Stomach problem	**Bark**: One tea spoon of powdered bark is taken with tea every day for 3 days	Oral
2	*Albizia gummifera*	Imala	Fabaceae	Evil eye	**Root**: Dried root of *Albizia gummiffera* and	Nasal

	(J.F .Gmel.)C.A Sm.**Tree**	**WV**			*Pterolobium stellatum* will be crushed together and the smoke inhaled	
3	*Allium Sativum* L .:**Herb**	Qulubbii adii **HG**	Alliaceae	Malaria	**Bulb** :of *Allium sativum* and rhizome of *Gingerofficinaleare* pounded together and eaten with honey.	Oral
				Stomachache	**Bulb** : Bulb of *Allium sativum* and seed of *Lepidiumsatidysent*erica pounded together and eaten with injera	Oral
4	*Artemissia abyssinica* Sch.Bip. e.x A .Rich .:**Herb***	Xiroo **WV**	Asteraceaceae	Epilepsy	**Leaf** :Fresh lea of *Artemissia abyssinica ,Brucea antidysenterica and ccccucumis ficifolius* are pounded together mixed with a tea cup of water and drunk	Oral
5	*Bersama abyssinica* Fresen **:Tree**	Lolchiisa a **WV**	Fabacea	Rheumatism	**Leaf** :Fresh leaf of will be heated on fire and held on the affected area	Dermal
				Inestinal parasite	**Stem**: Chopped young stem (34-5 pieces)will be cooked with common bean seed and before breakfast for 2 consecutive days .	Oral

Appendix 1 continued

				Hook worm	**Leaf** : Fresh leaf of *Bersama abyssinica* together with leaf of Cheilanthes farinose And root of *Amelocissus bombycina* will be chewed and the juice swallowed.	Oral
6	*Brucea antidysenterica* J.F.Mill .:**shrub**	Qomonyoo **RS**	Simaroubaceae	Malaria	**Seed** :One raw seed will be eaten every month for prevention	Oral
				Rheumatism	**Leaf** :The leaf will be heated on fire and held on the affected area every night .	Dermal
				Rabies	**Root** : Root of *Brucea antdysenterica* pound with bark and root ofc*roton macrostachyus* and root of *Rumex nervous* drunk animals one cup of powder by mixed with local tella and to human 1-spoon given cup of coffer or chwed.	Oral
7	*Calpurni aurea* (Ait .) Benth :**Shrub**	Ceekaa **RS**	Fabacea e	Snake bite	**Leaf** : Fresh leaf *of calpurnina aurea* will be smashed and 2-3 drops of the sap is taken orally .	Oral
				Skin rash	**Leaf**: The leaf of infusion is used to wash the	Dermal

					affected body daily for a week.	
				Arthropod external parasite (e.g., fleas, lice, bed bug, etc.)	**Leaf** : The leaf is ground along with barks of *millettia ferruginea* and sprayed on the area of problem (external human body part (s),clothes .rooms ,beds,etc.).	Dermal
8	*C a p p a r i s cartilaginea* Decne .: **Climber**	Goraa **WV**	Cappari daceae	Back pain	**Seed**: The seed (drived) Is swallowed once a day for 3-5 days	Oral
9	*Carduus schimperi* Sch. Bip .ex .A.Rich :**Herb***	Q o r a t t i Harree RS	Astera ceae	Febrile illness	**Leaf** : of *carduus Scimper*i pounded and given to human .Also ,the juice will be creamed on body surface.	Oral

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10	*Carissa spinarum* L.:**shrub ***	Agamsa **WV**	Apocynace ae	Head ache	**Leaf**:Dry leaf of *Carissa spinarum* will be smoked and inhaled through nostrilas	Nasal

				Stomach ache	**Lea**f :pouded leaf of *Carissa spinarum* will be mixed with honey and 2-3 teaspoons will be eaten before breakfast	Oral
				Evil eye	**Root**:Dries root of *Carissa spinarum* will be crushed and the smoke will be inhaled	Nasal
				Gonrrhea	**Roo**t :Fresh root of *Carissa spinarum* will be pounded mixed with local beer (tella)and one glass of it (-250ml)will be drunk for three days	Oral
11	*Catha edulis* (Vah1) Forssk. ex.Endl. * :**shrub**	Caatii **CF**	Celastraceae	Intestial parasite	**Leaf**: Fresh leaf and bark will be chewed and swallowed .	Oral
				Common cold	**Leaf** :The leaf of Catha eduliswill be boiled with that of *Ruta chalepensisand* drunk	Oral
12	*Cheilanthesfarinose* (Forssk.) kaulf :herb *	Baala Ballesii **MAF**	Sinpteridaceae	Hook Work	**Leaf**: The leaf of *cheilanthes farinose* will be chewed together with root of *Ampelocissus bombycinia* and the juice will be sawlloed.	
13	*Cirsuim vulgare* (savi)Ten	Kosorru	Asteraceae	Skin	**Leaf** :Leaf of ,*Cirsuim vulgare* together	

	:**Herb**	Harree **RS**		infection	with that of *Rumex* *Nervosus* and *Juncus oxycarpus* will be mixed wood ash and milk /butter ,heated together and creamed on the affected area for two weeks	
14	*Citrus aurantfolia* (Christm.) Swingle :**Shrub***	Q o m x a x x e (Loomii) **CF**	Rutaceae	Stmachche	**Fruit** :Fruit of citrus *aurantifolia* ,bulb of Allium sativum will be pounded together ,mixed with honey and eaten with wheat bread.	Oral
				N a s a l bleeding	**Fruit** :The juice of citrus *aurantifolia* will be added into the nose or drunk	Nasal

