HARAMAYA UNIVERSITY

POSTGRADUATE PROGRAM DIRECTORATE

ASSESSMENT OF ETHNOMEDICINAL PLANTS AND ASSOCIATED INDIGENOUS KNOWLEDGE IN ODA-BULTUM DISTRICT,WEST HARARGHE ZONE OF OROMIA REGION, ETHIOPIA

MSc THESIS

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Assessment of Ethnomedicinal Plants and Associated Indigenous Knowledge in Oda-Bultum District,West Hararghe Zone of Oromia Region, Ethiopia

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APPROVAL SHEET

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We hereby certify that we have read and evaluated this Thesis entitle "Assessment of Ethnomedicinal Plants and Associated Indigenous Knowledge in Oda-Bultum District, West Hararghe Zone of Oromia Region, Ethiopia" prepared under our guidance by Shumete Mogosse. We recommend that it be submitted as fulfilling the thesis requirement.

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BIOGRAPHICAL SKETCH

Shumete Mogosse was born on April 12, 1976 G.C. in Ife-bas kebele in Oda-Bultum District, West Hararge Zone of Oromia Regional State of Ethiopia. He attended his primary education (Grade1-6) at Oda-Roba Primary School and his junior and secondary education (Grade7-12) at Bedessa Junior and Secondary School. After completion of his secondary School education, he joined Harar Teacher Institute in 1994 G.C. and Adama Teacher College in 2001 G.C. and received certificate and diploma respectively. He joined also Addis Ababa University in 2005 G.C. and received his bachelor of education degree in Biology in 2009 G.C. After graduating with teacher traing institute, he was employed as a teacher at Boke-Tiko Primary School. Then he worked as a biology teacher in Boke-Tiko Primary School, Bedessa Secondary School and in Bedessa Preparatory School for 8 years, 8 years, and 6 years respectively. In 2013 G.C. he joined the School of Postgraduate Studies at Harramaya University as candidates of Master of Science in Biology.

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LIST OF ACRONYMS/ABBREVIATIONS

BGCI	Botanical Garden Conservation International
CBD	Center for Biological Diversity
EBI	Ethiopia Biodiversity Institute
FL	Fidelity Level
IBC	Institute of Biodiversity Conservation
ICF	Informant Consensus Factor
IK	Indigenous Knowledge
MPs	Medicinal Plants
PR	Preference Ranking
TK	Traditional knowledge
TM	Traditional Medicine
TMK	Traditional medicinal knowledge
TMPs	Traditional Medicinal Practitioners
WHO	World Health Organization

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Assessment of Ethnomedicinal Plants and Associated Indigenous Knowledge in Oda-Bultum District,West Hararghe Zone of Oromia Region, Ethiopia

ABSTRACT

Ethnomedicinal researches play important role for conservation and sustainable utilization of medicinal plants and associated knowledge. The objective of this study was to document medicinal plants and associated indigenous knowledge in Oda-bultum district. Ethnobotanical data was collected from April 2016 to July 2016 using semi-structured interview, focus group discussion and direct field observation with 90 randomly selected non key informants and 47 key informants. To analyze data, descriptive statistics such as percentages and frequencies were employed. Moreover, informant consensus factor, fidelity level and preference ranking were computed. A total of 185 medicinal plant species distributed among 148 genera and 72 families were collected and documented from the study area as traditional medicine for the treatment of 89 diseases of humans and live-stock. Of these, 96 plant species (51.9%) were reported as remedies for human, 8 plant species (4.32%) as live-stock medicine, and 81 plant species (43.78%) for both human and live- stock remedies. Family Asteraceae and Lamiaceae each contributed the largest number of species (15); followed by Fabaceae with 14 species. Leaves were the most used plant part followed by root and seed. The three most methods of preparation of remedies were crushing (39.7%), pounding (22.1%), crushing and boiling (7.81%). Oral application was the most commonly (63.66%) used route of application followed by dermal (25.73%). The highest informant consensus factor value was observed for Skin and subcutaneous tissue related diseases, and Circulatory system related diseases (ICF > 0.80). The highest fidelity level index (100%) was for two species; Phytolacca dodecandra and Alysicarpus rugosus for the treatment of gonorrhea and cough, respectively. In preference ranking Carica papaya and Ocimum basilicum were ranked first and second, to treat typhoid. The major factors threatening medicinal plants were agricultural expansion, expansion of invasive species and drought. Indigenous knowledge transfer found to suffer from secrecy, and lack of written documents. Therefore, awareness of the local people should be raised to conserve medicinal plants and associated indigenous knowledge.

Keywords: Oda-Bultum, Indigenous Knowledge, Traditional medicine, West Hararge

1. INTRODUCTION

Traditional medicine (TM) has a long history of use in health maintenance and in disease prevention and treatment particularly for chronic disease (Abbot, 2014). It is found in almost every country in the world and the demand for its services is increasing (WHO, 2013). The World Health Organization (WHO) estimates that about 60% of people in the world use traditional medicine for treating their sickness and up to 80% of the population living in Africa depend on TM for some aspects of health care need (WHO, 2000). Particularly for many rural communities in Africa traditional medicine is the major and in some cases the only source of health care available (Antiwi-Baffour *et al.,* 2014). About 80% of Ethiopian population and 90% of livestock still depend on traditional medicine to fight a number of diseases (Yibrah, 20014; Yared *et al*., 2014; Tadesse *et al*., 2015).

Modern health care has never been and probably never will provide adequate and equitable health services anywhere in Africa, and Ethiopia in particular, due to financial limitations related to rapid population growth and poor economic performance (Debela *et al.,* 2006). Therefore, traditional medicine now considered as alternative health care remedy. World Health Organization also recognized traditional medicinal sectors as responsible organization to ensure that all people to have access to preventive, curative and rehabilitative health service with minimal financial hard ships. Therefore, in order to promote universal health coverage countries have to integrating TM services appropriately in to conventional health service delivery and self healthcare (WHO, 2013). However, traditional medicine is important and often underestimated part of health services.

Ancient people in different localities have developed their specific knowledge, management and conservation technologies by practicing traditional medicine. Indigenous knowledge of the society accumulating during prolonged interactions with the natural world remains fundamental for the physical, spiritual and social being (Getaneh *et al*., 2014). Indigenous knowledge of medicine involves the collection of raw materials, preparation of remedies, traditional diagnosis and its prescription to patients. This practice vary widely from country to country within certain practice (sometimes modalities) regarded differently depending on the culture, historical influence, understanding and accessibility of conventional medicine (WHO,

2013). This knowledge differed between countries, and within ethnic groups and among citizens (Berhane *et al*., 2014). Differs also among within the same community members according to gender, age, social standing, profession and intellectual capabilities (Mathewos *et al*., 2013a).Therefore, many countries have their own traditional or indigenous form of healing, which are firmly rooted in their culture and history (WHO, 2013).

The major component of traditional medicine is that it uses medicinal plants (Moa *et al.*, 2013). Plants have been used throughout human history as sources of food and medicine (Getaneh *et al*., 2014; Seada *et al*., 2015). Medicinal plants have formed the basis of health care throughout the world since the earliest days of humanity and are still widely used and have considerable importance in international trade (Ahmed *et al*., 2006). This implies that the use of plants for treating diseases is as old as the human species (Silva and Fernandes, 2010).

Traditional medicine does more than providing raw materials for pharmaceutical; holders of traditional knowledge often have valuable knowledge for new drug development. Traditional knowledge can provide valuable guidance in selecting and obtaining plant material of potential therapeutic interest (Samuel *et al.*, 2015).

Chemically synthesized drug gained popularity and became the basis of pharmaceutical industry. However, synthetic drugs have been plagued by unwanted side-effects, toxicity, and inefficiency, among other problems. In addition, the search for new drugs against a variety of illnesses through chemical synthesis and other modern approaches has not been encouraging. These factors, as well as the emergence of new infectious diseases, the proliferation of disorders such as cancer, and growing multidrug resistance in pathogenic microorganisms, have prompted renewed interest in the discovery of potential drug molecules from medicinal plants. As a result, plants are important for pharmacological research and drug development, not only when bioactive phytocompounds are used directly as therapeutic agents, but also as starting materials for the synthesis of drugs or as models for pharmacologically active molecules (Ahmed *et al*., 2006).

Plants have played a central part in combating many ailments in human and live- stock in many indigenous communities including Africa. Traditional healers, particularly medicinal

plant herbalist have a detailed knowledge base of traditional medicine in Africa (Feyisa *et al*., 2015). In globe about 250,000 plants were identified. Among these 50,000 - 80,000 are used medicinally. Of these, currently at least 15,000 may face extinction worldwide due to anthropogenic and natural factors. As a result earth is losing at least one potential major drug every two years (CBD, 2008). The loss medicinal plant also causes the loss of indigenous knowledge of medicinal plants (Engedasew *et al*., 2015). Therefore, now a days the global medicinal plants and associated indigenous knowledge are under various threats of manmade and natural constraints. For all of these reasons, the study and conservation of medicinal plants and animal species had become increasingly urgent. The accelerating loss of species and habitat worldwide add to this urgency (CBD, 2008).

In Ethiopia, utilization of medicinal plants remedies in preventing or curing various ailments still playing a significant role in most parts of the country (Miruts and Tilahun, 2013; Ketema *et al.*, 2013). However, different studies have been conducted in different part of the country also show that medicinal plants and associated knowledge faces the risk of disappearing due to combined anthropogenic and natural threaten factors (Engdasew *et al*., 2015; Solomon *et al.* 2015; Tadesse *et al*., 2015; Yibrah, 2015). Therefore botanical collection and documentation of associated knowledge should carry out before such rich heritages are lost due to various threatening factors (Gidey, 2010b, d).

Most available literatures indicate that ethnobotanical studies on medicinal plants are carried out in south, southwest, central, north and north west while studies in eastern part is scanty (Anteneh *et al*., 2012). Particularly, no investigation on medicinal plants has been conducted in Oda-Bultum district. This study is, therefore, designed to carry out ethnobotanical study on medicinal plants of the district with the following general and specific objectives.

General Objective

- To conduct ethnobotanical study on medicinal plants used by people of Oda- Bultum district.

Specific Objectives

- To gather, identify and document medicinal plants of Oda-Bultum district.
- To document indigenous knowledge on the use and management practices of medicinal plants by indigenous people of Oda-Bultum district.

2. LITERATURE REVIEW

2.1. Ethnobiology and Ethnobotany

2.1.1. Ethnobiology

Ethno biology is the scientific and humanistic study of the complex set of relationships of the biota to present and past in human societies. The field can be divided in to three major domains of inquiry; economic (how people use plants and animals), cognitive (how people know and conceptualize plants and animals) and ecological (how people interact with plants and animals, especially in an evolutionary and co-evolutionary framework) (Stepp, 2005). Therefore, it is the first science that originated with the evolution or existence of men in this planet (Rawat and Chowdhury, 1980).

Much of ethnobiological knowledge is traditional, that is learned long ago and passed on with varying degrees of faithfulness for at least two or three generations and it can change rapidly. When ecosystem changes, new plants and animals arrive, and people learn new way of thinking: ethnobiological systems change accordingly, and are typically flexible and dynamic. Nevertheless, ethnobiological knowledge is virtually important in traditional cultures of indigenous people and rural societies do not want to lose it. Because of traditional (indigenous) knowledge is emerging as important, even necessary for managing key resources and ecosystem. Therefore, ethnobiology continues to be a source of knowledge about medicines, crops, agricultural techniques, conservation and management, and much more (Well, 2011). Therefore, it draws on both personal (including traditional) and scientific forms of knowledge, allowing comparison and integration for the benefits of conservations and sustainable development (Hamilton *et al*., 2003).

2.1.2. Ethnobotony

Ethnobotany is a distinct branch of natural science dealing with various aspects such as anthropology, archeology, botany, ecology, economics, and medicine, religious, cultural and several other disciplines. However, ethnobotany is usually defined as anthropological

approach to botany. It is the study and evaluation of plant-human relations in all phases and the effect of plant environment on human society (Sharma and Kumar, 2015). It is particularly emphasis on traditional tribal culture (Kalayu *et al*., 2013a). It applies to the botanical relationships which define a society, often a micro society; and which characterizes the specific and distinct use of local flora (Pear, 2004).

Ethnobotany tries to find out how people have traditionally used plants, for whatever purposes, and how people are still doing so. It also tries to preserve valuable traditional knowledge for both future generations and other communities (Tesfaye and Sebsebe, 2009). Especially, ethnobotanical studies are often significant in revealing the locally important plant species for the discovery of modern drug (Tilahun and Mirutse, 2007). Therefore, ethnobotanical study is real and encourage able in rich biological resource areas for medicinal plant identification, documentation, ranking, conservation and sustainable usage (Balcha, 2014).

2.2. Traditional Medicine

Traditional medicine refers to "the sum total of knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not used in the maintenance of health, as well as, in the prevention, diagnosis, improvement or treatment of physical and mental illness" (WHO, 2013). It comprises of therapeutic practices that have been in existence, for hundreds of years, before the development and spread of modern medicine and are used to day .This practices vary widely, in keeping with social and cultural heritage of different countries (Moa *et al*., 2013).

The principle of practices in traditional medicine is premised on the belief that human being is both a physical and spiritual entity, and that disease can be due to supernatural causes as well as the invasion of foreign object in to the body. It is therefore; not only the symptoms of the disease that are taken in to account in TM, but also physiological and sociological factors. Thus, the holistic nature culture-based approach to traditional health care is an important aspect of the practice, and sets it apart from conventional western approaches (Degene, 2014).

Traditional medicine has a long history of use in health maintenance and in disease prevention and treatment particularly for chronic disease. It is found in almost every country in the world and the demand for its services is increasing. About 80% of African people, 70% population in India, 40% of China, 60-70% Asian countries, 70% in Chile, 40% in Columbia, 46% in Australia, 70% in Canada, 40% UK, 42% USA, has been practicing TM (Bussman and Sharon, 2006; WHO, 2013; Abott, 2014). Particularly in many Africans, especially rural people and poor people in urban centers, relay on the use of TM when they are ill. In fact, in many rural communities in Africa, TM is the major and in some cases the only source of health care available (Antiwi-Baffour *et al*, 2014).

Recently, there has been a growing interest in traditional to public health in developed and developing countries. This wide spread of use of TM could be attributed to cultural acceptability, economic affordability, accessibility, diversity, flexibility, low levels of technological input, relative low side effects and growing economic importance (WHO, 2002). It is efficient against multidrug resistance pathogens and helminthes of diseases as compared to modern medicines (Ketema *et al*., 2013; Feysa *et al*., 2015). Traditional medicine also stands out as a way of coping with the relentless rise of chronic non-communicable diseases (WHO, 2013).

Traditional medicine sectors have played a significant role in the economic development of a number of countries. At the same time, with prevailing current global constraints, use of TM for health promotion, self-health care and disease prevention may actually reduce health care costs. Therefore, TM sectors are responsible to ensure that all people have access to preventive, curative and rehabilitative health services (WHO, 2013).

2.2.1. Indigenous Knowledge on Traditional Medicine

Indigenous knowledge (IK) refers to the cumulative and complex bodies of know-how, practices, beliefs, and representations that are maintained and developed by local communities, who have long histories of interaction with the natural environment (Teodera and Ashly, 2011; Ketema *et al*., 2013). Furthermore Abbott Rayan (2014) describe indigenous knowledge as the content or substance of knowledge resulting from intellectual activities in a

traditional context, and includes the know-how, skills, innovations, practices and the learning that form part of IK systems, and knowledge embodying traditional life styles of indigenous and local communities, or contained in codified knowledge system passed between generation (Abbott, 2014). An IK of medicine involves collection of raw materials, preparation of remedies, traditional diagnosis and its prescription to patients (Mathewos *et al*., 2013a, b).

The indigenous people of different countries and localities have developed their own specific knowledge of plant resource uses, management and conservation by ’trials and error” (Martin, 1995; Cotton, 1996; Endalew, 2007; Fisseha *et al*., 2009). This knowledge differed between countries, and within ethnic groups and among citizens (Berhane *et al*., 2014). Also differs among community member according to gender, age, social standing, profession and intellectual capabilities (Mathewos *et al*., 2013a, b). Many countries have their own traditional or indigenous form of healing which are firmly rooted in their culture and history (WHO, 2013). Thus indigenous and local communities are immense reservoirs of TK that can benefit to biotechnology, agriculture, pharmaceutical development and health care (CBD, 2008).

2.2.2. Problems Associated With Traditional Medicine and Practitioners

Despite traditional medicine being widely used, conventional health practitioners have viewed it with a lot of skepticism and the practice faces some challenges (Antiwi-Baffour *et al*., 2014). The acceptance of western religion, education, urbanization and globalization phenomena have negatively affected the perception about TM in Africa, usually among the educated elites (Afr and Arazeem, 2011). As a result, especially young generation has not shown much interest in this life long accumulated traditional medicinal knowledge. This tendency of disinterestedness in traditional medicinal knowledge is likely to be one of the major causes for losing this wealth of knowledge in the near future (Ketema *et al*., 2013; Seyoum and Zerihun, 2014; Engdasew *et al*., 2015).

In Africa the way in which traditional medicinal practitioners obtained their knowledge and skill is through mouth verbally, but not from an official educational training program. This making it difficult to identifying qualified practitioners (WHO, 2013). Traditional medicinal practitioners also consider their traditional medicinal knowledge as private property, and hold

as secret due to different personal economic and social interest attached to it and other cultural consideration. Therefore, refuse to release (disclose) to others (Gizachew, 2011; Kalayu *et al*., 2013a a, b; Tadesse *et al*., 2015). Furthermore, most traditional medicine is not safe. This due to traditional medicinal knowledge does not have standard and accurate dosage of medications. Therefore, traditional medicinal practitioner prescribed medicines based on "trial and error" method (Gyasi *et al*., 2011; Abbott, 2014). This indicates that the traditional medicinal knowledge is not fully conveyed from one generation to the next generation.