Appendix 1 continued

15	*C l a u s e n a anisata* (Wild .) B e n t h .:**shrub ***	Ulumayii **WV**	Rutaceae	Skin Infection	**Leaf** :Leaf of *clausena anisata* ,together with that of solanecio gigas and Justcia schimperiana will be pounded together ,and creamed on skin	Dermal

16	*Clematis hirsute* per. Guill. : **Climber** :**shrub***	Hidda fiitii **WV**	Ranunculaceae	Tonsillitis	**Leaf**: leaf of *clematis hisuta* will be crushed and pressed ,rapped with clean cloth and tied on the neck	Neck \Dermal
				Diffuse cutaneous Leshmaniasis	**Leaf** :The leaf of *clematis hirsute* crushed with leaf of justice schimpera are creamed at affected area and also sniffed without touched of nose for 3-days to half minute .	Dermal \Nasal
				Lymphatic swelling	**Leaf**:leaf of *clematis hirusuta* and *lagenaria siceraria* will be crushed together and tied on swelling .	Neck
17	*Coffea Arabica* L**.:shrub ***	Buna **CF**	Rubiaceae	Diarrhea	**Seed** :Powder of roasted coffee bean will be eaten or drunk before breakfast for 2-3 days	Oral
18	*Cordia Africana* Lami .:**Tree***	Weddessa **HG**	Boraginaceae	Wound	**Leaf**:Leaf of **cordial Africana** will be burned and its ash mixed with butter will be creamed on the affected part .	Dermal
19	*Coriandrum sativum* L.**Herb ***	Dimbilaal **HG**	Apiaceae	Diffuse Cutaneous Leshmaniasis	Leaf: The leaf of *coriandrum sativum* pound with leaf of *croton macrostachyus* and Rumex *nervosus* creamed on pain area for 2-3 days .	Dermal
20	*Croton Macrostachy* us Del :**Tre**e	Bakkanisa **WV**	Euphobiaceae	Lymphatic Swelling	**Leaf:**Drived leaves of *croton macrostachyus* and *premna Schimper* will be be powdeded and 2-3 teaspoons of the powder will be mixed with alcohol or coffee and drunk	Oral

				Evil eye	**Root:** Chopped roots of *croton macrostachyus* and *Carissa spinarrum* will besmoked and inhaled	Nasal
				Febrile illness	Leaf:Leaf of croton *macrostachyus* and *ocimumForkolei* are fumigated	Oral / Nasal
				Gonrrhea	**Bark**:Bark of *croton macrostachyus* and *venonia amydlina* will be powdered together ,and 3-4 teaspoons of the podwer will be taken with tella (loca beer l).	Oral

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	Headache	**Leaf**: leaf of *croton macrostachyus* and *ocimum forskolei* will be smashed and sniffed.	Nasal
	Haermorrhoide	**Lea**f:The fresh leaves of croton macrotachyus and cucumis ficifolius will be pounded together and creamed	Dermal

			Rabies		**Roo**t:Root of croton macrostachyus pound with leaf of *Hypericum revelutum* and given to cattel according to their age ,for example for big animal 2 cups of powder with 1-bottle of local tella but for calf 1-cup .For human root of croton macrostachyus ponded together with root of scandoxus multiflorus by mixing with water half of cup given on 9th day after infected	Oral
			Diffuse Cutaneus Leshmaniassis		**Leaf**:the fresh leaf of *croton macrotaschyus* will be pounded with leaves of *Ricinus communis* and *Epilobium hirstus* heated on fire being rapped up with the leaf of *Croton Macrotaschyus*and sniffed ,also creamed.	
21	*Cucumis ficifolius* A.Rich :**Climber**	Hiddi Holaa **RS**	Cucurbitaceae	Stomach ache	**Roo**t: A piece of root of *cucumis ficfolius* will be chewed with salt and swallowed.	Oral
				Febrile illness	**Root**:Root of *cucumis ficifolius* together with the leaves of *ocimum gratissimum* and *calpurnina aurea* will be Pounded and drunk with a cup of coffee	Oral
				Wound	**Leaf**: leaf of *cucumis ficifolius* will be smashed and 2-4 Drops of the sap will be added to the wound	Dermal

				Epilepsy	**Bark:**Dried bark and leaf of *cucumis ficifolius* will be powdered together than mixed with alcohol , and one cups is taken by human .	Oral

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				Haemorrhiode	**Leaf**: The leaf of *cucumis focifolius* will be pounded with fresh leaf of croton Macrotschyus mixed with butter and applied on the affected area unti cured	Dermal
22	*Cynodon dactylon* (L.)pers .:**Herb**	Coqorsa **RS**	Poaceae	Snake bite	**Entire plant** :The entire above ground parts of *cynodon Dactylon* will be crushed ,mixed with butter and rubbed on to the skin part bitten by the snake .	Dermal

				Wound	**Entire plant** : The whole plant will be crushed finely and sprayed over the wound every night for some days.	Dermal
23	*Datura stramonium* L.:**Herb**	Asangira **MAF**	Solanaceae	Wound	**Leaf** : The is pounded and applied (put)on affected Area once a day for 2-5 days	Dermal
				Headache	**Seed**:Seed of *Datura Stramonium*and wii be powdered together put on head for 9-days.	Dermal
24	*Dichrocephala Integrifolia (L.f) O.Kuntze :**Herb***	X a b b a Giddi **MAF**	Asterceae	Febrile illness (Michi)	**Leaf**: leaf of *Dichrocephala interifolia* together with that of *Croton Macrostachyus*and *Ocimum forskolei* will be smashed and sniffed.	Nasal
25	*Ekebergia Capensis sparm :***Tree***	Somboo **HG**	Meliaceae	Wound	**Bark:**Bark of *Ekebergia capensis* will be powdered and applied on to the wound	Dermal
				Haemorrhode	**Sap** : sap exudate of *Ekebergia capensis* is directly applied to haemorrhoid	Anal
26	*Embelia schimperi* Vatke .**:Shrub***	Haanquu **RS**	Myrsinaceae	Intestinal Parsite (Tape worm)	**Seed:**Dry seeds of *Embelia schimperi* will be powdered and mixed with water and 2 cups of mixture will be drunk	Oral
					Leaf : Leaves and seeds of *Embelia schimperi* together with The leaves of *Croton Macrostchyus*will be pounded mixed with a glass of water and drunk	Oral

Appendix 1 continued

27	*Englerina Woodfordiodes* (Schweinf.)M. Gilbert **Epiphyte**	Digaluu **RS**	Loranthaceae	Diarrhea	**Leaf**:Leaf of *Englerina woodfordiodes* is pounded and mixed With water then with one cup of local tella is given to human	Oral
28	*Epilobium hirsutum* L**:Herb**	Ashufee **MAF**	Onargraceae	Diffuse Cutaneous Leshmaniasis	**Leaf**: The leaf of *Epilobium hirsutum* put in firwe by taking away from fire and by rubbing creamed on pain area .Also leaf of *Epilobium hirsutum* pounded with flesh y leaf of *Croton Macrostchyus*and *Ricinus communis* are creamed for both human and cattle.	Dermal
29	*Eucalyptus globules* Labill .:**Tree**	Bargamo o adii **HG**	Myrtaceae	Cough	**Leaf**:The leaf and young branches will be biled in water and the steam will be inhaled during bed times .	Nasal

30	*E u p h o r b i a Apliphlla pax* : **Tree***	Adamii **WV**	Euphorbiaceae	Gonorrhea	**Sap**: Four to six drops of collected sap will be mixed with a cup of wheat flour , baked and eaten to the empty stomach for 5 days.	Oral
				Breast ulcer	**Stem**: stem of *Euphorbia apliphylla* is creamed and fumigated to ulcerated breast.	Dermal
				Intestinal Parasite (Ascaries)	**Sap**: 2-3 drop of *Euphorbia apliphylla* sap is backed with teff and given to human.	Oral
31	*Ficussur Forssk.*:**Tree ***	Harbuu **WV**	Moraceae	Skin infection	**Sap**: sap from *Ficus sur* will be creamed on affected skin	Dermal

Appendix1 continued

33	*Foeniculumvulgare*	Insilaala **RS**	Apiaceae	Urinating Problem	**Leaf**:leaves of *Foenicukum vulgare, vebascumsinaitcum, Catha edulis ,and cucumis*	Oral

	L.: **Shrub**				*ficifolius* wii be boiled in water together and drunk.	
34	Gindia glauca (F r s e n .)Gilg.:**Shrub** *	Qaqaroo **MAF**	Thymelaeceae	Kidney problem	**Root**:Root of Gnidia glauca will be powdered and mixed with teff flour baked and eaten	Oral
35	H a g e n i a a b y s s i n i c a (B r u c e) J . F .Gmel.:tree *	Heexoo **WV**	Rosaceae	Haemorrdiode	**Leaf**: The leaf of *Hagenia abyssinica* together with that of *phytolacca dodecandra ,Ficus vasta , Justica schimperiana ,Dodonaea Angustifolia ,and Rhamnus* prinoides will be pounded and taken with tea or local alcoholic drink()e.g tella)	Oral
36	*J u n c u s o x y c a r p u s E . M e y e r e x kunth:* **Herb***	Aladduu **WV**	Cyperaceace	Skin fungal Infection	**Leaf**:leaf of *Juncus oxycarpus* together with that of *Rumex nervosus* will be mixed with ash and wood ash and heated on fire with milk or butter . Then the mixture will be applied on the skin as cream.	Dermal
37	*J u s t i c i a schimperiana* (H o c h s t . e x Nees) T . A n d e r s :**Shrub**	Dhumuga **HG**	Acanthaceae	Rabies	**Root and Leaf: Root** and Leaf of*Justicaschimperiana* willbe poundedtogether, mixed with water and drunk.	Oral

				Gonorrhea	**Root**: Root of *Justica schimperiana* together with leaf of *Erythrina brucei* will be pounded and drunk	Oral

Appendix 1 continued

38	*Kalanchoe petitiana* A.Rch.:**Herb***	Bosoqqe **WV**	Crassulaceae	Nasal bleeding	Root and Leaf of *kalanchoe Petitiana* will be powdered and sniffed	Nasal
				Lymphatic swelling	**Root and leaf** :Root and leaf Petitiana will be powdered together and taken with coffee	Oral
39	*Lagenaria siceraria* (Molina) Standi**.Climber***	Buqqe Hadha **MAF**	Cucurbitaceae	Malaria	**Fruit: The**sap from ripe Lagenaria Sicerariafruit will be mixed with waterand drunk before breakfast.	Oral
				Skin rash	**Fruit:** inner part of fresh fruit of *lagenaria*	Dermal