Now a day's, traditional medicinal plants and associated indigenous knowledge are disappearing at an alarming rate; due to natural and anthropogenic factors (d'Avidor, 2014; Seyoum and Zerihun, 2014; Engidasew *et al*., 2015). As a result, the earth is losing at least one potential drug every two years. For all of these reasons, the study and conservation of medicinal plant and animal species have become increasingly urgent. The accelerating loss of species and habitat worldwide adds to this urgency (CBD, 2008).

2.3. Traditional Medicine in Ethiopia

The people of Ethiopia have been used traditional medicine (TM) s from times immemorial to combat and control human and livestock ailments. It continues to play a significant role in the most part of the country (Dejene, 2014; Tadesse *et al*., 2015). TM has been used to prevent pests and vectors (Gizachew, 2011). From this fact, the use of TM has become an integral part of the different cultures in Ethiopia (Wolde *et al*., 2011; Mirutse and Teklehaymanot, 2013; Fisseha *et al*., 2014). Therefore, TM is an integral part of the culture, belief structure and life style of Ethiopian people's (Tesfaye *et al*., 2009). Traditional remedies are sometimes the only source of therapeutics for nearly 80% of human population and 90% live stocks (Berhane *et al*., 2014) and 95% of the preparation are of plant origin (Yared *et al*., 2014; Yibrah, 2014; Tadesse *et al*., 2015).

2.3.1. Traditional Medicinal Plants in Ethiopia

Ethiopia is a home for a number of traditional knowledge on traditional medicine (Fiseha *et al*., 2014). Because Ethiopia is one of the six centers of bio diversity in the world with several

topographies, climatic condition and various ethnic cultures (Balcha, 2014 ; Fisseha *et al*., 2014; Getaneh *et al*., 2014).

Ethiopia is endowed with rich flora and fauna, due to its physical and climatic diversity .The total number of vascular plants is estimated to be between 6,500 and 7000 species. Of which 12% is considered to be endemic and 14% is used as medicinal plants (Balcha, 2014; Fisseha *et al*., 2014; Tadesse *et al*., 2015).The country possesses a wide range of potentially useful medicinal plant, more extensive indeed than available in many other parts of world (Gidey, 2010b).

There is a wide gap in our knowledge about ethnobotanical data and information from various part of Ethiopia; although we have rich and diverse ethnobotanical work have not yet been made in all parts of the country (Getaneh *et al*., 2014; Seada *et al*., 2015). A review of the main source show that studies on medicinal plant of Ethiopia has so far concentrated in the south, south west, central, north and northern west parts of the country but lacking in eastern part of Ethiopia (Anteneh *et al*., 2012; Fisseha *et al*., 2014). Therefore, the studies conducted on the traditional medicinal plants in Ethiopia are limited when compared with multiethnic cultural diversity and the diverse flora of Ethiopia (Fesseha *et al*., 2014; Seada *et al*., 2015). For all of this reasons, the need to perform ethnobotanical researches and to document the medicinal plants and associated IK must be an urgent task (Feyisa *et al*., 2015; Gonfa *et al*., 2015; Seida *et al*., 2015; Tadesse *et al*., 2015; Yibrah; 2015).

2.3.2. Indigenous Knowledge of Medicinal Plants in Ethiopia

The indigenous knowledge on medicinal plants of Ethiopia's appears when human started and learned how to use traditional knowledge on medicinal plants (Emiru *et al*., 2011). The indigenous people of different localities in Ethiopia have developed their own specific knowledge of plant resource uses, management and conservation (Miruts and Tilahun, 2013; Ketema *et al*., 2013), The medicinal plant knowledge is shaped by the ecological diversity of the country, known to be site specific and varies across peoples with different religious, linguistic and cultural back grounds (Endeshaw, 2007; Gizachew, 2011; Berhane *et al*., 2014). From the fact of this, the ethno medicinal healing system varies across cultures. Thus, in

Ethiopia there is cultural diversity with various patterns of using flora (Tesfaye *et al*., 2009). This made Ethiopia to be the home for a numbers of traditional knowledge in TM (Tesfaye *et al*., 2009; Fisseha *et al*., 2014). However, traditional medicinal plants and associated indigenous knowledge of the country faced uncertain futures (Gizachew, 2011).

2.4. Threat and Conservation of Medicinal Plants and Associated Indigenous Knowledge in Ethiopia

Medicinal plant and associated indigenous knowledge of their uses provide vital contribution to human and live stock health care needs throughout Ethiopia (d' Advigdor *et al*., 2014; Feyisa *et al*., 2015). Despite the fact that, indigenous knowledge is associated with the conservation and use of medicinal plant is disappearing at an alarming rate (Seyoum and Zerihun, 2014; Engidasew *et al*., 2015).

This is due to lack of systematic conservation, research, improper utilization and documentation (Kalayu *et al*., 2013b). From the fact of this Ethiopian's traditional medicine is faced with problem of continuity and sustainability (Mersha, 2011; Sintayehu, 2011). This implies botanical collection and documentation of the associated ethnobotanical knowledge should be carried out before such rich heritages are lost due to various threats (Giday, 2010b, d).

2.4.1. Threats and Challenges of Traditional Medicinal Plants in Ethiopia

The people of Ethiopia utilized traditional medicinal plant as the major of health care especially before biomedicine turns to became another option and it remain popular even in the presence of biomedicine. It continues to play a significant role in the health care service (Dejene, 2014). However, there was a loss of plant biodiversity, especially a dramatic decrease in number of medicinal plants in the last 25 years (Mathewos *et al*., 2013a).

Several studies in different part of Ethiopia have shown that wild plant resources including medicinal plants are subjected to a number of anthropogenic and natural factors (Berhane *et al*., 2014; Engidasew *et al*., 2015; Solomon *et al*., 2015). Anthropogenic factors were recorded as the main threats to plant species in general and medicinal plants in particular (Abreha *et al*., 2013; Kalayu *et al*., 2013b). The main factors to loss of plant species are agricultural

expansion in relation to population growth, overharvesting, destructive harvesting, the need for fuel, timber production, overgrazing, encouraging the new varieties and cultural shifts. Likewise, natural cause includes recurrent drought, bush fire, disease and pest out breaks (Endeshaw, 2007; Fisseha *et al*., 2009). Also other problems of medicinal plants are lack of awareness, secrecy and oral based knowledge transfer, unwilling of young generation, and influence of modern education (Engidasew, *et al*., 2015; Haymanot *et al*., 2015; Tadesse *et al*., 2015).

Due to the uncontrolled population growth in Ethiopia, the existed forests were affected inversely. In order to feed these highly growing people, farmers in Ethiopia cleared many forests. The annual rate of deforestation of Ethiopia between 1990 and 2010 was estimated at 141,000 ha/year (Haymanot *et al*., 2015). Because the increasing population pressure leads to an increasing demand for agricultural land and plants products, thus forcing the people to clear woodlands for settlement and expansion of farm land (Tesfaye, 2007). In addition, Botanical Garden Conservation International revealed that the country forest being lost at rapid rate due to fast infrastructure and evidence of invasive species impact (BGCI, 2014). Due to all of these reasons Ethiopian medicinal plants are under great threat (Habtamu *et al*., 2014; Tadesse *et al*., 2015). The issue of medicinal plant conservation in Ethiopia today calls for aggressive studies and documentation before accelerated ecological and cultural transformation distorts the habitats of these plants and culturally held knowledge base (Endeshaw, 2007). Therefore, such ethno botanical studies are useful to identify threatened plants and to take appropriate conservation measures (Ermias *et al*., 2008).

2.4.2. Threats and Challenges of Indigenous Knowledge of Medicinal Plants In Ethiopia

Indigenous knowledge associated with the conservation and use of medicinal plant also disappearing at an alarming rate with the loss of medicinal plants (Reta, 2013); because the loss medicinal plants causes the loss of traditional knowledge (Engedasew *et al*., 2015).

Most studies conducted so far in Ethiopia have shown that the major mechanism for transfer of ethno medical knowledge is oral with great secrecy. This method is crude and highly to distorted and in most cases, some of the knowledge is lost at each point transfer (Gizachew,

2011; Engdasew *et al*., 2015; Tadesse *et al*., 2015). This standing lost at each point to transfer or modified and they became mistaken and dangerous to use (Habtamu *et al*., 2014).

The local indigenous medicinal plant knowledge and transfer of knowledge to the young generation have been affected by modernization such as having access to modern education and health (Gidey and Samuel, 2012; Ketema *et al*., 2013). Because of this, the young generations have not shown much interest in this life long accumulated knowledge. This tendency of disinterestedness in traditional medicinal practices is likely to be one of the major causes for losing this wealth of knowledge in the near future (Seyoum and Zerihun, 2014). In addition, introduction of new religion, and increased business work are the main threats of indigenous knowledge of medicinal plants (Mersha, 2011). Furthermore, the young members of traditional communities are reluctant to carry forward tradition practices that may demise an entire tradition and knowledge system (Gizachew, 2011). This implies Ethiopian IK of medicinal plant is being rapidly lost, and preservation of IK may be of key importance. So, it could be transfer to the future generation (Seyoum and Zerihun, 2014; Engdasew *et al*., 2015).

2.4.3. Conservation of Medicinal Plants and Associated Indigenous Knowledge

There is some conservation efforts in the country to salvage medicinal plants from lost. Especially Ethiopian Biodiversity Institute (EBI) is undertaking some activities regarding conservation of medicinal plants and associated indigenous knowledge. Ethiopian Biodiversity Institute was established two field gene banks (Wendo-Gennet and Bale-Goba field gene bank) to conserve threatened, endangered and rare medicinal plants. It also promote in-situ conservation method which exercise farmers' knowledge and tradition practice (EBI, 2015). However, Only 10% of medicinal plant species is cultivated today while the larger majority being left under wild stands threat (Balcha, 2014). As a result, currently Ethiopian biodiversity especially medicinal plants are under various threats of manmade and natural factors link with the missing of valuable indigenous knowledge associated with the plants (Berhane *et al*., 2014; Tadesse *et al*., 2015). To mitigate this problem, documenting, identifying and applying appropriate conservation strategies are mandatory (Assegid and Tesfaye, 2014; Habtamu *et al*., 2014; Feyisa *et al*., 2015). Therefore, ethnobotanical studies

are useful to identify threatened plants and to take appropriate conservation measures (Ermias *et al*., 2008).

Conserving and protection of medicinal plants and indigenous knowledge have to underline on two fundamental issues. The first is the need to recognize it and its value. Secondly, degradation of medicinal plants is in the way to accelerate the loss of indigenous medicinal knowledge. Therefore, this is pressing need for recovering valuable medicinal plants (Moa *et al*., 2013).

Several studies conducted in the country have recommended different conservation and management strategies to salvage the risk problem faced with medicinal plants and associated knowledge. Among these, the most are promoting both in-situ and ex-situ conservation; establishing community based parks, protecting areas, botanical garden, home garden, domesticating and cultivating endangered multipurpose plants (BGCI, 2014; Berhane *et al*., 2014); creating and ensuring awareness of traditional healers as well as community on conservation and sustainable usage (Assegid and Tesfaye, 2014; Engdasew *et al*., 2015); ensure the right of people to apply their traditional practice (WHO, 2013; Seyoum and Zerihun, 2014). Furthermore, the one way of preserving important traditional knowledge in the new generations is through integrating the school curricular or at least introducing the idea as an extra-curricular school activity (Tesfaye and Sebsibe, 2009; Gizachew, 2011). Also ensuring land use planning and development plan should also consider strategies that stimulate medicinal plant availability in the land scope and works towards increasing their cultivation (Berhane *et al*., 2014). Therefore, immediate action is required to conserve medicinal plants and document the associated indigenous knowledge.

3. MATERIALS AND METHODS

3.1. Description of the Study Area

3.1.1. Geographical Location

The study was carried out in Oromia Region, West Hararghe Zone in Oda-Bultuma District, Ethiopia. The district is found at about 361km to the east of Addis Ababa and located between latitude 8^{o} 10' and 9^{o} 0' N and longitudes 40 ^{o} 50' and 41^{o} 21' E. The area is situated attitude between range of 840-2920 m.a.s.l. (Western Hararghe Zone Rural Land Administration Office: SPM, 2016).

The district is bordered with the District of Gemechis to the east, Chiro to the north, Guba koricha and Habro to the North West, Boke to the southwest, Burka Dintu to the south, East Hararghe zone with Gole-Oda and Melkabello districts to the southeast.

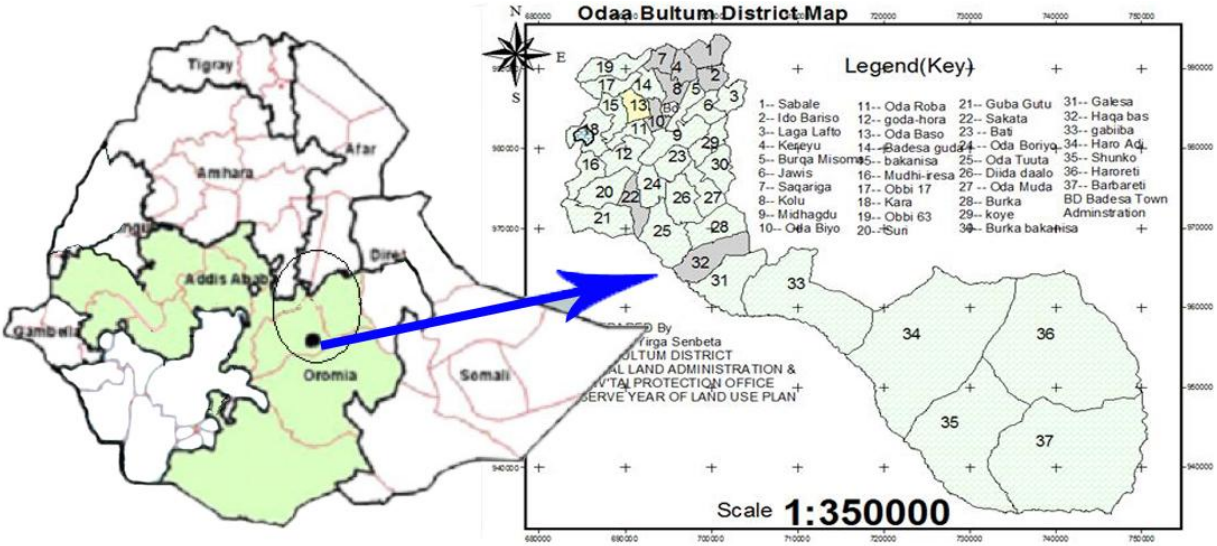

Figure 1 Map of Oda Bultum District (The Study Area)

3.1.2. Agro-Ecology and Climatic Condition

Oda-Bultum District is divided in to three agro-ecological zones, namely the low lands (< 1500 m.a.s.l..) locally called gammoojjii that covers about 65% of the district, middle lands (1500-2300 m.a.s.l.) which is badda-daree in local language that covers about 31%, and high lands (>2301-2500 m.a.s.l.) which is baddaa in local language that covers 4% of the total area of the district. The rainfall pattern of Oda-Bultum is bimodal with two rainy seasons, annual average rainfall ranging from 900-1200 ml. The district receives high rainfall between June and September (Wekti genna in local language) as well as relatively good amount from March to May (Wekti afrasa in local language). The dry season mostly extends from October to February. The annual average temperature of the district ranges from 22ºC - 29ºC (Oda-Bltum Agricultural and rural Development Office, 2014).

3.1.3. Land Use and Agriculture

According to the report of Oda-Bultum District Land Use and Environmental Protection Office; the people of the study area classify and use their land through functional categories as farming land 15.97%, grazing lands about 29.66%, home garden area 11.39%, forest land 23.53%, settlement land 7.3% and degraded land 12.02% (Oda-Bultum District Land Use and Environmental Protection Office, 2014). Agricultural production is based on rain fed cultivation 69.2% and irrigation 30.8%. The major crops cultivated in the study area are cereals (maize, sorghum, *teff*, wheat and barley); oil crops (ground nut and *noug*); tuber crops (potato, sweet potato, carrot and red beet); fruits (banana, orange, lemon, mango, papaya, avocado, peach, and guava), vegetables (shallot, pepper, tomato, pumpkin, cabbage, lettuce, cauliflower) and cash crops (khat, coffee, sugar cane, pepper and tobacco) (Oda-Bultum Agricultural and Rural Development Office, 2014).

3.2. Reconnaissance Survey and Selection of Study Site

Oda-Bltum district has 39 kebeles of which six kebeles were purposively selected. Those kebeles were Sebale ++(1800-2920 m.a.s.l.), Obbi (1960-2280 m.a.s.l.), Bate (1990-2060 m.a.s.l.), Surri (1860-1920 m.a.s.l.), Hake-Bas (1380-1660 m.a.s.l.) and Gebiba (1380-1660 m.a.s.l.). They were selected purposively depending on the availability of medicinal plants and

traditional healers based on the information that obtained from the experts of District Agricultural and Rural Development Office and Health Office.

3.3. Ethnobotanical Data Collection

Prior to ethnobotanical data collection, respondent were selected from the selected kebeles. Totally, 90 ordinary (non key informants) residents (15 from each kebele) and all available key informants (traditional healers) were considered as respondents. Non key informants were selected randomly and all key informants (traditional medicinal healers) were selected purposively based on the information gathered from the local people such as kebeles administrators, DAs, elders and health extensions (Table1).

Table 1 Total number of informants in the study area and in each kebele

№	Name of Kebele	Represented Agro ecology	Key informants			Non key Informants			Total Informants		
			Male	Female	Total	Male	Female	Total	Male	Female	Total
1.	Sebale	High land/ Bedda	4	2	6	15	-	15	19	2	21
2.	Obbi	High land/ Bedda	8	-	8	14	1	15	22	1	23
3.	Bate	Middle land/ Bedda-dere	6	1	7	14	1	15	20	2	22
4.	Surri	Middle land/ Bedda-dere	7	1	8	11	4	15	18	5	23
5.	Hake-bas	Low land/ Gemojji	9	-	9	13	2	15	22	2	24
6.	Gebiba	Low land/ Gemojji	8	1	9	15	-	15	23	1	24
		Total	42	5	47	82	8	90	124	13	137

Ethnobotanical data was collected from April 01, 2016 to August 15, 2016 on two field trips made to the site. Semi-structured interviews, group discussions, and guided field walks with key informants for field observations were methods of data collection. First key informants were interviewed individually to mention about the local names of plants they use to treat diseases, diseases treated, part (s) of plants used, methods of preparation of remedies, route of

application of remedies, dosage, and factors that threaten medicinal plant. Then after discussions were made with them, and asked them for field walk for onsite observation of the plants. Similar procedures were also applied with randomly selected key informants. Voucher specimens were collected, pressed, and dried for identification. For some species, that are common to the study area, preliminary identification was done in the field using hand book (Azene, 2007) and with the help of plant science expert from the district (Ato Getachew Zebene). In addition, further identification of all specimens was done by comparison with authentic specimens, illustrations and taxonomic keys from flora of Ethiopia, and with the assistance of experts of Haramaya University Herbarium. The identified specimens were deposited in Haramaya University Herbarium.