				(ring worm)	s*iceraria* willbe rubbed against theaffected skin.	
				Ear disease	**Leaf:**Fresh leaf of Lagenaria siceraria will be squeezed and its juice will be droped into the ear for 3-days	Ear canal
40	*Lantanacamara* L. **:Shrub***	Kusaye **WV**	Verbenaceae	Fungi	**Leaf:** Fresh Leaf of *Lantana camera* isdirectly rubbed onaffected skin.	Dermal
41	*Mentha Aquatic* L.**Herb***	Baala Lagaa **MAF**	Lamiaceae	Diffuse Cutaneous Leshmaniasis	**Leaf:**Leaf of aquatic and leaf of *clematis hirsute* ,*Rumex nervosus* are rubbed together and creamed affected ,and also sniffed without touched nose for half minuet until 3 days	Dermal/nasal
42	*Mikaniopsis Clematoides* (Sch.Bip.ex.A.Rich.):Climber	Hidda Kalala a**WV**	Menispermaceae	Wound	**Leaf**:Leaf of *Mikaniopsis clematoides* will be pounded and a small amount applied on the wound	Dermal
43	*Nicotiana tabacum* L.:**Shrub**	Tambo o **HG**	Solanaceae	Headache	**Leaf:** Dried and powdered leaf of *Nicotianatabacum* will be Sniffed	Nasal
44	*Ocimum basilicum* L.:**Herb***	Gosabi la **CF**	Lamiaceae	Headache	**Leaf**:leaf of *ocimum basilicum* will be crushed and sniffed	Nasal
				Malaria	**Leaf**: leaf of *ocimum basilicum*	Oral

					And bulb of *Allium sativum* bulb will be poundede together and eaten with honey	
45	*Ocimum forkolei* Benth .:**Herb***	Hancabi **WV**	Lamiaceae	Febrile illness	**Leaf:** Leaf infusion will be smelled.	Nasal

Appendix 1 continued

				Headache	**Leaf**: leaf of *ocium forkolei*together with that of *Carissa spinarum and Ocimum basilicum*will besmashed andsniffed.	Nasal
				Eye disease	**Leaf**: leafof *Ocimum forkolei* together with that of*premna schimper, vernonia amygdalina, Acacia abyssinica, and cynodon dactlon* will be crushed and squeezed to put drops of the juice in to the eye.	
46	*Olea europaea* L.**Tree***	Ejersa **WV**	Oleaceae	Haemorrhoide	**Bark:** Thebark will be heated onfire held on the pain area.	Dermal
47	*Olinia rochetiana*	Soolee	Oliniaceae	Tooth ache	**Leaf:**fresh leaf of *olinia rochetiana* and root	Tooth

	A . J u s s .:**Tree***	**WV**			of *cucumis Ficifolius* will be smashed and held on diseased tooth for few minutes .squeezed leaves a	surface
48	*P e n t a s schimperiana* (A . R i c h .) vatke.:**Herb***	Maxannee **RS**	Rubiaceae	Nasal bleeding	**Leaf**: Freshsqueezed leaves are inhaled through nasal opening.	Nasal
				Diarrhea	**Root**: Root of *pentas schimperiana* will be chewed with Salt and swallowed	Oral
				Febrile illness	**Leaf**: leafof pentals *schimperiana* will be smashed and sniffed.	Dermal
				Skin infection (ring)	Leaf:leaf of *pentas schimperiana* is immersed in hot water and rubbed to the affected skin of human	Dermal
49	*P e r i p l o c a linearifolia Quartin Dill* .& A.Rich : **Climber ***	Annannoo **WV**	Asclepiadaceae	Gonorrhea	**Sap**: Five–seven drops collected bakedwith one cup of wheat powder andeaten to the empty stomach for 5 day.	Oral
50	*Phytolacca Dodecandra*L 'Hert:	Handodee **WV**	Phytolaccaeceae	Liver problem	**Root**:Crush root of *phytolaccaa dodecandra* will be mixed wixed with water and drunk	Oral

	Shrub					

Appendix 1 continued

				Gonorrhea	**Roo**t: Rootsof Phytolacca *dodecandra* and *crotonmacrostchys* will be powdered togetherand drunk with coffee.	Oral
				Haemorrhoide	**Leaf:**of *Phytolacca dodecandra* ,together with that of Ficus vasta ,*Justica schimperiana ,Dodonaea angustifolia,and Rhamnus prinoides* will be pounded and drunk with alcohol or tea.	Oral
				Rabies	**Root**:Dried root of phytolacca dodecandra will be powdered drunk with locally made alcohol (Areke)	Oral
51	*P r e m n a schimperi* .**Tree**	Urgessa **WV**	Lamiaceae	Tooth ache	**Root:** Root of *premna schimperi* will be chewed and the solution is allowed to be in contact with disease tooth.	Oral
52	Pterolobium Stellatum (Forssk.)Brena	Arangama **WV**	Fabaceae	Evil eye	**Root:**Root of *Pterolobium stellatum* and root of Ruta chalepensis will be powdered together and sniffed	Nasal

	n:**Shrub***			Head ache	**Root**: Root of *Pterolobium stellatum* and root of	Nasal
					Ruta chalepensis will be powdered together and sniffed	
				Epilepsy	**Root**: Root of *Pterolobium stellatum* is dried powdered and one spoon of the powder is mixed with half cup of local alcohol and given to human.	Oral
				Tooth ache	**Leaf**:leaf of *Pterolobium stellatum ,croton macrostachyus , vernonia amygdalina and Carissa spinarum are macrostachyus* and heated in fire and put on infected teeth .	T o o t h surface
				Intestinal .parsite eg,Tape worm	**Root**: Root of *Pterolobium stellatum* is dried and powdered, mixed with water. Thee spoon is given per a day for thee days	Oral
53	*R h a m n u s p r i n o i d e s* L ' H e r t .**:Shrub***	Geshoo **HG**	Rhamnaceae	Skin fungal Infection	**Leaf**: leaf of *Rhamnus prinides* will be pounded andapplied on the affected part.	Dermal