3.4. Ethnobotanical Data Analysis

A descriptive statistical method (percentage and/or frequency) were employed to summarize ethnobotanical data.

The informant consensus factor (ICF) was calculated for categories of aliments to identify the agreements of the informants on the reported cures using the formula used by (Rodrigo *et al*., 2005) and (Tilahun and Miruts, 2007) indicated below.

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

Where Nur =number of use citation, Nt =number of species used.

Fidelity level: The fidelity level (FL), the percentage of informants claiming the use of a certain plant for the same major purpose, was also calculated for the most frequently reported diseases or aliments using the following equation(Tilahun and Muruts, 2007).

$$\text{FL (\%)} = \frac{\mathbf{NP}}{\text{N}} \text{x} 100$$

Where Np is the number of informants that claimed the use of a plant species to treat a particular disease, and N is the number of informants that used the plants as a medicine to treat any given disease.

Preference ranking: To compare the most effective medicinal plants used by community to treat particular disease, preference ranking was conducted following Martin (1995) and Cotton (1996) for most important medicinal plants used in treating a particular illness. For this, ten informants were selected to identify the best-preferred medicinal plants species for treatment of typhoid among the human illness. Each informant was provided with the mentioned medicinal plants reported to cure the illness with leaves of medicinal plants used being paper tagged then was asked to assign the highest value for the most preferred species against the illness and the lowest value(1) for the least preferred plant in accordance of their order for the remaining one. The value of each species was summed up and the rank for each species was determined based on the total score. This help to indicate the rank order of the most effective medicinal plant used by the community to treat the disease.

4. RESULT AND DISCUSSION

4.1. Ethnomedicinal Plants in the Study Area

4.1.1. Medicinal Plant Resource of the Study Area

One hundred eighty-five (185) medicinal plant species distributed among 148 genera and 72 families were collected and documented from the study area as traditional medicine for the treatment of 89 diseases of human and livestock (Table2). Of these185 medicinal plant species, 96 plant species (51.9%) were reported as remedies for human, 8 plant species (4.32%) as live- stock medicine, and 81 plant species (43.78%) for both human and live- stock remedies. This confirms the wide use of traditional medicine particularly medicinal plants in the study area. Most of these plants were also used for different purposes in addition to the disease treatment like food, fuel wood, constriction and building, house hold tools, agricultural equipments, stimulants, shade, forage, cash income, and ornamental. The local community assigned vernacular names to all collected and documented medicinal plants. This indicates that the existence of very close interaction between the local people and their plant resource.

Table 2 List of medicinal plants collected from the study area

Keys: - TU refers treat used for (Human (H), Livestock (L), both human and livestock (B)); FU for form used (Fresh (F), dry (D), both fresh and dry form (B); route of administration (Oral (O), anal (A), nasal (N), optical (Eye), auricular (Ear), dermal (D), vaginal (V).

Table 2 List of medicinal plants collected from the study area

№	Scientific name	Family name	Local name	Disease treated	TU	FU	Part(s) used, method of preparation and application	Route of administration
1	*Achyranthus aspere* L.	Amaranthaceae	Darguu-daalattii	Wound	H	F	Leave will be crushed and then tied on the affected body part.	D
				Back pain	H	F	Root will be crushed and boiled with milk then drunk a glass of tea every night before sleep until recovery from illness.	O
2	*Achyranthus* spp.	Amaranthaceae	Darguu-dimtuu	Wound	H	F	Leave will crushed and then tied on the affected body part.	D
				Febrile illness	H	F	Leave will be crushed and squeezed then drunk its juice before sleep.	O
				Tooth ache	H	F	Leave will be crushed then put on and hold on the infected tooth.	O
				Gonorrhea	H	F	Root will be crushed and mixed with water then drunken ½ cup of coffee every morning for three consecutive days.	O
				Skin burn	H	F	Leave will be crushed and then painted the infected body part.	D
3	*Acokanthera schimperi* (A.D.C.)	Amaranthaceae	Qaraaruu	Gonorrhea	H	F	Root will be pounded together with root of *Euclea racemosa*, *Alysicarpus rugosus* and *Gomphocarpus fruticosu* and mixed with waters then drunk a cup of coffee for three mornings.	O
				Black leg	L	F	Root will be pounded and mixed with water then give one liter to infected animals.	O
				Anthrax	L	F	Root and Leaves pounded together and mixed with water then given one liter to infected animal.	O
4	*Adathoda schimperiana*	Acanthaceae	Dhumuga	Jaundice	H	F	Root will be pounded together with the root of *Ehretia cymosa* then drunk the filtered juice.	O

Table 2 Continued …

	Adathoda schimperiana			Gonorrhea	H	F	Root will be pounded together with the root of *Euclea racemosa* then drunken ½ coffee cups for three days.	O
				Typhoid	H	F	Root will be pounded together with water then drunk the filtrate juice.	O
				Lymph node swilling	B	F	Leaves will be crushed and mixed with water then washed and painted the infected body part.	D
				Leech removal	L	F	Leaves will be crushed and mixed with water then given one liter of juice for cattle and dropped some juice through nose.	O, D
				Rabies	B	F	Root will be pounded together with water then drunk the filtrate juice and given to the infected livestock.	O
				Amoebiasis	H	F	Root will be pounded together with water then drunk the filtrate juice.	O
				Wound	B	F	Leaves will be crushed and then tied on the affected body part.	D
5	*Agave sisalana* Perrine ex.Engelml.	Agavaceae	Algee	Ear disease	B	F	Leaf will be heated and squeezed then dropped in to the ear.	Ear
				Blackleg	L	F	Root will be crushed and mixed with water then given one liter of juice for cattle until recovery from the problem.	O
6	*Allium cepa* C.	Liliaceae	Shunkurtii diimtuu	Impotency problem	H	B	Bulbs will be pounded and boiled together with rhizomes of *Ginger officinale* and seeds of *Cicer aritinum t*hen eaten as he/he can before one hour having sex.	O

Table 2 Continued …

	Allium cepa C.			Heart burning	H	F	Bulbs will be peeled and chopped then chewed and swallowed.	O
7	*Allium sativum* L.	Alliaceae	Qulubbii-adii	Febrile illness	B	B	Bulbs will be chewed with seeds of *Lepidium sativum* and swallowed.	O
				Dyspepsia	B	B	Bulbs will be chewed then swallowed.	O
				Bloating	B	B	Bulbs will be chewed then swallowed.	O
				Intestinal parasite	B	B	Bulbs will be chewed and boiled then drunk one coffee cup for three days.	O
				Wound	B	B	Bulbs will be chewed and tied on the wound.	D
				Toothache	H	B	Bulbs will be crushed then put on and held on the tooth.	O
				Common cold	H	B	Bulbs will be crushed and boiled together with honey then drunk a coffee cup until recovery from illness.	O
				Typhoid	H	B	Bulbs will be crushed and boiled together with *Ginger officinale* then drunk a coffee cup until recovery from illness.	O
				Throat infection	H	B	Bulbs will be crushed and mixed with honey then eaten 3-5 broth before breakfast until recovery from the problem.	O
				Nerve problem (paralysis)	H	B	Bulbs will be crushed and mixed with honey then eaten 3-5 broth before breakfast until recovery from the problem.	O
				Black leg	L	B	Bulbs will be crushed and mixed with seeds of *Lepidium sativum* and water then given to livestock.	O
				Anthrax	L	B	Bulbs will be crushed and mixed with seeds of *Lepidium sativum* and water then given to livestock.	O

Table 2 Continued …

8	*Aloe bertemariae* Sebsibe and M. Dioli	Aloaceae	Hargisa	Hypertension	H	F	Leaves will be crushed and mixed with sugar then drunk its juice when there is pain.	O
				Diabetes	H	F	Leaves will be crushed and mixed with sugar then drunk its juice when there is pain.	O
				Gonorrhea	H	F	Root will be crushed and mixed with water then drunk a cup of coffee before breakfast for 3 days.	O
				Kidneys disease	B	F	Root will be pounded and mixed with water then drunk a coffee cup for 3 days.	O
				Impotency problem	H	F	Leaves will be crushed and mixed with sugar then drunk its juice as a patient can drink.	O
				Diarrhea	B	F	Leaves will be crushed and mixed with sugar then drunk its juice.	O
				Ear disease	H	F	Leaves will be crushed and squeezed its juice then add small amount to the ear.	O
				Typhoid	H	F	Leaves will be crushed and mixed with sugar then drunk its juice.	O
				Conception	B	F	Leaves will be crushed and mixed with water then drunk its juice.	O
				Anthrax	L	F	Leaves will be crushed and mixed with water then given one liter of juice in each day for 7 days.	O
				Nerve problems (paralysis)	H	F	Whole plant parts will be crushed and massaged patient body with exposed to heated and painted until recovery from the problem.	O
				Skin warts	B	F	Latex will be collected and heated then painted the body of patient.	O
				Insufficient milk supply	B	F	Leaves will be crushed and mixed with water then drunk its juice.	O

Table 2 Continued …

9	*Aloysia triphylla* Britt.	Verbenaceae	Naanaa	Cough	H	B	Whole plant will boiled together with plant *Calamintha paredoxa* and a glass of goat milk then drunk a glass of tea for seven days consecutively before sleep.	O
				Common cold	H	B	Whole plant will boiled together with plant *Calamintha paredoxa* and a glass of goat milk then drunk a glass of tea for seven days consecutively before sleep.	O
				Uvula infection	H	F	Whole plant will be crushed and squeezed then swallowed its juice.	O
10	*Alternanthera sessillis* (L) R. Br.	Amarantheceae	Mararree-furdoo	Eczema	H	F	Whole plant parts will be roasted, powdered, and mixed with butter or oil then painted the affected body part.	D
				Hemorrhoids	B	F	Whole plant parts will be pounded together with oil of *Olea hochstetteri* then tied on the anus or inserted to anus.	A
				Black leg	L	F	Whole plant parts will be crushed and mixed with water then given to infected livestock without filtered.	O
11	*Alysicarpus rugosus* (Willd.) DC.	Fabaceae	Alii-hanqaa	Impotency problem	H	F	Root will crush and mixed with water then drunk for three consecutive nights or until recovery from the problem.	O
				Gonorrhea	H	F	Root will be pounded with the root of *Gomphocarpus fruticosus*, *Acokanthera schimperi* and *Euclea racemosa* and boiled with water then drunken one tea cup for a day.	O
				Cough	H	F	Root will be crushed and boiled with tea and then drunk before infected by cough.	O
				Common cold	H	F	Root will be crushed and boiled with tea and then drunk before and after infected.	O

Table 2 Continued …

12	*Anethum foeniculum* L.	Apiaceae	Shish (Shiih)	Diabetes	H	B	Fruits and seeds will be crushed and mixed with water then drunk a glass of juice when pain sensed.	O
				Intestinal worms	H	B	Fruits and seeds will be crushed and mixed with water then drunk a glass of juice for three days before breakfast.	O
13	*Anthemis tigreensis* J.Gay exRichard	Asteraceae	Zar-nab	Cough	H	F	Seeds and leaves will be crushed together with the leaves of *Otostegia integrifolia* and boiled together with *ashare buna* then drunk as a patient can until recovery from the problem.	O
14	*Aristolochia bracteolate* Lam.Wild.	Aristolochiaceae	Foroorree	Intestinal worms	B	F	Root will be crushed and boiled with *ashere –buna* then drunk before breakfast for three days.	O
15	*Artemisia afra* Jacq.ex Wild.	Asteraceae	Urgoftuu-adii (saakayyee-adii)	Typhoid	H	B	Leaves will be crushed and mixed with water then drunk.	O
				Hiccups	H	F	Leaves will be crushed and mixed with water then drunk	O
16	*Asparagus africanus* Lam	Asparagaceae	Saariteе-adii	Urine retention	B	F	Leaves will be pounded, mixed with water then drunk or given to infected livestock.	O
				Impotency problem	H	F	Leaves will be crushed and added to burn fire then fumigated the smoke before having sex.	D
				Diarrhea	B	F	Leaves will be pounded, mixed with water then drunk or given to infected livestock.	O
				Gonorrhea	H	F	Leaves will be pounded together with the leaves of *Catha edulis* then drunken one water glass every morning for three days.	O
				Uvula infection	H	F	Leaves will be chewed and then swallowed its juice.	O

Table 2 Continued …

	Asparagus africanus Lam			External parasite	B	F	Leaves will be pounded together with the leaves of *Spilanthes mauritiana* then painted the affected body.	D
17	*Asparagus racemosus* Willd.	Asparagaceae	Saaritii-gurraati	Urine retention	B	F	Leaves will be pounded, mixed with water then drunk or given to infected livestock.	O
				Diarrhea	B	F	Leaves will be pounded, mixed with water then drunk or given to infected livestock.	O
				Gonorrhea	H	F	Leaves will be pounded together with the leaves of *Catha edulis* then drunken one water glass every morning for three days.	O
				External parasite	B	F	Leaves will be pounded together with the leaves of *Spilanthes mauritiana* then painted the affected body.	D
				Insufficient milk production	B	F	Leaves will be pounded together with the whole plant part of *Silene macrosolen and* mixed with water then given to woman and livestock.	O
18	*Asplenium aethiopicum* (Burum.) Bech.	Aspleniaceae	Bega-nagubdee	Skin burn	H	F	Leave will crushed and then tied on the affected body part.	D
19	*Balanites aegyptiaca* (L.) Del.	Balanitaceae	Beddennoo	Uterus problem	H	D	Stem will be smashed together with stem of Syzygium *guineense* and *Zizyphus spine* or *Zizyphus muronata* then fumigating vagina with smoke.	V
20	*Bersama abyssinica* Fresen.	Melianthaceae	Qillisaa	Ascariasis	H	D	Fruits and seeds will be crushed and mix with water then drunk a glass of juice every morning before having breakfast for three days.	O
				Tape worm	H	D	Fruits and seeds will be crushed and mix with water then drunk a glass of juice every morning before having breakfast for three days.	O

Table 2 Continued …

21	*Bidens pilosa* L.	Asteraceae	Cogoogee	Fungal skin infection	H	F	Leaf will be crushed together with the leave of *Xanthium spinosum* then rubbed and painted the affected body part until recover from the problem.	D
				Skin cut bleeding	H	F	Leave will crushed and then tied on the affected body part.	D
				Wound	H	F	Leave will crushed and then tied on the affected body part.	D
				Febrile illness	H	F	Leave will be crushed and squeezed then drunk juice before sleep.	O
				Nasal bleeding	H	F	Leave will be crushed and squeezed then dropped the juice in to the nose when there is bleeding.	N
22	*Brassica nigra* (L.) Koch.	Brassicaceae	Sinaafiic	Throat infection	H	D	Seeds will be roasted, pounded together with the bulb of *Allium sativum* and mixed with honey then taken three spoons of broth/ *fal'aana shummoo* before sleep until recovery from the problem.	O
				Intestinal parasite	H	D	Seeds will be pounded and mixed with water then drunk a glass of tea for three consecutive mornings before breakfast.	O
				Bone cancer	H	D	Seeds will be pounded and boiled together the root of *Gomphocarpus fruticosus* then drunk one glass of tea in each days until recovery from illness.	O
				Common cold	H	D	Seeds will be pounded and mixed with tea then drunk a glass of tea two times in each day until recovery from the problem.	O
				Asthma	H	D	Seeds will be roasted, pounded together with the bulb of *Allium sativum* and mixed with honey then taken three spoons of broth before sleep until recovery from the problem.	O
23	*Brassica oleraceae* L.	Brassicaceae	Midhaan-Raafuu	Dyspepsia	H	D	Seeds will be chewed and then swallowed.	O

Table 2 Continued …

	Brassica oleraceae L.			Uterus problem	H	D	Seeds will be roasted together with seed of *Trigonella foenum-graecum,* powdered and mixed with water then drunk by a glass of water before sleep.	O
				Malaria	H	D	Seeds will be pounded together with bulb of *Allium sativum* and mixed with honey then eating 3 spoons of broth/ *fal'aana shummoo* before breakfast.	O
				Typhoid	S	D	Seeds will be pounded together with bulb of *Allium sativum* and mixed with honey then eating 3 spoons of broth / *fal'aana shummooo* before breakfast.	O
				Common cold	H	D	Seeds will be pounded and boiled together with honey and milk of goat then drunk until recovery from the problem.	O
				Hidda-handura	H	D	Seeds will be roasted together with seed of *Trigonella foenum-graecum,* Powdered and mixed with water then drunk by a glass of water before sleep seven days.	O
				Conception	H	D	Seeds will be roasted together with seed of *Trigonella foenum-graecum,* Powdered and mixed with water then drunk by a glass of water before sleep for three days.	O
				Cough	H	D	Seeds will be pounded and boiled together with honey and milk of goat then drunk every night until recovery from the problem.	O
24	*Brucea antidysenteria* J.F. Miller	Simaroubaceae	Buna-saree	Lymph node swilling	H	F	Leaves will be crushed and mixed with water then washed and painted the infected parts by its juice.	D

Table 2 Continued …

	Brucea antidysenteria J.F. Miller			Over bleeding of menstrual cycle	H	F	Leaves and bark of stem will be pounded together and mixed with water then drunk immediately when menstruation seen.	O
25	*Caesalpinia decepetala* (Roth) Alston	Fabaceae	Qajiima a	Swollen body with oozing pus	H	F	Leaves will be crushed then tied on the infected part.	D
				Tonsillitis	H	F	Seven twig leaves will be crushed and squeezed then swallowed the juice and tied on the sludge on the head.	O, D
				Lymph node swilling	H	F	Seven twig leaves will be crushed and then painted the infected body.	D
				Giardiais	H	F	Root will be pounded and boiled with water then drunk every morning for three days.	O
26	*Calamintha paredoxa*	Lamiaceae	Xosiny oo/Xosi inee	Hypertensio n	H	B	Whole plant parts will be boiled together with *Aloysia triphylla,* tea or *hojjaa or ashe- buna* then drunk a glass of tea when feeling of pain sensed.	O
				Cough	H	B	Whole plant parts will be boiled together with Otostegia *integrifolia,* tea or *hojjaa or ashe- buna* then drunk as She/ He can, until recovery.	O
				Common cold	H	B	Whole plant parts will be boiled together with the leaves of Otostegia *integrifoli, Aloysia triphylla,* tea or *hojjaa or ashe- buna* then drunk as She/ He can, until recovery from the problem.	O
				Diabetes	H	B	Whole plant parts will be boiled with water and sugar then drunk a glass of water when pain sensed.	O
				Nerve problem (paralysis)	H	B	Whole plant parts will be pounded together with the leaves of *Citrus limonia; Citrus medica* and seed of *Ricinus communis* then fumigated and massaged the whole body until recovery.	D

Table 2 Continued …

	Calamintha paredoxa			Kidneys problem	H	B	Whole plant parts will be boiled together with ashere-buna then drunk every night until recovery from the problem.	O
27	*Calpumia aurea* (Ait.) Benth.	Fabaceae	Ceekaa	Diarrhea	B	F	Leaves will be crushed together with the leaves of *Vernonia amygdalina*, Rumex *ellenbeckii*, and *Psidium guajava* and mixed with water then drunken one water glass of juice two times a day until recovers.	O
				Jaundice	H	F	Root will be pounded and mixed with water then drunken one coffee cup of juice for 3 days.	O
				Gonorrhea	H	F	Root will be pounded and mixed with water then drunken one coffee cup of juice for 3 days.	O
				Vomiting	H	F	Root will be pounded and mixed with water then drunk.	O
				Syphilis	H	F	Leaves will be crushed and mixed with water then drunk.	O
				Rabies	B	F	Root will be pounded and mixed with water then drunk.	O
				Poison detoxification	B	F	Leaves will be crushed and mixed with water then drunk.	O
				External parasite infection	B	F	Leaves will be crushed and mixed with water then washed and painted the affected body part.	D
				Spider poison	B	F	Leaves will be crushed and mixed with water then painted the affected body part.	D
				Amoebiasis	H	F	Leaves will be crushed and mixed with water then drunk.	O

Table 2 Continued …

28	*Capparis cartilaginea* Decne.	Capparaceae	Harang amaa-gurraacha	Swollen body part	H	F	Leaves will be crushed and then painted the swollen body parts.	D
29	*Capparis tomentosa*	Capparaceae	Harang amaa-dimaa	Swollen body part	H	F	Leaves will be crushed and then painted the swollen body parts.	D
				Dyspepsia	H	F	Root will be pounded and mixed with water then drunk a cup of coffee.	O
30	*Capsicum annum* L.	Solanaceae	Mixmii xaa	Gastritis	H	F	Fruits will be crushed and mixed with water then drunk the filtered juice.	O
				Bloating	B	F	Fruits and seeds will be pounded together and mixed with water then drunk or given to livestock.	O
				Dyspepsia	B	F	Seven twig of leaves cut, crushed and mixed with water then drunk or given to livestock.	O
				Uvula infection	H	F	Seven twig of leaves cut and chewed then swallowed.	O
				Heart burning	H	F	Seven twig of leaves cut and chewed then swallowed.	O
				Leech removal	L	F	Fruits and seeds will be pounded together and mixed with water then given orally and dropped some juice through nose.	O, N
31	*Carica papaya* L.	Carricaceae	Paapaa yyee	Malaria	H	F	Root will be crushed and boiled with the leaves of *Brassica oleraceae* and sugar then drunk for three days morning.	O
				Typhoid	H	F	Bark of tree will be crushed and mixed with water then drunk a glass of tea for three to five days.	O
				Intestinal worms	H	D	Seeds will be roasted, powdered and mixed with honey or sugar then drunk a glass of tea for three consecutive days before breakfast.	O

Table 2 Continued …

	Carica papaya L.			Antidandruff	H	F	Fruit will be crushed and mixed with water then painted the hairs and left for an hour, and lastly washed with water.	D
				Febrile illness	H	F	Twigs of leaves will be crushed and drunk ½ cup of coffee.	O
				Gastritis	H	F	Leaves will be crushed and mixed with water then drunk a glass of tea.	O
				Swollen body with oozing pus	H	F	Unripe fruit will be crushed and tied on affected body part.	D
32	*Carissa spinarum* L.	Apocynaceae	Agamsa	Gonorrhea	H	F	Root will be crushed, mix with water and then drunk for three morning.	O
				Malaria	H	F	Root will be crushed, mix with water and then drunk one water glass for three morning.	O
				Nerve problem (paralysis)	H	F	Root will be pounded with *Allium sativum* and boiled with water then drunk the decoction, fumigated with the steam and massaged with sludge.	O, D
33	*Casimiroa edulis* Liave and Lex.	Rutaceae	Asaamirroo	Kidney problem	H	F	Fruit will be crushed and mixed with water then drunk until recovery from the problem.	O
34	*Catha edulis* Forsk.	Celastraceae	Jimaa-dimaa	Wound	B	F	Leaves will be pounded then painted and tied on the wound.	D
				Diarrhea	H	F	Leaves will be pounded and mixed with water then drunk its juice.	O
				Gonorrhea	H	F	Leaves will be crushed and boiled with water then drunken two tea glass a day for five days.	O
				Common cold	H	F	Leaves will be boiled with crushed rhizome of *Ginger officinale* then drunken 2-3 tea glass a day until recover from the problem.	O

Table 2 Continued …

	Catha edulis Forsk.			Swollen body part diagnosis	H	F	Leaves will be pounded then painted the infected body part. If it adheres to the infected part, this confirms positive test.	D
35	*Caylusea*abyssinica (Frens.) Fish and Mey.	Resedaceae	Chiif (Atuchii)	Tonsillitis	H	F	Root will be crushed and squeezed then swallowed its juice and mixed its sludge with wood ash and tied on the head of patient.	O, D
				Uvula infection	H	F	Root will be crushed and squeezed then swallowed the juice and mixed its sludge with wood ash and tied on the head of patient.	O, D
				Urine retention	H	F	Root and leave will be crushed and boiling with coffee and immediately drunk a cup of coffee.	O
36	*Cicer aritinum* L.	Fabaceae	Shumburaa	Gonorrhea	H	D	Seeds will be powdered, mixed with the latex of *Opuntia ficus-indica* and baked as bread then eaten for seven days.	O
				Impotency problem	H	D	Seeds will be cooked together with crushed bulb of *Allium cepa* and mixed with honey then eaten as He/ She can before one hour having sex.	O
37	*Cissampeclos mucronata* A. Rich	Menispermaceae	Muka-hadhaawaa	Diarrhea	B	F	Root will be crushed and mixed with water then drunken one tea cup.	O
				Snake poison	B	F	Leaves will be crushed then painted the affected body part.	D
38	*Cissampeclos pareira* L.	Menispermaceae	Baal-tokkee	Snake poison	B	F	Root will be crushed and mixed with water then tied the affected body part.	D
				Dyspepsia	B	F	Root will be chewed and swallowed its juice	O
				Diarrhea	B	F	Root will be crushed and mixed with water then drunk.	O
				Bone cancer	H	F	Root will be crushed and boiled with the seed of *Brassica nigra* then drunken 2-3 cups of the decoction each night until recovery from the problem.	O

Table 2 Continued …

	Cissampeclos pareira L.			Toothache	H	F	Root will be crushed then held on the infected tooth.	O
				Cough	H	F	Root will be crushed and boiled with the root of *Alysicarpus rugosus then* drunk the decoction until recovery from the illness.	O
				Heart problem	H	F	Root will be chewed and swallowed its juice when there is pain.	O
				Keledo (Tumors)	H	F	Root will be crushed and heated then tied on the affected body part.	D
				Typhoid	H	F	Root will be crushed and mixed with water then drunk.	O
				Nose disease	H	F	Leaves will be crushed and squeezed then dropped its juice and put in the sludge in the nose.	N
39	*Citrus limonia* Osbeck	Rutaceae	Xuxxoo	Gum bleeding	H	F	Fruit will be squeezed and then drunk or sucked its juice.	O
				Febrile illness	H	F	Fruit will be crushed and smoked then fumigated all body parts.	D
				Vomiting	H	F	Fruit will be squeezed and then drunk or sucked it juice.	O
				Bloating	H	F	Fruit will be squeezed and then drunk or sucked its juice.	O
				Hiccups	H	F	Fruit will be squeezed and then drunk or sucked its juice.	O
				Nausea	H	F	Fruit will be squeezed and then drunk or sucked its juice.	O
				Common cold	H	F	Fruit will be squeezed and then drunk or sucked its juice.	O
				Worm poison	H	F	Fruit will be crushed then rubbed the affected body parts.	D

Table 2 Continued …

	Citrus limonia Osbeck			Nerve problem (paralysis)	H	F	Leaves will be pounded together with the leaves of *Ruta chalepensis, Kleinia longiflora, Citrus medica* and *the* whole plant part of *Senecio nandensis* then fumigated.	D
				Poison detoxification	H	F	Fruit will be squeezed and then drunk or sucked the juice.	O
40	*Citrus medica* L.	Rutaceae	Turungaa	Nerve problem (paralysis)	H	F	Leaves will be pounded together with the leaves of *Citrus limonia Calamintha paredoxa,* and whole plant parts of *Senecio nandensis* and added to burn fire then fumigated body with smoke.	D
				Hypertension	H	F	Fruit will be chopped then eaten.	O
41	*Citrus paradisi* Macf.	Rutaceae	Samargeela	Gastritis	H	F	Bark of fruit will be chewed and then swallowed.	O
				Bloating	H	F	Fruit will be pressed and squeezed then drunk its juice.	O
				Hypertension	H	F	Bark of fruit will be chewed and then swallowed.	O
42	*Clerdrodendrum myricoides* (Hochst.)	Amaranthaceae	Misiirichii	Swollen body part	H	F	Leaves will be crushed with the leaves of *Commicarpus verticillatus, Premna schiniperi Croton macrostachyus, Rhus natalensis* then painted the infected body parts for three days.	D
43	*Coleus edulis* Vatke.	Lamiaceae	Shimbiir	Gum bleeding	H	F	Stem will be cut and brushed the tooth every morning until recovery from problem.	O
				Swollen body part	H	F	Leaves will be crushed and then painted and tied on the affected body part.	D
				Skin burn	B	F	Leaves will be crushed and then painted the affected body part.	D
				Mastitis	L	F	Leaves will be pounded, mixed with water then given to infected livestock.	O

Table 2 Continued …

	Coleus edulis Vatke.			Insufficient milk supply	B	F	Leaves will be pounded together with the root of *Withania somnifera, Carissa edulis* and leaves of *Ruta chalepensis* then given to woman and livestock.	O
44	*Colocasia esculenta* (L.) Schott	Araceae	Godarree	Placental retention	L	B	Bulb will be crushed and mixed with water then given one liter of juice for cattle.	O
				Swilling body part	L	B	Bulb will be crushed and mixed with water then tied on the infected body part.	D
				Wound	L	B	Bulb will be crushed and mixed with water then tied on the infected body part.	D
45	*Commelina benghalensis* L.	Commelinaceae	Hoola-gabbis	Ring worms	H	F	Stems and flowers will be chopped and latex collected then rubbed and painted the affected body parts.	D
				Skin warts	H	F	Stems and flowers will be chopped and latex collected then rubbed and painted the affected body parts.	D
46	*Commicarpus pedunculosus* (Rich.) Cuf.	Nyctaginaceae	Homacheysaa	Wound	B	F	Leaves will be crushed then painted the affected body part.	D
				Skin burn	B	F	Leaves will be crushed then painted the affected body part.	D
47	*Commicarpus verticillatus* (Poir.) Standl.	Nyctaginaceae	Biluu	Reduce bleeding	H	F	Leave will crushed and then tied on the affected body part.	D
				Swollen body part	H	F	Leave will be crushed and then painted the affected body part.	D
				Wound	H	F	Leave will crushed and then tied on the affected body part.	D
48	*Conium maculatum* L.	Apiaceae	Shukaar	Typhoid	H	D	Seeds will be powdered, mixed with water then drunk.	O

Table 2 Continued …

	Conium maculatum L.			Tonsillitis	H	D	Seeds will be powdered, mixed with water then drunk.	O
				Bloating	B	D	Seeds will be powdered, mixed with water then drunk.	O
				Kidney problem	B	D	Seeds will be powdered, mixed with water then drunken one coffee cup every night until recovery from the problem.	O
				Gastritis	H	D	Seeds will be powdered, mixed with water then drunken one coffee cup when there is pain.	O
				Heart problem	H	D	Seeds will be powdered, mixed with water then drunken one coffee cup when there is pain.	O
				Black leg	L	F	Seeds will be powdered, mixed with water then given to infected livestock.	O
49	*Corchorus olitorius* L.	Tiliaceae	Soggid da-re'ee	Gonorrhea	H	F	Whole plant parts will be crushed together and mixed with water then drunk a cup of coffee for three consecutive days.	O
				Tooth ache	H	F	Whole plants parts will pounded and mixed with water then put on and hold on tooth.	O
				Snake poison	H	F	Whole plant parts will be crushed and then painted the affected body part.	D
50	*Cordia africana* Lam.	Boraginaceae	Waddessa	Wound	H	D	Leaves will be roasted, powdered, and mixed with butter or oil then painted the affected body.	D
				Spider poison	H	D	Leaves will be roasted, powdered, and mixed with butter or oil then painted the infected body.	D
				Eczema	H	D	Leaves will be roasted, powdered, and mixed with butter or oil then painted the infected body.	D
				Placental retention	B	D	Leaves will be roasted, powdered, and mixed with water then drunk when there is placental delayed.	O

Table 2 Continued …

	Cordia africana Lam.			Dystocia	B	D	Leaves will be roasted, powdered, and mixed with water then drunk when there is difficulty of delivery.	O
				Amoebiasis	H	F	Bark will be crushed and mixed with water then drunk its juice for five mornings.	O
				Baaftaa	H	D	Leaves will be roasted, powdered, and mixed with butter or oil then painted the infected body.	D
51	*Crinum abyssinicum* Hochst. Ex A. Rich.	Amaryllidaceae	Qulubbii-waraabeessaa	Breast cancer	H	F	Bulb will be crushed, covered with the leaf of *Cordia africana* and heated then tied on the infected breast part.	D
				Swollen body with oozing pus	H	F	Bulb will be crushed, and heated then tied on the infected body part.	D
52	*Crinum schimperi* Vatke ex k.Schum.	Amaryllidaceae	Abrashaa	Gonorrhea	H	F	Root will be crushed and mixed with water then drunk a glass of water for three days before breakfast.	O
				Kidney problem	H	F	Root will be crushed and mixed with water then drunk a glass of water for three days before breakfast.	O
53	*Crinum spp.*	Amaryllidaceae	Dhama'ee	Scabies	H	F	Leave will crushed and creamed then painted the infected body part.	D
54	*Crotalaria ssp.*	Fabaceae	Atara-saree	Wound	H	F	Whole parts will be crushed and tied on the affected body part.	D
55	*Crotelalaria natalitia* Meissn.var *rutshuruensis* DeWilld.	Fabaceae	Atara-bashoo	Diarrhea	L	B	Leaves will be crushed and mixed with water then given one liter/ *Mestii* of juice in each day until recovery from the problem.	O
56	*Croton macrostachyus* Del.	Euphorbiaceae	Bakkannisaa	Ringworm	H	F	Twig leaves will be cut and then rubbed the infected body parts.	D

Table 2 Continued …

	Croton macrostachyus Del.			Bloating	B	F	Leaves will be crushed and mixed with water then drunk.	O
				Swollen body part	H	F	Leaves will be crushed together with the leaves of *Premna schiniperi* then painted.	D
				Gonorrhea	H	D	Leaves and bark of tree will be pounded and mixed together with water then drank.	O
				Febrile illness	H	D	Leaves will be smoked and then fumigated.	D
				Kidney problem	B	F	Leaves and bark of tree will be pounded and mixed together with water then drank.	O
				Hemorrhoids	B	D	Leaves will be smoked and fumigated the anus.	A
				Uterus problem	H	D	Root will be smoked and fumigated the vagina.	V
				Tonsillitis	H	F	Bark will be pounded with water and squeezed the juice then drunk.	O
				Eye disease	B	F	Twig of leaves will be crushed and squeezed then dropped in to the eye.	Eye
				Intestinal worms	B	F	Root will be crushed and mixed with water then drunken one coffee cup for three days.	O
57	*Cucumis africanus* L. f.	Cucurbitaceae	Harree-googee	Heart problem	H	B	Root will be crushed and boiled with *ashere-buna* then drunk one coffee cup when there is pain.	O
				Epilepsy	H	H	Root and leaves will be pounded and soaked in water for 2 days then drunk.	O
				Jaundice	H	F	Root will be pounded and mixed with water then drunk a cup of coffee before breakfast for 3 days.	O
				Gonorrhea	H	F	Root will be pounded together with whole plant parts of *Malva parviflora* and mixed with water then drunken one teacup a day for three days.	O