54	*Rumex nervousus* Vahl.:**shrub**	Dhangaggoo **MAF**	Polygonaceae	Rabies	**Root:**The root of *Rumex nevosus* together with that of *phytolacca dodecandra ,Brurea antidysenterica ,croton macrostachyus* will be pounded together 1 teaspoon will be drunk with coffeee	Oral
				Diffuse cutaneous Leshmaniasis	**Root and Leaf :**Root and leaf of *Rumex nervosus* together with the leaves of *clematis hirsute ,and Mentha aquaqtic* will be pounded together and are rubbed together and creamed on cattle breast ulcer,but for human without touching nose sniffed .	Dermal
				Skin infection	**Root**:Root of *Rumex nervosus* id dried and powdered 3-4 teaspoons of the powder will be mixed butter and creamed on affected skin	Dermal
55	Ruta chalepensis L. :**Herb***	Cilatama **MAF**	Rutaceae	Cough	**Leaf**: Leaf of *Ruta chalepensis* pounded with schefflera *Abyssinica* and eaten with injera.	Oral
				Cough	**Leaf:**Leaf of *Ruta chalepensis* pounded with bulb of *Allium sativum* mixed with with soup and taken	Oral
				Stomachache	**Leaf**:Leaf of *Ruta chalepensis* ,together with that of *vernoniamygdalina* and bulb of	

					Alliumsativum will be pounded and drunk with coffee or tea before breakfast.	
56	*Rytigynia neglect*(Hiern) robins :**shrub***	Mixoo **MAF**	Rubiaceace	Haemorrhoide	**Leaf** :The leaf of Rytigynia neglecta together with that of *phytolacca dodecandra* ,*Ficus vasata* ,*Justica schimperiana* ,*Dodonaea angustifolia* ,*and Rhamnus prinoides* will be pounded and drunk with local alcohol or tea .	Oral

Appendix 1 continued

57	*Scandoxus Multiflorus* (Martyn) Raf.:**Herb***	Qulubi Warabesa **MAF**	Amarylidaceae	Rabies	**Bulb** :Bulb of *scandoxus multiflorus* will be pounded with bark of *croton macrostachyus* and put in cold water for 1-night then by	Oral

					filtering one cup given to human.	
58	*Sida tenuicarpa* Vollesen:**Herb***	Mokotee **MAF**	Malvaceae	Haemorrhoide	**Leaf:**The leaf of *sida tenuicarpa* together with leaf of *Hagenia abyssinca ,Rytigynina neglecta ,phytolacca dodecandra ,Ficus vasata ,Justica schimperiana ,Dodonaea angustifolia ,and Rhamnus prinoides* will be pounded and 2 spoon of powder drunk with local alcohol or tea .	
59	*Snowdenia polystachiya* (Fresen .) Pil.:**Herb***	Muujjaa **MAF**	Poaceae	Skin infection (Fungal)	**Entire above ground part:**Above ground part will be crushed and rubbed against the affected skin	Derm al
60	*Solanum marginatum* L.f :**Herb***	Hiddi Horii **RS**	Solanaceae	Tonsillitis	**Fruit** :Fruit liquid content of *solanum marginatum* and bulb of *Allium sativum* are pounded together and given to human with honey for 2-3 days .	Oral
				Skin infection (jock itch)	**Fruit**: Fruit liquid content of *solanum marginatum* morning daily creamed on affected skin area until cured.	Derm al
61	U*rtica simensis* Steud .:**Herb***	Gulgubbe e **MAF**	Urticaceae	Fever	**Leaf**:The dried leaf will be powdered and 1 teaspoon of the powder will be drunk with tea every day for r 5 days	Oral

62	*Verbascum Sinaiticum*Benth. :**Herb**	Gurra Harree **MAF**	Scrophulariaceae	Diarrhea	**Leaf:**Leaf of *verbascum sinaiticum* will be powdered and for cattle 2-3 spoon with one bottle of water and for human one Spoon with cup of water given as pain is seen.	Oral
				Urinating Problem	Leaf of *verbascum sinaiticum* together with that of *chata edulis ,cucumis ficifolius,* and *Foeniculum vulgare* will is boiled in water and drunk	Oral

Appendix 1

63	*Vernonia amygdalina* del.: **Shrub**	Eebicha **HG**	Asteraceae	Tooth ache	**Leaf:**Fresh of *vernonia amygdalina* and bulb of *Allium sativum* will be chewed	Oral
				Stomach ache	**Leaf:**Leaf of *vernonia amygdalina* together with bulb of *Allium sativum*and Rhizome of Giger officinalewill be pounded and eaten with honey	Oral
				Intestinal	**Leaf**:The leaf infusion will be made and	Oral

				Parasite	drunk before breakfast .Food and water will not be taken until 5 hours since then	
				Malaria	**Leaf:**Crushed leaves of *Vernonia amygdalina* concocted with leaves of *Ruta chalepensis* .one cup is served as a drink for 3-5 days with cold water in the morning	Oral
64	*Zehneria scabra. (L.f.) sond* **:Climber ***	**H i d d a adii WV**	**Asteraceae**	**Tonsillitis**	**Leaf:**Leaf of *Zehneria scabra mashed* and after drying will be mixed with butter and put on the head	Dermal

*= plant species used only for human ailments

Appendix 2: List of medicinal plants used to treatlivestock healthproblems.