Table 2 Continued …

	Cucumis africanus L. f.			Kidney problem	B	F	Root will be pounded and mixed with water then drunken one tea cup a day until recovery from the illness.	O
				Diarrhea	B	F	Root will be pounded and mixed with water then drunken one glass of water a day.	O
				Hemorrhoid	H	F	Fruit will be heated and then put in to anus.	A
				Lymph node swilling	B	F	Fruit will be crushed and then tied on the infected body parts.	D
				Placental retention	B	F	Fruit will be chopped and soaked in the oil of *Olea hochstetteri* then put in through vagina.	V
				Nausea	H	F	Leaves will be chewed then swallowed its juice when there is feeling of nausea.	O
				Rabies	B	F	Root will be crushed and mixed with water then given to patient.	O
				Bloating	B	F	Leaves will be chewed then swallowed its juice.	O
				Wound	B	F	Fruit will be crushed and then tied on the wound.	D
				Swollen body with oozing pus	H	F	Fruit will be crushed and heated then tied on the infected body parts.	D
58	*Cucumis ficifolius* Richard	Cucurbitaceae	Cuquun	General body swilling	H	F	Whole pant parts will be crushed and mix with water then washed the infected person with the juice until recovery from the problem.	D
				Cough	H	F	Leave will be crushed together with the bulb of *Allium sativum* and boiled with *bune ashara and* sugar then drunken two water glass of juice every night before sleeps until recovery from the illness.	O
				Common cold	H	F	Leave will be crushed together with the bulb of *Allium sativum* and boiled with *bune ashara and* sugar then drunken two water glass of juice every night before sleeps until recovery from the illness.	O

Table 2 Continued …

59	*Cucurbita pepo* L	Cucurbitaceae	Dabaaqulaa	Intestinal worms	H	D	Seed will be roasted and then eaten before breakfast for three days.	O
60	*Cussonia holstii* Harms ex Engl.	Araliaceae	Buna-waraaboo	External parasite infection	B	F	Root will be pounded and mixed with water then painted the affected body part.	D
61	*Cymbopogn citrates* (DC. ex Nees) Stapf	Poaceae	Xajii-saar	Giardiasis	H	F	Root will be crushed and mixed with water then drunken 1-2 coffee cups before breakfast for seven days.	O
				Vomiting	H	F	Root will be crushed and mixed with water then drunken 1coffee cup.	O
				Diarrhea	B	F	Root will be crushed and mixed with water then drunken 1-2coffee cups a day until recovery from the problem.	O
62	*Cyphostemma digitatum* (Forsk.) Deswing	Vitaceae	Burii-udaan-mucaa	Bone cancer	H	F	Root will be pounded together with bulb of *Allium sativum* and boiled with honey then drunken 1-2 cups of decoction every night until recovery from the problem.	O
				Intestinal body parasite	L	F	Root will be pounded and boiled with *dorowot* or *ittoo lukkuu* then eaten with *enjera/buddene* or bread.	O
				Urine retention	L	F	Root will be pounded and mixed with water then drunk.	O
				Insufficient milk supply	L	F	Root will be pounded and mixed with water then drunk1-2 cups every morning until recovery from the problem.	O
63	*Datura stramonium* L.	Solanaceae	Banjjii	Tooth gum worms	H	D	Seed will be mixed with butter then smoked and fumigated.	O
				Bloating	B	F	Root will be crushed and mixed with water then drunk.	O

Table 2 Continued …

	Datura stramonium L.			Rabies	B	F	Root will be crushed and mixed with water then drunk.	O
				External parasite infections	B	F	Leaves will be pounded with water then rubbed and painted the affected body part.	D
				Ear problems	H	F	Twig leaves will be crushed and squeezed then dropped its juice in the ear.	Ear
64	*Desmodium spp*.	Fabaceae	Xilloo	Wound	H	F	Root will be crushed then tied on the affected body parts.	O
				Gonorrhea	H	F	Root will be crushed and mixed with water and drunk a cup coffee before breakfast for three days.	O
				Body part swilling	H	F	Root will be crushed and mixed with *ashare- buna* or coffee then drunk a cup of coffee twice a day.	O
65	*Digitaria velutina* (Forsk.) Beauv.	Poaceae	Buraana	Skin cut bleeding	H	F	Leave will crushed and then tied on the affected body part.	D
				Heart burning	H	F	Whole plant will be chewed and then swallowed its juice.	O
				Vomiting	H	F	Whole plant will be pounded together with the leave of *Foeniculum vulgare, Ruta chalepensis* and root of *Eleusine jaegeri* then dissolved with water and drunk.	O
66	*Dipcadi lanceolatum* Baker	Hyacinathaceae	Ciccoo-bocoo	Breast cancer	B	F	Bulbs will be crushed and mixed with water then drunk and painted the infected body part.	O, D
				Swollen body part	B	F	Bulbs will be crushed and then tied on the infected body part.	D
				Swollen body with oozing pus	H	F	Bulbs will be crushed and then tied on the infected body part.	D
				Tumors and skin warts	B	F	Bulbs will be crushed and mixed with water then rubbed and painted the infected body part.	D

Table 2 Continued …

67	*Dodonea angustifolia* L.f.	Sapindaceae	Ittacha	Gum bleeding	H	F	Stem will be cut then brushed tooth every morning until recovery from the problem.	O
				Fungal skin infection	H	F	Leaves will be crushed and painted on the affected body part.	D
				Poison detoxification	H	F	Leaves will be crushed and mixed with water then drunk.	O
				Scabies	B	F	Leaves will be crushed and painted on the affected body part.	D
				Lymph node swilling	B	F	Leaves will be crushed and painted on the affected body part.	D
				Swollen body part	H	F	Leaves will be crushed then tied on the swollen parts.	D
				Swollen body with oozing pus	H	F	Leaves will be crushed then tied on the infected parts.	D
				Nerve problem (paralysis)	H	F	Leaves will be pounded and boiled together with the leaves of *Citrus limonia, Citrus medica, Kleinia longiflora,* and whole plant part *Calamintha paredoxa,* then fumigated by steam smoked and massaged the body by sludge until recovery from the problem.	D
				Eczema	H	F	Leaves will be roasted, powdered, and mixed with butter then rubbed and painted the affected body part.	D
68	*Dovayalis abyssinica*	Flacourtiaceae	Koshimoo	Jaundice	H	F	Leaves will be crushed and boiled with *ashare buna* then drunk a cup of coffee every morning before breakfast for three consecutive days.	O

Table 2 Continued …

	Dovayalis abyssinica			Hemorrhoids	H	D	Seeds will be pounded and mixed with water then put in to the anus.	A
				Fever	H	F	Root will be pounded together with the leaves of *Otostegia integrifolia* boiled with tea then drunk a glass of tea before sleep when feeling of pain sensed.	O
69	*Echinops kebericho* Mesfin.	Asteraceae	Qabarii choo	Intestinal worms	H	F	Root will be pounded and mixed with water then drunk a cup of coffee early morning before breakfast for three consecutive days.	O
				Tonsillitis	H	F	Root will be pounded and mixed with honey then taken a three spoon of soup/fal'aana shummoo for three days.	O
				Bone cancer	H	F	Root will be crushed and boiled with coffee then drunk a glass of tea every night until recovery from the illness.	O
				Urine retention	H	F	Root will be crushed and boiled with oil then drunk a glass of tea.	O
70	*Echinops longifolius* Richard	Asteraceae	Baal-waraantii	Kidneys disease	B	F	Root will be crushed and mixed with water then drunk.	O
				Urine retention	B	F	Root will be crushed and mixed with water then drunk.	O
71	*Ehretia cymosa* Thonn.	Boraginaceae	Ulaagaa	Body swilling part	H	F	Leaves will be crushed together with the leaves of *Croton macrostachyus* , *Carissa edulis* , and *Rhus natalensis* then painted the infected body part.	D
				Diarrhea	B	F	Leaves will be crushed and boiled with ashare then drunk or given to infected livestock.	O
				Tooth ache	H	F	Leaves will be crushed then put on and held on the tooth.	O
				Baaftaa	H	F	Leaves will be roasted, powdered, and mixed with butter or oil then painted the infected body.	D

Table 2 Continued …

72	*Ekebergia capensis* Sparrm.Zsde	Meliaceae	Biraa-hadiyyaa	Intestinal worms	H	B	Fruits and seeds will be pounding and mixed with water then drunk.	O
73	*Eleusine floccifolia* (Forssk.)	Poaceae	Sarduu (Coqoorsa)	Snake poison	B	F	Whole plant parts pounded and then painted the affected body parts.	D
74	*Eleusine jaegeri* Pilger.	Poaceae	Migra	Vomiting	H	F	Root will be crushed together with the leaves of *Ruta chalepensis*, *Foeniculum vulgare* and whole plant parts *Digitaria velutina* and mixed with water then immediately drunk a cup of juice when there is vomiting.	O
				Diarrhea	H	F	Root will be crushed and mixed with water then drunk a glass of water until recovery from the problem.	O
75	*Ensete ventricosum* (Welw.) Cheesman	Musaceae	Warqee	Dyspepsia	H	F	Latex will be squeezed from its stems and then swallowed immediately.	O
				Hiccups	H	F	Latex will be squeezed from its stems and then swallowed immediately.	O
76	*Erythrina burana* Chiovenda.	Fabaceae	Waleensuu	Intestinal worms	L	F	Bark of tree will be chopped and then given to be eaten by the cattle.	D
				External parasite	L	F	Leaves and bark will be pounded with water then painted the external body part until recovery from the problem.	D
				Wound	L	F	Leaves will be pounded with water then painted the affected body part until recovery from the problem.	D
				Diarrhea	L	F	Leaves will be crushed and mixed with water then given one liter of juice in each day until recovery from the problem.	O

Table 2 Continued …

	Erythrina burana Chiovenda			Hyena bite	L	F	Leaves will be pounded with water then painted the affected body part until recovery from the problem.	D
77	*Eucalyptus globulus* Labill.	Myrtaceae	Baharz aafii-adii	Common cold	H	F	Leave will be crushed and boiled with water then fumigated and sniffed with hot steam and drank its decoction.	N, D, O
				Cough	H	B	Leave will be crushed and boiled with water then fumigated and sniffed with hot steam and drank its decoction.	N, D, O
				Febrile illness	H	B	Leave will be crushed and boiled with water then fumigated and sniffed with hot steam and drank its decoction.	N, D, O
78	*Euclea racemosa*	Ebenaceae	Mi'eessaa	Toothache	H	F	Root will be pounded and mixed with water then put on and hold on tooth.	O
				Gonorrhea	H	F	Leaves will be pounded together with the root of *Alysicarpus rugosus, Acokanthera schimperi, and Gomphocarpus fruticosus* and mixed with water then drunken cup of coffee for three days.	O
				Intestinal worms	H	F	Root will be crushed and mixed with water then drunk a glass of water before breakfast.	O
				Tonsillitis	H	F	Seven twig leaves will be crushed and mixed with water then drunken ½ cup of coffee.	O
				Impotency problem	H	F	Root will be pounded and mix with water then drunk a glass of water before having sex.	O
				Uvula infection	H	F	Seven twig leaves will be crushed and squeezed its juice then drunk ½ cup of coffee.	O
				External parasite	H	F	Leaves will be crushed and creamed then painted the affected body part.	D
79	*Euphorbia abyssinica* Gmel.	Euphorbiaceae	Adaami	Gonorrhea	H	F	Latex will be collected from crushed stem and powdered, mixed, and baked with the seed of *Cicer aritinum* then eaten its bread.	O

Table 2 Continued …

				Skin warts	B	F	Latex will be collected from crushed stem then painted the infected body part.	D
				Hemorrhoid	B	F	Latex will be collected from crushed stem then painted the infected body part.	A
				Wound	B	F	Latex will be collected from crushed stem then tied on the infected body part.	D
				Antidandruff	H	F	Latex will be collected from crushed stem then washed hairs daily until recovery from the problem.	D
80	*Euphorbia hetrophylla*	Euphorbiaceae	Annano	Hemorrhoid	H	F	Latex will be collected and creamed then put on the affected body part until recover from the problem.	A
81	*Euphorbia schimperiana* Hochst. Ex Scheele	Euphorbiaceae	Gurii	Ringworm	H	F	Root will be crushed and squeezed then painted the infected body surface.	D
				Fungal skin infection	H	F	Root will be crushed and squeezed then painted the infected body surface.	D
				Hemorrhoid	B	F	Root will be crushed and squeezed then painted the external surface of anus.	D
82	*Euphorbia trucalli*	Euphorbiaceae	Qinciba	Hemorrhoids	H	F	Latex will be collected and creamed then painted and put in to the anus.	A
				Gonorrhea	H	F	Latex will be collected and pounded together with the seeds of *Cicer aritinum* and baked with bread then eaten the bread for three days before breakfast.	O
83	*Fagara spp.*	Euphorbiaceae	Qondoo-barbarii	Urine retention	B	F	Fruits will be crushed and mixed with water then drunk its juice.	O
				Bloating	B	F	Fruits will be crushed and mixed with water then drunk its juice.	O
				Tonsillitis	H	B	Fruits will be chewed and swallowed its juice.	O

Table 2 Continued …

84	*Ficus vasta* Forssk.	Moraceae	Qilxuu	Ear disease	H	F	Leaves will be crushed and squeezed then dropped to the ear.	Ear
85	*Foeniculum vulgare* Miller.	Apiaceae	Kamoona	Kidneys disease	B	F	Root and leaves will be pounded and mixed with water then drunk a water glass every day until recovery from the illness.	O
				Urine retention	B	F	Root will be pounded and mixed with water then drunk or given to livestock.	O
				Hypertension	H	F	Fruits and seeds crushed and boiled together then drunk one tea glass of decoction when there is pain.	O
				Vomiting	H	F	Root will be pounded together with root of *Eleusine jaegeri*, leaves of *Ruta chalepensis*, and whole plant parts of *Digitaria velutina* and mixed with water then drunk immediately when there is vomiting.	O
				Dyspepsia	H	F	Fruit will be chewed and swallowed its juice.	O
				Back pain	H	F	Fruits and seeds crushed and boiled together then drunk one tea glass of decoction until recovery from pain.	O
				Intestinal worms	H	F	Fruits and seeds crushed and boiled together then drunk one tea glass of decoction before breakfast for three days. .	O
				Placental retention	B	F	Root will be pounded together with the root of *Ricinus communis* and mixed with water then drunk when there is labor pain.	O
				Nerve problem (paralysis)	H	F	Fruits will be pounding together with the leaves of *Senecio nandensis, Kleinia longiflora, Citrus limonia* and *Citrus medica,* and to burning fire then smoked and fumigated body.	D

Table 2 Continued …

86	*Galium hamatum* Hochst.ex A. Rich.	Rubiaceae	Laaleessaa	Giardia	H	B	Root will be crushed and boiled with water then drunk every morning for five days.	O
				Prevent abortion	B	F	Root will be crushed and mixed with water then drunken one coffee cup when a pregnant woman feels discomfort.	O
				Snake poison	B	F	Root will be crushed and painted the affected body part until recovery.	D
				Urine retention	B	F	Root will be crushed and mixed with water then drunk.	O
				Cough	H	F	Root will be crushed and boiled with coffee then drunk 1-2 coffee cups a day until recover from the problem.	O
				Asthma	H	F	Root will be crushed and boiled with coffee and butter then drunk 2-3 coffee cup when there is pain.	O
87	*Ginger officinale* Roscoe	Zingiberaceae	Zinjibila	Common cold	H	B	Rhizomes will be crushed and boiled with tea or *hojja* then the patient drunk as she/he can until recovery from the problem.	O
				Cough	H	B	Rhizomes will be crushed and boiled with tea or *hojja* then the patient drunk as she/he can until recovery from the problem.	O
				Tonsillitis	H	B	Rhizomes will be crushed and boiled with tea or *hojja* then the patient drunk as she/he can until recovery from the problem.	O
				Hemorrhoids	H	B	Rhizomes will be pounded together with bulb of *Allium cepa* and leaves of *Raphanus sativus t*hen tied on the anus by plaster.	A
				Intestinal worms	H	B	Rhizomes will be crushed and boiled with tea or *hojja* then drunk for three days before breakfast.	O

Table 2 Continued …

	Ginger officinale Roscoe			Impotency problem	H	B	Rhizomes will be crushed together with the root of *Galium hamatum* and *Malva parviflora* then drunk a glass of tea before one hour having sex.	O
88	*Gloriosa simplex* L.	Colochicaceae	Qorii-kuruphoo	Snake poison	B	F	Root will be crushed then rubbed and painted the affected body part every day until recovery from the problem.	D
				Bone cancer	H	F	Root will be crushed together with the bulb of *Allium sativum* and boiled with *ashere-buna* then drunk every day until recovery from the problem.	O
				Tumor (Keledo)	B	F	Root will be crushed then tied on the affected body part.	D
89	*Gomphocarpus fruticosus* (L.) R. Brown	Asclepiadaceae	Harrii-hiiyyoo	Gonorrhea	H	F	Root will be crushed and mixed with water then drunken one tea glass for three days.	O
				Tuberculosis	B	F	Root will be crushed and boiled with butter then drunken one tea glass a day for seven days.	O
				Impotency problem	H	F	Root will be crushed and cooked with the seeds of *Cicer aritinum* then eaten mountainously until recover from the problem.	O
				Ring worm	H	F	Whole plant parts will be pounded and mixed with butter then rubbed and painted the infected body part.	D
				Fungal skin infection	H	F	Whole plant parts will be pounded and mixed with butter then rubbed and painted the infected body part.	D
				Bone cancer	H	F	Root will be crushed and boiled with *ashere-buna* then drunk 2-3 water glass a days until recover.	O
				Tuberculosis	B	F	Root will be crushed and boiled with honey and butter then drunken 1-2 tea glass a days until recover y from the problem.	O

Table 2 Continued …

	Gomphocarpus fruticosus (L.) R. Brown			Mastitis	L	F	Leaves will be crushed and mixed with water then given one liter of juice and painted the breast.	O, D
				Insufficient milk supply	B	F	Root will be crushed and mixed with water then given to livestock or in case of women.	O
90	*Gossypium barbadense* L.	Malvaceae	Jibrii-bukkee	Headache	H	D	Seeds will be pounded and smoked then sniffed with nose and fumigated the body of patient.	D
				Kidneys problem	H	F	Root will be pounded together with water then drunk the filtrate juice after cooled.	O
				Urine retention	B	B	Root will be pounded boiled with water then drunk the filtrate juice after cooled.	O
				Intestinal worms	B	D	Root will be pounded together with water then drunk one coffee cup before breakfast.	O
				Ear disease	H	F	Flower will be heated and squeezed then dropped to the ear.	Ear
				Typhoid	H	B	Root will be pounded boiled with water then drunk the filtrate juice after cooled.	O
				Black leg	L	F	Root will be pounded together with water then given to the livestock for three consecutive days.	O
91	*Grewia villosa* Willd.	Malvaceae	Ogobbii/ Ogobdii	Over bleeding of menstrual cycle	H	F	Leave will be crushed and mixed with water and then drunk its juice.	O
92	*Guizotia abyssinica* (L.f.)	Asteraceae	Nugii	Cough	H	D	Seed will be roasted, pounded and boiled with honey then drunken one water glass for seven days before sleep.	O
				Common cold	H	D	Seed will be roasted, pounded and boiled with honey then drunken one water glass for seven days before sleep.	O