	Scientific name and plant habit	**Local Name**	**Family Name**	**Disease Treated**	**Part(s) used,mode of preparations and Application**	**Route of application On**
65	*Albizia gummifera (J.f.Gmel.)* C.A.sm**.:Tree**	Imala	Fabaceae	Black leg	**Root**: Root of *Albizia gummifera* will be powdered and mixed with water and a glass of the concoction will be given to cattle.	Oral
				Lymphatic swelling	**Root:**Root of *Albizia schimperiana* will be powdered and the powder is cover	Neck

					with clean cloth and tied to the neck of cattle	
66	*Allium sativum L.* :**Herb**	Qulubbii Adii	Alliaceae	Blackleg	**Bulb**:bulb of *Allium sativum* will be crushed with roots of *cucumis ficifolius ,brucea antidysenteria ,vernonia amygdalina ,Rutachalepensis* ,leaves of *Justica ,schimperiana and Rhoicissus* tridentate mixed with half altter of cold water and given to cattle.	Oral
				Pasturolosis	**Bulb :**Bulb of *A.sativum* together with roots of *Brucea antidysenterica ,croton macrostachyus and permna resinoa* will be pounded mixed with water given to cattle .	Oral
				Blotting	**Bulb**: The of bulb (10 pices in number) will be pounde together and given twice a day for 3-5 days .	Oral
67	*A m p e l o c i s s u s Bombycina* (bank.) Planch.:**Climber***	Buqee Seexanaa **WV**	Vitaceae	Anthrax	**Leaf:** Leaf of *Ampelocissus bombycina* with leaf of croton *macrostachyus* andjustice *schimperiana* are dried together and pounded ,then creamed an	Dermal

					affected area.	

Appendix 2 contunued

68	*Bersama abyssinica* Fresen .**:Tree**	Lochisa		Arthropod pest infestation	**Roo**t: root of *Bersama Abyssinca* will be powdered and sprayed on cattle skin.	Dermal
69	*Brucea antidysenterica* J.F.Mill. :**Shrub**	Qomonyoo	Simarouba ceae	Rabies	**Roo**t: rootBrucea *antidysenter ica* will be pounded with bark and root of *croton macrostachyus, roots of Rumex* n*ervosus*, *phytolacca dodecandra* and Justica *schimperiana* and for human 1-spoon given by coffe.	Oral
				Arthropod external parasite(e.g.,mites,fly) infestation	**Leaf**:leaf of *Brucea antidyseterica* will be pouderd mixed with water and used to wash cattle, donkey, mule or hourse	Dermal
70	*B u d d l e j a polystachya*Fresen: **Tree***	Hanfarre **HG**	Loganiacea	Eye disease	**Leaf:** The leaf of *Buddeja polystachya* will be pounded in to finepowder; the Juice is extracted and applied ot the eye in drops, tat night times.	Dermal
71	*Calpurnia aurea* (Ait.)Benth	Ceekaa	Fabaceae	Skin rash	**Leaf**: leaf of calpurnia together with that of *croton macrostachyus* and *Justicia*	Through The eye

	:**Shrub**				*schimperian*a wil be pounded and used to wash skin of cattle.	
				Snake bite	**Leaf**:leaf leaf of *calpurnia aurea* is smashed and 3-4 drop of the sap is given orally to cattle and 2-3 drop to human.	Oral
				Wound	**Leaf:** leaf of *calpurnia aurrea* is smashed and rubbed on affected area	Dermal
72	*Capparis Cartilagine*a Dence. :**Climber**	Goraa	Capparidaceae	Rabies	**Root**: root of *capparis cartilaginea* together with that of *phytolaccadodecandra,Brucea antidysenterica* and *croton macrostachyus* will be pounded and given to cattle	Oral

Appendix 2 contunued

73	*Capsicum annuum* **L.:Herb***	Qaaraa **CF**	solanaceae	Blotting\Black leg	**Fruit** :Fruit will be crushed together with roots of *cucumis ficifoius, Bruceaantidyenterica vernonia amygdalina , Allium sativum Ruta chalepensis,* and leaves of *Justica schimperiana* and *Rhoicissus* mixed with water and given to ncattle.	Oral
74	*Cirsiumvulgare*(savi)Tea:**Herb**	Kosorru harree	Asteaceae	Trapanosomias is	**Root:** Dry root *cirsium vulgare* will be powdered mixed with water and given to cattle.	Nasal
				Diffuse cutaneous Lashmaniasis	**Root:** Dry root *cirsium vulgare* will be powdered mixed with water and given to cattle.	Oral
75	*Crotonmacrostachyus* Del.:**Tree**	Bakkanisa	Euphorbiaceae	Skin infaction	**Leaf**: leaf of *Crotonmacrostachyus* will be crushed with that of *Brucea antidysenterica* and used to wash the skin.	Dermal
76	*Cucumisficifolius*A.Rich**.:climber**	Hiddi Holaa	cucurbitacea	Blotting&Black leg	**Root** rootof *Cucumis ficifolius*together with that of *Brucea antidysenteria, vernonia*	Oral

					amygdaliana Allium sativum Ruta chalepensis, Ruta chalepensis , leaves of *Jucica schimperiana* and *Rhoicissis* tridentate will be crushed, mixed with water and given to cattle.	
				Pasrurellosis Gorosisu	**Roo**t :Root of *Cucumis ficifolius* together with that of croton macrostachyus *Allium sativumprenma schimperi ,Brucea antidysenterica, Maesa lancolata* will be pounded, mixed with water and given to cattle.	
77	*Cynodon dac t y l o n* (L.)pers.:**Herb**	Coqorsa	poaceae	Eye disease	**Leaf**:The leaf of *cynodon dactylon* together with that of v*ernonia* amygdalina acacia Abyssinia , *Mikaniopsis cle matoides , ocimum forskolie* and root of *Engleria* wood fodes will be s mashed and the juice will be added into the eye	Through the eye

Appendix 2 contunued

78	*Datura stramonium*	Asangira	Solanace	Wound	**Leaf** : The leaf is pounded and applied (put)on	

	L. **Herb**		ae		affected area once a day for 2-5 days.	
79	*Dichrocephala Integriffolia* (L.f) O.Kutze	Xabba gidi	Asteraceae	Eye disease	**Leaf:** leaf of *Dichrocephala integrifolia* together with that of *Acacia abyssinina ,Ocium forskolei,premna schimperi ,Mikaniopsis clematoides* will be pounded and the liquit part will be dropped into the eye .	
80	*Dodonaea Angustifolia* L.f :**Shrub***	Ittacha **WV**	Sapidaceae	Wound	**Leaf:**Drived leaves of *Dodonaea angustifolia* will be powdered and dusted on the wound .	
81	*Englerina Woodfordiodes* (schweinf.)M Gilbert :**Epiphyte**	Digaluu	Lornanthcea	Eye disease	***Roo***t:The root of *Englerina* wood fordiodes will be pounded and the liquid part will be added into the eye .	
82	*Erythrina brucei* Schweinf .:**Tree***	Walensuu **WV**	Fabaceae	Eye disease	**Root**: Root of *Erythrina brucei* and leaf of *premna schimperri* will be pounded together and 4-6 drop of the liquid.	
83	*Eucalyptus globules* Labill.:Tree	Baargamooadii	Myrtaceae	Cholera	Leaf: Leaf of *Eucalyptus globules* pounded, boiled and the liquid is added to wheat powder and given	Oral

					to hen.	
84	* *Hibiscus macranthus Hochest.ex.A.Rich: Climber*	Hidda hincinnii WV	Malvacea e	Black leg (Bishooftuu)	Root: Root of *Hibiscus macranthus* together with that of *Verninia amygdalina, Allium sativum, brucea antidysenteria, Ruta chalepensis* and *Capsicum* pepper and leaves of *Rhoicssus tridentate* and *Justica schimperiana* will be powdered together and given to cattle with water.	Oral
85	*Hypericum Revolutum vahl* :**Shrub***	Hidhee **WV**	Guttifera e	Rabies	**Root and Leaf** :The root and leaf of *Hypercum revolutum* together with roots of *rumex nervosus*and bark of *croton macrostachyus* will be pounded together mixed with water and given to cattle .	Oral
86	*Justicia Schimperiana* (Hchst .ex Nees) T. Anders:S**hrub**	Dhumugaa	Acanthac eae	Black Leg	**Leaf and Root** :Leaf and root of *Justicaschimperian* will be pounded with dried fruit of Ricinus communis mixed with water and given to cattle .	Oral
				Inestinal parasite	**Leaf**:pounded leaf of Justica *schimperian* will be mixed with barely malt powder and given to the animal (cattle ,horse or donkey) to drink.	Oral
				Blotting	**Leaf:**of *justica of schimperiana* and bulb of	

					Allium sativum ,root of *Bruceaantidyenteria and vernonia amygdalina* are pounded together powdered and by mixed with water one is given to cattle.	
87	*Linum Usitatissaimum*.L :**Herb***	Talba **CF**	Linaceae	Retained Placenta	**Seed**:Seed of *Linum Usitatissimum* is powdered and half a glass of the powder is dissolved in water and given to cattle	Oral
88	*Maesa lanceolata* Forssk.:s**hrub***	Abbayi **WV**	Myrsinaceae	Eye disease	**Lea**f:leaf of Maesa lance lata together with that of *stephania abyssinica ,Acaccia abyssinnica and cynododactyon* will be crushed and few drops of the flud will be applied into the eye.	Through Eye
				Pasturosis (Gorosisu)	**Root:**The root of maesa *lanceol,Alliumsativum ,Brucea antidysenterica ,crotonmacrostachyus ,cucumis ficifolius* are pounded ,powdered with meat of porcupine (Xadde) given to cattle 1 –bottle for big but half bottle for calf .	Oral

Appendix 2 Continued

89	*Mikania capensis* DC.**:Climber***	Hidda Reeffa	Asteraceae	Rabies	**Root:**The root of *Mikania capensis* and *cucumisficifolius* will be powdered to together mixed	Oral