Table 2 Continued …

	Guizotia abyssinica (L.f.)			Asthma	H	D	Seed will be roasted, pounded and boiled with water and honey then drunken one water glass for seven days before sleeps.	O
				Tuberculosis	H	D	Seed will be roasted, pounded and boiled with water and honey then drunken one water glass for seven days consecutively before sleep.	O
93	*Hagenia abyssinica* (Bruce) Gmelin.	Rosaceae	Heexoo	Tape worm	B	D	Seeds will be pounded put it in banana and then eaten for one day before breakfast.	O
				Intestinal parasite	B	D	Seeds will be pounded put it in banana and then eaten for one day before breakfast.	O
				Dyspepsia	B	F	Leaves will be crushed and mixed with water then given to the patient.	O
				Ameobiasis	B	F	Seeds will be pounded and mixed with water then drunk a water glass for five days	O
				Back pain	H	F	Seeds will be pounded and cooked with meat then eaten and drunk the gravy every night until recovery from the problem.	O
				Anthrax	L	F	Leaves will be crushed and mixed with water then given one liter/ *mestii* of juice in each day for 3 days.	O
94	*Hordeum vulgare* L.	Poaceae	Garbuu	Gastritis	H	D	Seeds will be roasted, powdered and mixed with sugar then eaten	O
				Febrile illness	B	D	Seeds will be added to the fire and smoke to patient.	O
				Bone fracture	H	D	Seeds will be roasted, powdered and made porridge then eaten with butter, milk, or honey.	O
				Black leg	L	D	Seeds will be added to the fire and smoke to livestock.	O

Table 2 Continued …

95	*Juniperus procera* L.	Cupressaceae	Gatirra a-abashaa	Diarrhea	H	F	Leave will be crushed and mixed with water then drinking until recovery from the problem.	O
				External body parasite	H	F	Leave will be pounded and creamed then painted the affected body part.	D
				Uterus problem	H	D	Seeds will be pounded and mixed with water then drunk a glass of tea every night before sleep until recovery from the illness.	O
96	*Kalachoe marmorata*	Crassulaceae	Phiphii	Ear disease	H	F	Leaves will be heated and squeezed then dropped to the ear.	Ear
				Jaundice	H	F	Root will be pounded and boiled then drunk one water glass before breakfast.	O
				Asthma	H	F	Root will be pounded together with *Ximenia americana* and boiled then drunk 2-3 coffee cup taken when there is pain.	O
				Rabies	B	F	Leaves will be crushed and mixed with water then drunk the filtered juice or given to livestock.	O
97	*Kalanchoe lanceolata* (Forsk.) Pers.	Crassulaceae	Burii-furdoo	Breast cancer	B	F	Root will be crushed and mixed with water then drunk and painted the infected breast.	O, D
				Urine retention	L	F	Root will be crushed and mixed with water then drunk.	O
				External parasite infection	B	F	Leaves will be crushed and mixed with water then painted body surface.	D
				Uvula infection	H	F	Leaves will be crushed and squeezed then dropped its juice in the nose.	N
98	*Kleinia longiflora* DC.	Astreraceae	Huluqqoo	Nerve problem (paralysis)	H	B	Leaves will be pounded together with whole plant parts of *Ocimum basilicum,* and *Senecio nandensis,* and leaves of *Citrus limonia, Citrus medica,* and *Ruta chalepensis* and dried then fumigating the whole body with its smoke.	D

Table 2 Continued …

99	*Lagenaria siceraria* (Molina) Standley.	Cucurbitaceae	Buqqee	Ear disease	B	F	Leaves will be crushed and squeezed then dropped in the ear.	Ear
				Black leg	L	F	Seeds and leaves will be crushed and mixed with water then given one liter filtered juice every morning until recovery from the illness.	O
				Lymph node swilling	H	F	Leaves will be crushed and tied on the infected body parts until recovery from the illness.	D
100	*Lantana camara* L.	Verbenaceae	Bakka-argattee	Fungal skin infection	H	F	Leaves will be pounded then rubbed and painted the infected body part.	D
				Febrile illness	B	B	Leaves will be smoked with the leaves of *Otostegia integrifolia* then fumigated.	D
101	*Lepidium sativum* L.	Brassicaceae	Shifuu	Febrile illness	B	D	Seeds will be added to the burned fire, smoked then fumigated.	D
				Bloating	B	D	Seeds will be pounded, mixed with water then drunk or given to livestock.	O
				Gastritis	H	D	Seeds will be pounded, mixed with water then drunk when there is pain..	O
				Dyspepsia	H	D	Seeds will be chewed then swallowed.	O
				Ameobiasis	H	D	Seeds will be roasted, powdered, mixed with water then drunk a coffee cup every morning before breakfast.	O
				Bone cancer	H	D	Seeds will be pounded together with the bulbs of *Allium sativum* and mixed with honey then eaten 2-3 broth of spoons before breakfast until recovery from illness.	O
				Cough	B	D	Seeds will be pounded together with the bulbs of *Allium sativum* and mixed with honey then eaten 2-3 broth of spoons before breakfast until recovery from illness.	O

Table2. Continued …

	Lepidium sativum L.			Tonsillitis	H	D	Seeds will be pounded together with the bulbs of *Allium sativum* and mixed with honey then eaten 2-3 broth of spoons before breakfast until recovery from illness.	O
				Rabies	B	D	Seeds will be pounded together with the bulbs of *Allium sativum* and mixed with honey then eaten 2-3 broth of spoons before breakfast until recovery from illness.	O
102	*Leucas stachydiformis* Hochst ex. Benth.	Lamiaceae	Muka-aroo	Spider poison	B	F	Leaves will be crushed then rubbed and painted the affected part.	D
103	*Leucas martinicensis* (Jacq.) R. Br.	Lamiaceae	Bokuu-ferdaa (Mata-tul)	Dyspepsia	H	F	Leave will be crushed and mixed with water then drinking.	O
				Spider poison	H	F	Leaves will be roasting, powdering, and mixing with oil or butter then painted the infected body parts and waits for 30 minutes in the sun.	D
				Gland TB	H	F	Leaves will be roasting, powdering, and mixing with oil or butter then painted the infected body parts until recovery from the problem.	D
104	*Leucas minimifoiia* Chiole	Lamiaceae	Barbarr eessaa	Urine retention	B	F	Root will be crushed and mixed with water then drunk.	O
				Uterus problem	H	F	Root will be crushed and mixed with water then drunk.	O
				Fever	H	F	Root will be crushed and mixed with water then drunk when there is pain.	O
				Black leg	L	F	Leaves will be crushed and mixed with water then given one liter of juice in each day until recovery from the problem.	O

Table 2 Continued …

	Leucas minimifoiia Chiole			Pasturolosis	L	F	Leaves will be crushed and mixed with water then given one liter/ *mestii* of juice in each day until recovery from the problem.	O
				Mastitis	L	F	Leaves will be crushed and mixed with water then given one liter of juice in each day until recovery from the problem.	O
				Insufficient milk supply	B	F	Leaves will be crushed and mixed with water then given one liter of juice in each day until recovery from the problem.	O
105	*Lippia adoensis* Hochst. Ex Walp.	Verbenaceae	Sukee	Fungal skin infection	H	F	Leaves will be crushed and mixed with water then rubbed and painted the infected body part.	D
				Swollen body part	H	F	Leaves will be roasted, powdered, and mixed with butter or oil then painted the infected body.	D
				Eczema	H	F	Leaves will be roasted, powdered, and mixed with butter or oil then painted the infected body.	D
				Snake poison	B	F	Leaves will be pounded then painted the affected body part.	D
106	*Lycopersicon esculentum* Milerl	Solanaceae	Timaan timaa	Fungal skin infection	H	F	Leaves will be crushed together with the leaves of *Datura stramonium* then rubbed and painted the infected body part.	D
				Common cold	H	F	Leaves crushed together with the bulb of *Allium sativum*, and boiled with the seed of *Coniumma culatum* and root of *Eleusine floccifolia* then drunken two/three cups of tea before sleep until recovery from the illness.	O
				Anemia	H	F	Fruit will be crushed and mixed with soft drink such as mirinda or fanta and drunk every morning for seven days.	O

Table 2 Continued …

107	*Lysimachia ruhmeriana* Vatke	Primulaceae	Muka-gergoo	Beg bed repellent	H	F	Whole plant parts will be crushed and boiled with water then painted the body.	D
108	*Maesa lanceolata*	Myrsinaceae	Baal-adii	Bloating	H	F	Leave will be crushed and mixed with water then drunk.	O
				Asthma	H	F	Leave will be crushed and mixed with water then drunk.	O
				Typhoid	H	F	Leave will be crushed and mixed with water then drunk.	O
				Anthrax	L	F	Leave will be crushed and mixed with water then given one *mesti* for infected cattle.	O
109	*Malus domestic*	Rosaceae	Apiilii	Gastritis	H	F	Leaves will be crushed and mix with water then drunk when there is pain.	O
110	*Malva parviflora* Hojer	Malavaceae	Dobbii-qalloo	Gonorrhea	H	F	Whole plant parts will be crushed and mixed with water then drunken one tea cup every morning for five days.	O
				Impotency problem	H	F	Whole plant parts will be crushed and mixed with water then drunken one teacup every night before having sex until recovery from the problem.	O
				Giardia	H	F	Root will be crushed and mixed with water then drunken one teacup every morning for five days.	O
				Eye disease	B	F	Leaves will be crushed and squeezed its juice then dropped some drop of juice to the eye.	Eye
				Intestinal parasite	B	F	Whole plant parts will be crushed and mixed with water then drunken one teacup before breakfast for three days.	O
				Back pain	H	F	Root will be crushed and mixed with water then drunken when there is pain.	O
111	*Melia azedarach* L.	Meliaceae	Kiniin-zaaf	Intestinal parasite	B	F	Leaves will be crushed and mixed with water then drunk every morning for three days.	O

Table 2 Continued …

	Melia azedarach L.			Diarrhea	B	F	Leaves will be crushed and mixed with water then drunk the filtered juice.	O
				Typhoid	H	F	Leaves will be crushed and mixed with water then drunk the filtered juice.	O
				Kidney problem	B	F	Leaves will be crushed and mixed with water then drunk the filtered juice.	O
				Ameobiasis	H	F	Leaves will be crushed and mixed with water then drunken 2-3 tea glass a day the filtered juice for 5 consecutive days.	O
				Bloating	B	F	Leaves will be crushed and mixed with water then drunk the filtered juice.	O
112	*Mimusops kummel* Bruce ex DC.	Sapotaceae	Bururrii	Urine retention	B	B	Root will be pounded with water then drunk.	O
				Swollen body part	B	F	Leaves will be crushed and mixed with water then given one liter of juice in each day until recovery from the problem.	D
				External parasite infection	B	F	Leaves will be crushed and mixed with water then washed and rubbed the affected body part	D
				Wound	B	F	Leaves will be crushed and tied on the infected body parts until recovery from the illness.	D
				Intestinal parasites	B	F	Leaves will be pounded and mixed with water then given to infected person or livestock.	O
113	*Mirabilis jalapa* L.	Nyctaginaceae	Harmal	Tonsillitis	H	F	Root will be pounded and mixed with honey then eaten 2-4 broth cups every morning until recovery from the problem.	O
				Breast cancer	B	F	Root will be crushed and mixed with honey and water then drunken 1-2 tea cups every morning until recovery from the problem.	O

Table 2 Continued …

	Mirabilis jalapa L.			Bone cancer	H	F	Root will be crushed and mixed with honey and water then drunken 1-2 tea cups every morning until recovery from the problem.	O
				External parasite infection	B	F	Root will be pounded and mixed with water then painted the affected body part.	D
				Diarrhea	B	F	Root will be crushed and mixed with water then drunk.	O
114	*Momordica spp.*	Cucurbitaceae	Muka-loonii	Bloating	L	F	Leaves will be crushed and mixed with water then given one liter of juice.	O
115	*Moringa oleifera* Lam.	Moringaceae	Shifarra	Hypertension	H	F	Leaves will be chopped and boiled with water and sugar then drunk a water glass of decoction in each day until recovery from illness.	O
				Kidney problem	H	F	Leaves will be chopped and boiled with water and sugar then drunk a water glass/*hojjaa kaasaa* of decoction in each day until recovery from illness.	O
				Jaundice	H	F	Leaves will be crushed and mixed together with water and sugar then drunken one water glass of juice in each morning for seven days.	O
				Diabetes	H	F	Leaves will be chopped and boiled with water and sugar then drunk a glass of water decoction in each day until recovery from illness.	O
				Heart problem	H	F	Leaves will crushed and mixed together with water and sugar drunk a glass of water in each morning for seven days.	O
				Diarrhea	H	F	Leaves will be chopped and cooked with *ittoo or busa* then eaten three times a day with *budena* or bread until recovery from the problem.	O

Table 2 Continued …

	Moringa oleifera Lam.			Febrile illness	H	F	Leaves will be crushed and mixed with water or tear then drunk a glass of tea.	O
				Nerve problem (Paralysis)	H	F	Leaves will be chopped and boiled with water and sugar then drunken 2-3 water glass of decoction in each day until recovery from illness.	O
				Intestinal worms	H	F	Leaves will be chopped and cooked with *ittoo or busa* then eaten three times a day with *budena* or bread until recovery from the problem.	O
				Bone cancer	H	F	Leaves will be chopped and boiled with water and sugar then drunk a glass of water decoction in each day until recovery from illness.	O
116	*Mucuna pruriens* (L.) DC.	Fabaceae	Muke-mechaa raa	Intestinal worms	L	F	Root will be crushed and mixed with water then given one liter/ *Mesti* of juice for cattle for three consecutive days.	O
				External parasite	L	F	Leaves will be crushed and mixed with water then washed and painted external body.	D
117	*Musa paradisiaca* L.	Musaceae	Muuza	Snake poison	H	F	Leave will pounded and creamed then painted the infected body part.	D
118	*Myrsine africana* L.	Myrsinacea e	Qacam a	Tape worm	B	D	Seeds will be pounded and mixed with water then drunk the filtered juice.	O
				Ascariasis	H	D	Seeds will be pounded and mixed with water then drunk the filtered juice.	O
				Intestinal parasite	B	D	Seeds will be pounded and mixed with water then drunk the filtered juice.	O
				Back pain	H	D	Seeds will be pounded and baked with *budena or enjera* mixed with water then eaten when there is pain.	O
				External parasite infection	B	F	Leaves will be pounded and mixed with water then painted the affected body part.	D

Table 2 Continued …

119	*Myrtus communis*	Myrtaceae	Adas	Typhoid	H	F	Leaves will pounded and mixed with water then drunk for three to seven days until recovery made.	O
120	*Nicotiana glauca* R. Grah.	Solanaceae	Lanjaa	Bloating	L	F	Leaves will be crushed and mixed with water then given one liter/ *Mesti* of juice for cattle.	O
				Removal of leech	L	F	Leaves will be crushed and mixed with water then given one liter of juice for cattle and dropped some juice through nose.	O, N
121	*Nicotiana tabacum* L.	Solanaceae	Timboo	Urine retention	L	F	Leaves will be crushed and mixed with water then given to infected livestock.	O
				Tooth ache	H	F	Bulbs will be crushed then put on and held on the tooth.	O
				External parasite infection	B	F	Leaves will be crushed and then painted the affected body part.	D
				Snake repellent	B	D	Leaves will be crushed and added burned fire then fumigated the environment by smoke.	D
				Leech removal	L	F	Leaves will be crushed and mixed with water then given to infected livestock orally and through nose.	O, N
122	*Ocimum basilicum* L.	Lamiaceae	Mosolbaa	Typhoid	H	B	Whole plants will be pounded and mixed with water then drunk.	O
				Spider poison	H	F	Whole plants will be crushed then rubbed and painted the infected body and basked in the sun.	D
123	*Ocimum forskolei* Benth.	Lamiaceae	Cabbii	Febrile illness	H	F	Leave will be crushed and squeezed then drunk and painted all the body part with its juice before sleep.	O, D
				Bone cancer	H	F	Leave will be crushed and boiled with *bune ashara* then drunk a glass of water every morning after breakfast until recovery from the problem.	O
				Wound	H	F	Leave will crushed and then tied on the affected body part.	D

Table 2 Continued …

124	*Ocimum lamiifolium* Hochst.ex Benths	Lamiaceae	Daama a-kasee-dimaa	Febrile illness	B	F	Leaves will be crushed and squeezed then drunk and painted the body.	O, D
				Common cold	H	F	Leaves will be crushed and squeezed then drunk its juice.	O
				Eye disease	B	F	Leaves will be crushed and squeezed then dropped to the eye.	Eye
				Swollen body part	H	F	Leaves will be crushed and then painted the infected body part.	D
125	*Ocimum spp.*	Lamiaceae	Saakay yee-dimtuu	Eye disease	H	F	Leaves will be crushed and squeezed then dropped some drop of juice in to the infected eye.	Eye
				Dyspepsia	H	F	Leaves will be chewed and then swallowed.	O
126	*Ocimum urticifolium* Roth.	Lamiaceae	Daama a-kasee-adii	Febrile illness	B	F	Leaves will be crushed and squeezed then drunk and painted the body.	O, D
				Common cold	H	F	Leaves will be crushed and squeezed then drunk its juice.	O, D
				Eye disease	B	F	Leaves will be crushed and squeezed then dropped in the eye.	Eye
				Diarrhea	B	F	Leaves will be boiled then drunk its decoction.	O
127	*Olea hochstetteri* Baher.	Oleaceae	Ejeersa	Headache	H	B	Leaves will be smashed and added to burning fire then fumigated the whole body with smoke.	D
				Heart burning	H	F	Seven twig leaves chewed and then swallowed.	O
				Snake poison	H	F	Twig leaves will be crushed and then painted the affected body part.	D
				Common cold	H	D	Stem will smashed and added to burning fire then sniffed with nose and fumigated whole body with smoke before sleep.	N, D
				Asthma	H	D	Stem will smash and added to burning fire then sniffed with nose and mouth.	N, O

Table 2 Continued …

	Olea hochstetteri Baher.			Cough	H	D	Stem will smash and added to burning fire then sniffed with nose and mouth.	N, O
				Scabies	H	D	Stem will smashed, boiled and collect the oil then painted the infected body with oil.	D
128	*Opuntia ficus-indica* (L.) Miller	Cactaceae	Tiinii	Intestinal worms	L	F	Leaves will be crushed and mixed with water then given one liter/*Mesti* of juice for cattle for three consecutive days.	O
				Remove eaten plastics and clothes from intestine	L	F	Leaves will be crushed and mixed with water then given one liter of juice for cattle for three consecutive days.	O
				Antidandruff	H	F	Leaves will be crushed and mixed with water then washed hairs with its juice until recovery from the problem.	D
129	*Otostegia integrifolia* Bentham.	Lamiaceae	Xunjiitii	Cough	H	B	Leaves will be crushed and boiled together with the leaves of *Eucalyptus globules* then sniffed and fumigated with the steam.	N, D
				Febrile illness	H	B	Leaves will be crushed and boiled together with the leaves of *Eucalyptus globules* then sniffed and fumigated with the steam.	N, D
				Headache	H	B	Leaves will be crushed and boiled together with the leaves of *Eucalyptus globules* then sniffed and fumigated with the steam.	N, D
				Ameobiasis	H	F	Leaves will be crushed and boiled with water then drunk a glass of tea its concoction early morning before breakfast until recovery.	O
130	*Ozoroa insignis* Del.	Anacardiaceae	Biqqaa	Leech removal	L	F	Leaves will be crushed and mixed with water then dropped through the nose.	N

Table 2 Continued …

131	*Parthenium hysterophorus* L.	Asteraceae	Farramsiis	Hemorrhoids	H	F	Whole plant will be crushed and boiled with *ashere buna* then drunk a cup of coffee every night before sleep until recovery from the problems.	O
132	*Pavonia hildebrandtii* Gurke	Malvaceae	Muka-onnee	Heart problem	H	F	Whole plant parts will be crushed and boiled with coffee then drunk a cup of coffee two times in a day until recovery from illness.	O
133	*Phytolacca dodecandra* L. Herit.	Phytolaccaceae	Handoodee masheenaa	Gonorrhea	H	F	Root will be pounded and mixed with water then drunk a cup of coffee for three days.	O
				Rabies	B	F	Root will be pounded and mixed with water then drunk a cup of coffee for 21 days.	O
				Jaundice	H	F	Root will be pounded and mixed with water then drunk a cup of coffee early morning for 3 days.	O
				Asthma	H	F	Root will be pounded and mixed with water then drunk a coffee cup when there is pain.	O
				Syphilis	H	F	Root will be pounded and mixed with water then drunk a cup of coffee early morning for 7 days.	O
				Intestinal worms	B	F	Root will be pounded and mixed with water then drunk a cup of coffee before breakfast for 3 days.	O
134	*Plantago lanceolta* L.	Plantaginaceae	Torba-utaal	Gland TB	H	F	Whole parts will be crushed and then tied on the infected body part.	D
135	*Plumbago zelanica* L.	Plumbaginaceae	Marxas	Bone cancer	H	B	Whole plant parts will be crushed and boiled together with honey and *ashare- buna* then drunk 1-2 coffee cups every night until recovery.	O
				Headache	H	B	Root will be powdered then sniffed the powder.	N
				Heart problems	H	F	Root will be crushed and boiled together with *ashare- buna* then drunk ½ coffee cup when pain.	O

Table 2 Continued …

	Plumbago zelanica L.			Gonorrhea	H	F	Root will be crushed and boiled together with honey and coffee then drunk one coffee cups every morning for 3 days.	O
				Mastitis	L	F	Root will be pounded and mixed with water then given to infected livestock for seven days.	O
				Urine retention	B	F	Root will be pounded and mixed with water then drunk or given to livestock.	O
				Swollen body with oozing pus	H	F	Root will be pounded and mixed with water then tied on the infected body.	D
				Breast cancer	B	F	Whole plant parts will be crushed and boiled together with honey and *ashare- buna* then drunk 1-2 coffee cups every night until recovery.	O
				Back pain	H	F	Root will be pounded and mixed with water then drunk	O
136	*Podocarpus gracilior* Pilger.	Podocarpaceae	Birbirsa	Insect repellent	H	F	Leave will be crushed and then painted all body surfaces.	D
137	*Premna schiniperi* Engler	Lamiaceae	Urgeessa	Swollen body part	H	F	Leaves will be crushed together with the leaves of *Commicarpus verticillatus, Rhus natalensis* and *Ehretia cymosa* then painted the infected body part.	D
				Ear disease	H	F	Leaves will be roasted, powdered, and mixed with butter or oil then dropped to ear.	Ear
				Jaundice	H	F	Leaves will be crushed and mixed with water then drunk a coffee cup before breakfast for three days.	O
				Nerve problem (paralysis)	H	F	Leaves will be crushed and boiled together with the leaves of *Carissa edulis, Zizyphus muronata* or *Zizysphus spine* and one liter of red oil then fumigated body by steam and massaged with sludge.	D

Table 2 Continued …

	Premna schiniperi Engler			Swollen body with oozing pus	H	F	Leaves will be crushed and heated then painted and tied on the affected body part.	D
138	*Prunus persica* (L.) Stockes.	Rosaceae	Kukii	Intestinal worms	H	F	Root and leaves will be crushed together and mixed with water then drinking its juice for three days.	O
				Diarrhea	H	F	Leave will be crushed and mixed with water then drunk until recovery from the problem.	O
				Tonsillitis	H	F	Leave will be crushed and mixed with water then drinking.	O
139	*Psidium guajava* L.	Myrtaceae	Zayituu naa	Typhoid	B	F	Seven twigs of leaves will be crushed and mixed with water then drunk for three days before breakfast.	O
				Ear problem	H	F	Leaves will be crushed and mixed with water then dropped some juice to the ear.	Ear
140	*Punica granatum* L.	Lythraceae	Rumaa na	Cough	B	F	Leaves will be pounded and mixed with water then drunk the filtered juice.	O
				Cholera	H	F	Leaves will be pounded and mixed with water then drunk the filtered juice.	O
				Tape worm	H	F	Fruit and seeds will be crushed and boiled then drunk one water glass before breakfast.	O
				Ameobiosis	H	F	Leaves will be pounded and mixed with water then drunk the filtered juice.	O
				Hypertensio n	H	F	Fruit and seeds will be crushed and boiled then drunk one water glass before breakfast.	O
				Kidney problem	B	F	Seven twigs leaves will be crushed and boiled then drunk one water glass before breakfast.	O
				Gastritis	H	F	Fruit and seeds will be crushed and boiled then drunk one water glass before breakfast.	O
				Diarrhea	B	F	Leaves will be pounded and mixed with water then drunk the filtered juice.	O

Table 2 Continued …

	Punica granatum L.			Snake poison	B	F	Leaves will be pounded and mixed with water then painted the affected body part.	O
				Intestinal parasite	B	F	Leaves will be pounded together with *Allium sativum* and mixed with water then drunk the filtered juice.	O
141	*Pycnostachys abyssinica* Fresen.	Lamiaceae	Muka-ajoo	Febrile illness	H	F	Leaves will be crushed and squeezed its juice then drunk.	O
				Eye disease	H	F	Leaves will be crushed and squeezed its juice then apply some drop in the eye.	Eye
142	*Raphanus raphanistrum* L.	Brassicacea e	Raafu-shimbir roo	Impotency problem	H	D	Seeds will be pounded and mix with water then drunk before one hour having sex.	O
				Fungal skin infection	H	D	Seeds will be pounded and mix with water then painted the infected body part until recovery.	D
				Antidandruf f	H	F	Leaves will be crushed and squeezed then washed the hair with its juice.	D
143	*Raphanus sativus* L.	Barassicace ae	Fujul	Snake poison	B	B	Seeds pounded and then painted the affected body part.	D
				Ear problem	H	F	Leaves will be crushed and squeezed its juice then add small amount to the ear.	Ear
				Black leg	L	F	Leaves will be crushed and mixed with water then given one liter of juice in each day until recover.	O
144	*Rhamnus prinoides* L'Herit.	Rhamnacea e	Geeshe e	Tonsillitis	H	F	Leave will be crushed and mixed with water then drinking.	O
				Intestinal worms	H	F	Fruits will be crushed and mixed with water then drunk a glass of tea before breakfast every morning for three consecutive days.	O
145	*Rhus glutinosa* Hochst.ex A.Rich.	Anacardiace ae	Xaaxee ssaa	Swollen body part	H	F	Leaves will be pounded together with the leaves of *Croton macrostachyus* and *Coleus edulis* then painted the infected body part.	D

Table 2 Continued …

	Rhus glutinosa Hochst.ex A.Rich.			Insect infection	B	F	Leaves will be crushed and mixed with water then drunk and painted the affected body part.	O, D
				Diarrhea	B	F	Leaves will be crushed and mixed with water then drunk.	O
146	*Rhus natalensis* Krauss.	Anacardiaceae	Daboobeeyssaa	Swollen body part	H	F	Leave will pounded and creamed then painted the infected body part.	D
				Snake poison	H	F	Leave will pounded and creamed then painted the affected body part.	D
				Swollen body with oozing pus	H	F	Leave will pounded and creamed then tied on the infected body part.	D
147	*Rhus retinorrhoea* Steud.ex Oliver	Anacardiaceae	Bubbissaa	Swollen body part	H	F	Leave will be crushed and then painted the infected body part.	D
				Wound	H	F	Leave will be crushed and then painted the infected body part.	D
				Skin burn	H	F	Leave will be crushed and then painted the infected body part.	D
				Jaundice	H	F	Root will be pounding together with the leave of *Sida-cuneif olia* and *Withania somnifera* then drunk with water.	O
148	*Rhynchosia malacotricha* Harms.	Fabaceae	Ud-saliim	Intestinal worms	B	F	Leaves will be crushed and mixed with water then drunk or given to infected livestock.	O
				Breast cancer	B	F	Leaves will be crushed and boiled with *ashare* then drunk or given to infected livestock.	O
				Nerve problem (paralysis)	H	F	Leaves will be crushed with whole plant parts of *Senecio nandensis* and leaves of *Zizyphus muronata* or *Zizysphus spine* and boiled with one liter of red oil then painted and massaged body.	D

Table 2 Continued …

	Rhynchosia malacotricha Harms.		External parasite	B	F	Roots and leaves will be pounded and mixed with water then washed and painted the affected body.	D
			Headache	H	F	Leaves will be crushed and squeezed its juice then small amount of juice dropped through nose.	N
			Heart problem	H	F	Leaves will be pounded, mixed with water then drunk.	O
			Scabies	B	F	Leaves will be crushed and then painted the affected body part.	O
			Mastitis	B	F	Leaves will be crushed and boiled with *ashare* then given to infected livestock.	O
			Spider poison	B	F	Whole plant parts will be crushed then rubbed and painted the infected body part.	D
			Anthrax	L	F	Leaves will be crushed and mixed with water then given to infected livestock.	O
149	*Ricinus communis* L'Herit.	Euphorbiaceae	Qobboo	Urine retention	B	F	Root will be crushed and mixed with water the drunk or given to livestock.	O
				Headache	H	F	Seeds will be pounded together with whole plant part of *Sphaeranthus suaveolens* then tied on head.	D
				External parasite	B	F	Leaves will be crushed and painted body surface.	D
				Nerve problem (paralysis)	H	F	Seeds will be pounded together with leaves of *Citrus limonia, Dodonea angustifolia, Citrus medica,* and *Calamintha paredoxa* and add to burning fire and fumigated every night until recover.	D
				Jaundice	H	F	Root will be pounded and mixed with water then drunk its juice.	O
				Rabies	B	F	Root and leaves will be pounded together and mixed with water then drunk its juice.	O

Table 2 Continued …

150	*Rosa abyssinica* R.Br.ex Lindl	Rosaceae	Qajiima a-adii	Gonorrhea	H	D	Seeds will be pounded and cooked with *wot* or gravy of meat then eating with *enjera* or bread for three days.	O
				Back pain	H	D	Seeds will be pounded and boiled with honey or sugar then drunk.	O
151	*Rumex abyssinicus* Jacq.	Polygonaceae	Dhangosha	Swollen body part	H	F	Leave will be crushed and then painted the affected body part.	D
				Swollen body with oozing pus	H	F	Leave will be crushed and then tied on the infected body part.	D
				Bleeding	H	F	Leave will be crushed and squeezed then dropped its juice and tied the sludge on the affected body part.	D
				Gonorrhea	H	F	Root will be crushed and mixed with water then drunk a glass of tea every morning before breakfast for three days.	O
152	*Rumex bequartii* De Wild.	Polygonaceae	Mucha-arraab	Urine retention	B	F	Root will be pounded and mixed with water then drunk or given to livestock.	O
				Uvula infection	H	F	Root will be pounded and squeezed its juice then swallowed.	O
				Breast cancer	B	F	Root will be pounded and mixed with water then drunk and painted the affected breast.	O, D
				Bloating	B	F	Root will be pounded and mixed with water then drunk or given to livestock.	O
				Tonsillitis	H	F	Root will be pounded and mixed with water then drunk.	O
				Tumor (Keledo)s	B	F	Root will be crushed then rubbed and tied on the affected body.	D
				Swollen body with oozing pus	H	F	Leaves will be crushed and heated then rubbed and tied on the affected body.	D

Table 2 Continued …

	Rumex bequartii De Wild.			Prevent abortion	B	F	Root will be pounded and mixed with water then drunk or given to livestock when there is discomfort.	O
				Mastitis	L	F	Root will be pounded and mixed with water then given to livestock for three days.	O
153	*Rumex ellenbeckii* Dammer	Polygonaceae	Dhanga ggo	Fungal skin infection	H	F	Leaves will be crushed and then painted the infected body part.	D
				Diarrhea	B	F	Leaves will be crushed and mixed with water then drunk.	O
				Swollen body parts	H	F	Leaves will be crushed and then painted the infected body part.	D
				Swollen body with oozing pus	H	F	Leaves will be crushed and then tied on the infected body part.	D
154	*Ruta chalepensis* L.	Rutaceae	Xalasaan	Heart problem	H	F	Fruit will be chewed and swallowed its juice.	O
				Common cold	B	F	Leaves will be boiled with tea or coffee or *hojja* then drunken 2-3 tea cup until recovery from the problem.	O
				Typhoid	H	F	Leaves and fruits will be boiled together with the leaves of *Carica papaya* and *Psidium guajava* then drunk 1-2 tea cups every morning until recovery from the problem.	O
				Dyspepsia	B	F	Fruits will be chewed and swallowed its juice.	O
				Kidney problem	B	F	Leaves and fruits will be boiled with *ashere- buna* then drunk 1-3 tea cups every night until recover from the problem.	O
				Gastritis	H	F	Fruits will be crushed and mixed with water then drunk its juice when there is pain.	O

Table 2 Continued …

	Ruta chalepensis L.			Nerve problem (paralysis)	H	F	Fruits will be pounded and boiled together with the leaves of *Citrus limonia, Citrus medica,* and whole plant part of *Senecio nandensis, Kleinia longiflora, Ocimum basilicum,* and *one* liter of red oil then fumigated with hot steam and massaged patient body with the filtrate.	D
				Intestinal worms	H	F	Fruits and seeds will be crushed and mixed with water then drunken 1-2 teacup before breakfast for five days.	O
				Vomiting	H	F	Leaves will be pounded together with root of *Eleusine jaegeri,* whole plant parts of *Digitaria velutina* and leaves of *Foeniculum vulgare* then mixed with water and drunk one coffee juice when there is feeling of vomiting.	O
155	*Salvia nilotica* Juss. Ex Jacquin	Lamiaceae	Hool-gab	Bloating	B	F	Leaves will be crushed and mixed with water then drunk.	O
				Febrile illness	B	F	Leaves will be crushed and squeezed its juice then drunk.	O
				Spider poison	B	F	Leaves will be roasted, powdered, and mixed with butter then rubbed and painted the affected body.	D
				Eczema	H	F	Leaves will be roasted, powdered, and mixed with butter then rubbed and painted the affected body.	D
				Urine retention	H	F	Root will be crushed and mixed with water then drunk.	O
				Fever	H	F	Leaves will be crushed and mixed with water then drunk.	O
				Wound	H	F	Leaves will be crushed then tied on the wounded body part.	D
				Scabies	L	F	Leaves will be crushed and painted on the affected body part.	D

Table 2 Continued …

156	*Senecio nandensis* S. Moore	Asteraceae	Jiniiraas	Nerve problem (paralysis)	H	F	Whole plant parts will be the leaves of *Ruta chalepensis* and bulb of *Allium sativum*, and boiled with one liter of red oil and ½ kg of salt then drunk the filtered decoction and massaged the body by the sludge every night until recovery from the problem.	O, D
				Swollen body part	H	F	Leaves and stems will be crushed and then painted the infected body part.	D
				Febrile illness	B	F	Whole plant parts will be crushed and mixed with water then drunk.	O
				Urine retention	B	F	Whole plant parts will be crushed and mixed with water then drunk a glass of water for three mornings.	O
				Tooth ache	H	F	Stems will be crushed and held on the affected tooth.	O
				Spider poison	B	F	Whole plant parts will be crushed and mixed with water then drunk and painted the affected body part.	D
				Placental retention	B	F	Whole plant parts will be crushed and mixed with water then drunk.	O
				Insufficient milk supply	B	F	Whole plant parts will be crushed and mixed with water then drunk or given to livestock by the local measuring tools *(mesti*).	O
				Fungal skin infection	H	F	Leaves and stem will pounded together with bulb of *Allium cepa* and the leaves of *Lycopersicn esculentum* then painted the affected body part.	D
157	*Senna didymobotra*	Fabaceae	Shakamsaa	Snake poison	B	F	Leaves will be crushed and then painted the affected body part.	D