		WV			with water given to cattle.	
90	*Mikaniopsis Clematoides* (Sch.Bip.ex.) A. Rich .):**Climber**	Hidda Kalalaa	Menispermaceae	Eye disease	**Leaf** :leaf of mikanionpsis clematoides together with that of premna schimperi ,Ocimum forkolei ,vernonia amygdalina ,Acacia abyssinica ,and cynodon dactylon will be smashed and squeeze to add few drops of the sap into the eye	Through Eye
91	*Nicotiana tabacum* L.:**Shrub**	Tamboo	Solanaceae	Blotting	**Leaf and loot:**Dry leaf and root of *Nicotianatabacum* will be powdered ,mixed with salt and given to cattle .	Oral
				Leeches Problem	**Leaf:**Dried and powdered ,leaf of *Nicotianatabacum* will be given to cattle to drink with water.	Oral
92	*Phytolacca Dodecandra* L'Hert.:Shrub	Handodee	Phytolaccaceae	Hyena bite	**Root**:*Phytolacca dodecandra* root is smashed with its leaf ,and tied on neck of cattle by clean cloth.	Neck
93	*Premni schimperi* Engl. :**Tree**	Urgessa	Lamiaceae	Eye disease	**Leaf:**Leaf of *premna schimperiana* together with that of *Ocimum forskolei ,Vernonia amygdalina ,Acacia abyssinica,Cynodon dactylon* will be crushed squeezing and few drops will be added into the eye.	Through the eye
				Pasturolosis	**Root :**The root of premna schimperi ,bulb of Allium sativum ,root of Bruea antidysenteri and Cucumis ficifolius are pounded ,powdered with meat of	Oral

					porcupine given to cattle 1-bottle for big animal but half bottle for calf.	
94	*Prunus Africana* (Hook.f)Kalkm :**Tree***	Hoomii **WV**	Rosaceae	Wound	**Bark :**Bark will be powdered and dusted on the wound .	Demal
95	*Rhoicissus Tridentate* (L.f) Willd & Drummed. :**Climber***	Hida fojoga **WV**	Vitaceae	Blotting \Black leg	**Root:**Root of *Rhoicissus tridentate* and root of*vernonia amygdalina* ,Leaf of *justca schimperiana* ,root of *Allium Sativum ,Brucea antidysenteria (*Qomonyo*),Ruta chalepensis (Cilatama) and capsicum* pepper(Qaraa)are pounded together powdered and given to cattle, also chewed.	Oral \Nasal

Appendix 2 cotinued

96	*Rcinus communis* L.:**Shrub***	Qobboo **HG**	Euphorbiaceae	Anthrax	**Frut** :Dried fruit of *Ricinus communis* will be powdered , mixed with a tea cup of water and given to cattle to drink	Oral
				Epizotic Lymphagite	**Fruit** :Dried fruit of *Ricinus communis* is powdered and mixed with powdered bark of prunus afrian are creamed to the affected skin of horse	Dermal
				Blotting	**Root**:Root of *Ricinus communis* will be	Oral

					pounded with table salt ,mixed with cold water and ½ a tea cup will be given to cattle to dink.	
				Actinomycosis	**Root**:Root of *Ricinus communis* is pounded with table slt and soil .One glass of the concoction is given to cattle ;half a glass is given to goat and sheep.	Oral
				Wound	**Fruit**:Dried fruit of *Ricinus communis* will be powdered and mixed with bark powder of *prunus africana* and creamed on to the wound.	Dermal
97	*Salix mucronatha*Thunb.:**Herb***	Alaltuu **WV**	salicaceae	Joint dislocation	**Leaf**:The leaf ground along with young stem ,mixed with bread and given to the cattle in problem.	Oral
98	*Schefflera Abyssinica* (Hochst.ex. A.Rich) :**Tree***	Harfattuu(Gata maa) **WV**	Araliaceae	Cough	**Leaf**:Leaf of schettlera *abyssinica* together with that of *Englerrin*a *woodfordiodes* will be pounde together and 3-4 drop of the exaudate is given to cattle .	Oral

				Ulceric Lympangite	**Bark** :Bark of *schefflra abyssinica* together with leaves of Englerina woodfordiodes and calpurniaaurea will be pounde and given to donkey to drink with water .	Oral
				Pasteurellosis	**Bark** :Bark of *schefflera abyssinica* and leaf of *Enlerina woodfordiodes* pounde together and 2 cups given to cattle .	Oral
99	*Verbascum sinaiticum* Benth. *:Herb*	Gurra harreee	Scrophulariaceae	Blotting	Root: Root of *Verbascum sinaiticum* together with that of *Cucumis ficilius,Brucea antidysenterica* and bulb of *Allium sativum* are bounded with table salt given to cattle by one bottle of cold water.	Oral
100	*Solanum Marginatum* L.f: **Herb**	Hiddi horii	Solanaceae	Snake bite	**Fruit: snake** poised goat eats fruit of *solanum marginatum* against the poson.	Oral

Appendix 2 continued

101	*Venonia Amygdalina*Del. :**Shrub**	Eebicha	Asteraceae	Tooth ache	**Leaf**:To treat mtooth ache leaves of *vernonia amygdalina* are pounde with bulb of *Allium sativaum* and put onarea.	Oral / Tooth surface
				Blackleg\Blotting	**Root**:Root of *vernonia*	Nasal

					amydalina and leaf of *Justica schimperiana ,root of Allium sativum ,brucea antidysenteria* (Qomonyo) ,*Ruta chalepensis (cilatama) and capsicum annuum* (Qaraa) are pounded together powdered and given to cattle ,also chewed.	

*=plant species used only for livestock ailments.

WV ,MAF,HG,RS and CF are Plant Habitats where,WV,MAF,HG,RS and CF represents Wild Vegetation,Margins of Agricultural Field,Home Garden,Rod Side And Crop Fields respectively.