Table 2 Continued …

	Senna didymobotria			Swollen body parts	H	F	Leaves will be crushed and then painted and tied on the affected body part.	D
				Headache	H	F	Leaves will be crushed and then tied on the head.	D
				Diarrhea	B	F	Leaves will be crushed and mixed with water then drunk or given to infected livestock.	O
				Black leg	L	F	Leaves will be pounded, mixed with water then given to infected livestock.	O
				Mastitis	L	F	Leaves will be pounded, mixed with water then given to infected livestock.	O
158	*Senna occidentalis*	Fabaceae	Muka-gurraacha	Snake poison	B	F	Leaves will be crushed then painted the affected body part for three nights.	D
				Wound	B	F	Leaves will be crushed then tied on the affected body part.	D
				Typhoid	H	F	Root will be pounded and mixed with water then drunk.	O
159	*Sida-cuneifolia* Roxb.	Malvaceae	Rigaa-gaange e	Impotency problem	H	F	Root and leaves will be pounded together with the root of *Commelina benghalensis, Eleusine floccifolia and Achyrenthus aspera* and mixed with water then drunk a glass of tea before one hour having sex.	O
				Febrile illness	H	F	Leaves will pounding together with the leaves of *Ocimum urticifolium* or *Ocimum lamiifolium* and mixed with water then drunk ½ of cup of coffee.	O
				Uvula infection	H	F	Leaves crushed and squeezed then swallowed its juice.	O
				Jaundice	H	R	Root will be crushed and mixed with water then drunk a glass of water for three mornings.	O
				Diarrhea	H	F	Root will be crushed and mixed with water then drunk a glass of water in each day until recovery from the problem.	O

Table 2 Continued …

160	*Silene macrosolen* Steud ex. Rich	Caryophyllaceae	Liiq	Heart problem	B	F	Whole plant parts pounded together and mixed with water then drunken ½ coffee cup of filtered juice when there is feeling of pain.	O
				Intestinal parasite	B	F	Whole plant parts pounded together and mixed with milk then drunk the filtered juice 1-2 tea glass a day before breakfast for 3 days.	O
				Headache	H	F	Whole plant parts pounded together, squeezed its juice then drunken ½ coffee cups, and dropped small amount through nose.	O, N
				Diarrhea	B	F	Whole plant parts pounded together and mixed with water then drunken one coffee cup juice.	O
				Uvula infection	H	F	Whole plant parts pounded together and squeezed its juice then drunken small amount.	O
				Cough	B	F	Whole plant parts pounded together and boiled with *hojja* or tea then drunk.	O
				Swollen body part	H		Whole plant parts pounded together and boiled with water then washed and painted by the decoction the affected body.	D
				Tumors (Keledo)	B	F	Whole plant parts pounded together then rubbed and painted the infected body.	D
				Mastitis	L	F	Whole plant parts pounded together and mixed with water then given one liter of filtered juice and painted the external body.	O, D
161	*Smithia aeschynomenoides* Welv.ex Baker	Fabaceae	Hinnaa	Diarrhea	B	F	Leaves will be pounded and mixed with water then drunk.	O

Table 2 Continued …

	Smithia aeschynomenoides Welv.ex Baker			Headache	H	F	Leaves will be pounded with the seeds of *Gossypium barbadense, Ricinus communis* and the whole plant parts of *Sphaeranthus suaveolens* then tied on the head until recovery from the problem.	D
				Wound	H	B	Leaves will be pounded and mixed with the juice of *Citrus limonia* and ½ cup of salt then tied on the wounded body.	D
				Fungal skin infection	H	B	Leaves will be pounded and mixed with the juice of *Citrus limonia* and ½ cup of salt then tied on the infected body part.	D
162	*Solanum incanum* L.	Solanaceae	Hiddii	Skin cut bleeding	H	F	Leaves will be crushed and then tied on the affected parts.	D
				Tooth ache	H	F	Leave will be crushed then put on and hold on the infected tooth.	O
				Nasal bleeding	H	F	Leaves will be crushed and squeezed its juice then dropped some juice and put in the sludge in the nose.	N
163	*Solanum nigrum* L	Solanaceae	Shaama a-korboo	Uvula infection	H	F	Leaves crushed and squeezed then swallowed its juice.	O
				Spider poison	H	F	Leaves will pounding then rubbed and painted on the affected body parts and sited for an hour in sun.	D
				Skin warts	H	F	Fruits will be crushed and then rubbed and painted the infected surface.	D
				Hemorrhoid	H	F	Fruits will be crushed and then rubbed and painted the infected surface.	A
164	*Solanum tuberosum*	Solanaceae	Dinnichaa	Gastritis	H	F	Tuber will be peeled and chopped then eaten when the feeling of pain is occurring.	O
				Nausea	H	F	Tuber will be peeled and chopped then eaten when the feeling of nausea is occurring.	O

Table 2 Continued …

	Solanum tuberosum			Nausea	H	F	Tuber will be peeled and chopped then eaten when the feeling of nausea is occurring.	O
				Dyspepsia	H	F	Tuber will be peeled and chopped then eaten when the feeling of nausea is occurring.	O
165	*Sphaeranthus suaveolens* (Forssk.) DC.	Asteraceae	Raasshedii	Headache	H	F	Whole plant parts will be crushed together with the seeds *Ricinus communis* then tied on head.	D
				Anxiety disorder	H	F	Whole plant parts will be crushed together with the seeds *Ricinus communis* then tied on head.	D
166	*Spilanthes mauritiana* (Rich.Ex Pres.) DC.	Asteraceae	Gutiich	Tooth ache	H	F	Leave will be crushed then put on and hold on the infected tooth.	O
				Tonsillitis	H	F	Flowers will be chewed and then swallowed.	O
				Uvula infection	H	F	Flowers will be chewed and then swallowed.	O
167	*Stephania abyssinica* (Qu. Dillon. & A. Rich.) Walpers.	Menispermaceae	Kaalaalaa	Syphilis	H	F	Root will be pounded together with water then drunk the filtrate juice.	O
168	*Syzygium guineense* Var. (Wild.) DC.	Myrtaceae	Beddessaa	Uterus problem	H	D	Stem will be smashed together with stem of *Balanites aegyptiaca* and *Zizyphus spine* or *Zizyphus muronata* then fumigating vagina with smoke.	V
169	*Tagetes minuta* L.	Asteraceae	Ardi-fasaaz	Gastritis	H	F	Root will be chewed and then swallowed.	O
170	*Tamarindus indica* L.	Fabaceae	Rooqaa	Dyspepsia	H	F	Fruits will be crushed and mixed with water and sugar then drunk its juice.	O
				Wound	H	F	Leaves will be crushed and mixed with butter then painted the affected part.	D
				Diarrhea	H	B	Seeds and leaves will be pounded together and mix with water then drunk a glass of water.	O

Table 2 Continued …

	Tamarindus indica L.			Fever	H	B	Seeds and leaves will be pounded together and mixed with water then drunk a glass of water when there is feeling of fever sensed.	O
				Intestinal worms	H	B	Fruits and seeds will be pounded together and mixed with water then drunk a glass of water before breakfast for three days.	O
				Bone cancer	H	F	Root and leaves will be crushed, boiled together with honey and *ashare buna* then drunk two glass of tea every day until recovery from the problem.	O
				Malaria	H	B	Fruits and seeds will be pounded together with bulb of *Allium sativum* and mixed with honey and water then drunk a glass of water before breakfast for three days.	O
171	*Trigonella foenum-graecum* L.	Fabaceae	Talbaa	Conception	H	D	Seeds will be pounded and mixed together with water and sugar then drunk.	O
				Antidandruff	H	D	Seeds will be soaked in water for 1-2 days then washed hairs every day until recovery from the problem.	D
				Gastritis	H	D	Seeds will be pounded and mixed together with water and sugar then drunk.	O
				Amoebiasis	H	D	Seeds will be soaked in water for 1 or 2 days and mixed with sugar then drunken a water glass every morning until recovery from the problem.	O
				Uterus problem	H	D	Seeds will be roasted, pounded and boiled with sugar then drunk every night until recovery from the problem.	O
				Dystocia	B	D	Seeds will be roasted, pounded and boiled with sugar then drunk.	O
				Placental retention	B	D	Seeds will be roasted, pounded and boiled with sugar then drunk.	O

Table 2 Continued …

172	*Verbascum sinaiticum* Benth.	Scrophulariaceae	Gurra-harree	External parasite infection	B	F	Leaves will be crushed and mixed with water then drunk and painted	O, D
				Urine retention	B	F	Root will be crushed and mixed with water then drunk.	O
				Heart problem	H	F	Root will be chewed and swallowed its juice when there is pain.	O
				Impotency problem	H	F	Root will be pounded together with the leaves of *Euclea racemosa* and rhizomes of *Ginger officinale* and boiled with water and honey then drunk before having sex.	O
				Nausea	H	F	Root will be chewed and swallowed its juice when there is feeling of nausea.	O
				Boil	H	F	Leaves will be crushed then tied on the infected body part.	D
				Placental retention	B	F	Root will be crushed and mixed with water then drunk when there is placental retention.	O
173	*Vernonia amygdalina* Del.	Asteraceae	Obichaa (Ebichaa)	Intestinal parasite	B	F	Leaves will be crushed and mixed with water then drunk the filtered juice or given to livestock.	O
				Diabetes	H	F	Leaves will be crushed and mixed with water then drunk the filtered juice.	O
				Diarrhea	B	F	Leaves will be crushed and mixed with water then drunk the filtered juice or given to livestock.	O
				Insufficient milk supply	B	F	Leaves will be crushed and mixed with water then drunk the filtered juice or given to livestock.	O
174	*Vernonia stipulacea* Klutt.	Asteraceae	Dhadhahoo	Febrile illness	B	F	Whole plant parts will be crushed and mixed with water then drunk and painted the body.	O, D
				Head ache	H	F	Whole plant parts will be crushed and mixed with water then drunk its juice.	O

Table 2 Continued …

	Vernonia stipulacea Klutt.			Uvula infection	H	F	Leaves will be crushed and squeezed then dropped some juice and swallowed.	O
				Lymph node Swilling	H	F	Whole plant parts will be crushed and mixed with water then painted the infected body part.	D
175	*Viscum spp.*	Viscaceae	Digaloo -odaa	Impotency problem	H	F	Whole parts will be pounded together with leaves of *Aloe bertemariae and the root of Sida-cuneif olia* and mixed with water then drunk a glass of tea before one hour having sex.	O
176	*Viscum triflorum* DC.	Viscaceae	Digaloo - bakkan nisaa	Impotency problem	H	F	Whole plant parts will be crushed and mixed with water then washed body before having sex.	D
				Prevent abortion	B	F	Whole plant parts will be crushed and mixed with water then drunk.	O
				Typhoid	H	F	Whole plant parts will be pounded together with the root of *Senna didymobotra* mixed with water and drunk the juice part.	O
177	*Viscum tubercullatu m* A. Rich.	Viscaceae	Didaloo - ejeersaa	Breast cancer	H	F	Whole parts will be pounded and mixed with water then drunk a glass of tea juice and painted the infected part until recover from the problem.	O, D
				Back pain	H	F	Whole parts will be pounded and mixed with water then drunk a glass of tea juice until recover from the problem.	O
				Nerve problem (paralysis)	H	F	Whole parts will be pounded and boiled with red oil then painted, exposed the body with heat and massaged every night until recover from the problem.	T
178	*Withania somnifera* (L.) Dunal.	Solanaceae	Hiddii-budee	Headache	H	F	Root will be pounded and squeezed its juice then dropped some juice to nose.	N
				Heart problem	H	F	Root will be pounded together with root of *Silene macrosolen* and mixed with water then drunk its juice when there is pain.	O

Table 2 Continued …

	Withania somnifera (L.) Dunal.			Bloating	B	F	Root will be pounded and mixed with water then drunk a water glass.	
				Ear disease	H	F	Leaves will be crushed and squeezed its juice and dropped some juice to ear.	Ear
				Spider poison	B	F	Leaves will be crushed then rubbed and painted the affected body part.	D
179	*Xanthium spinosum* L	Asteraceae	Araddoo	Fungal skin infection	H	F	Leaf will be crushed and then rubbed and painted the affected body part until recover from the problem.	D
				Skin cut bleeding	H	F	Leaf will be crushed and then tied on the affected body part.	D
180	*Ximenia americana* L.	Olacaceae	Hudhaa	Jaundice	H	F	Bark of tree will be removed from mother plant, crushed and boiled with *ashare buna* then drunk a cup of coffee early morning before breakfast for three consecutive days.	O
				Uvula infection	H	F	Fruits will be pounded and squeezed then drunk its juice.	O
				Rabies	H	F	Root will be pounded, mixed with dough and baked then eaten early morning before breakfast for seven consecutive days.	O
				Tonsillitis	H	F	Fruits will be crushed and squeezed the juice and then swallowed	O
181	*Zaleya pentandra* (L.) C. Jeffrey	Aizoaceae	Mararree-qal'oo	Eczema	H	F	Whole plant parts will be roasted, powdered, and mixed with butter or oil then painted the affected body part.	D
				Black leg	L	F	Whole plant parts will be crushed and mixed with water then given to infected livestock without filtered.	D
182	*Zea mays* L.	Poaceae	Boqqolloo	Heart problem	H	F	Fruit will be boiled with water and drunk a glass of water decoction every night before sleep until recovery from the problem.	O

Table 2 Continued …

	Zea mays L.			Kidney problem	H	F	Fruit will be boiled with water and drunk a glass of water decoction every night before sleep until recovery from the problem.	O
183	*Zehneria scabra (*L.F.) Sonder.	Cucurbitaceae	Buuk-yadee	Intestinal worms	L	F	Root will be crushed and mixed with the water then given to the livestock.	O
184	*Zizyphus mauritiana* Wild	Rhamnaceae	Qurqur aa-gurraacha	Rigidity of tendon /ligaments	H	F	Leaves will be crushed and mixed with water then tied on the affected body part, exposed to heat and massaged until recovery from the problem.	D
				Tuberculosis	H	D	Seeds will be pounded together with the bulb of *Allium sativum,* seed of *Guizotia abyssinica* and mixed with melted butter then drunk a cup of coffee for seven consecutive days.	O
				Bone cancer	H	D	Seeds will be pounded together with the bulb of *Allium sativum* and boiled with butter then drunk a cup of coffee before sleep until recovery from the problem.	O
				Diarrhea	H	D	Seeds will be pounding and mixed with water then drunken one water glass.	O
				Swilling body part	H	F	Leaves will be crushed together with leaves of *Premna schiniperi* and *Commicarpus verticillatus* then painted the infected part.	D
185	*Zizysphus spine* Christi (L.) Desf.	Rhamnaceae	Qurqur aa-adii	Swilling body part	H	F	Leaves will be crushed together with leaves of *Premna schiniperi* and *Commicarpus verticillatus* then painted the infected part.	D
				Bone cancer	H	D	Seeds will be pounding together with the bulb of *Allium sativum* and boiled with butter then drunk a cup of coffee before sleep until recovery from the problem.	O

Table 2 Continued …

Zizysphus spine Christi (L.) Desf.	Nerve problem (paralysis)	H	F	Leaves will be crushed with the whole parts of *Senecio nandensis* and mixed with oil then painted the whole body, exposed to heat (fire) and massaged every night until recovery from the problem.	D
	Impotency problem	H	F	Leaves will be pounded together with rhizome of *Ginger officinale* and bulb of *Allium cepa* and mixed with water then washed their body and drunk a cup of coffee before having sex.	O
	Rigidity of tendon/ligaments	H	F	Leaves will be crushed and mixed with water then tied on the affected body part, exposed to heat and massaged until recovery from the problem.	D
	Epilepsy	H	F	Seven twig leaves will be crushed and mixed with water then drunk.	O
	Tuberculosis	H	D	Seeds will be pounded together with the bulb of *Allium sativum*, seed of *Guizotia abyssinica* and mixed with melted butter then drunk a cup of coffee for seven consecutive days.	O
	Diarrhea	H	D	Seeds will be pounding and mixed with water then drunk a glass of water.	O

In terms of family distribution, Asteraceae and Lamiaceae each contributed the largest species (15 species), followed by Fabaceae with 14 species, and then Solanaceae with 9 species. Cucubitaceae, Euphorbiaceae, Rutaceae and Poaceae each represented with 6 species, Barassicaceae and Malavaceae each with 5 species, Anacacardiaceae, Myrtaceae and Rosaceae, each with 4 species and the remaining families all together contain 86 species (Appendix 6). This result agree with the result of (Mengistu, 2011; Mekonnen, 2013; Seyoum and Zerihun, 2014; Tadesse *et al*., 2015) in which family Asteraceae was the dominant family. This confirms that the study area is rich with diversity of medicinal plants and indigenous knowledge of traditional medicines.

4.1.2. Habitat, Habit and Source of Medicinal Plants

The data collected from the study site showed that, 109 (58.92%) of medicinal plants were wild species, 49 (26.49%) were domestic and 27 (14.59%) of them were both as wild and domestic. This result of study goes in line with the result of (Fisseha *et al*., 2014; Getaneh *et al*., 20014; Tadesse *et al*., 2015) in which high number of medicinal plants were collected from wild. This implies that most of the medicinal plants in the study area are not under human management and exposed to any anthropogenic and natural disturbance. However, a significant percentage (41.08%) of medicinal plants was collected from domestic (Home garden). This confirms home garden have played a prominent role in providing medicine for treating day to day illness in the study area.

The result also shows that most 76 (41.08%) species were herbs, followed by shrubs with 56 (30.27%) species, trees with 34 (18.38%) species, climber with 16 (8.65%) and epiphyte three (1.62%) species (Table 3). This finding in line with studies in other parts of Ethiopia such as (Seyoum and Zerihun, 2014; Mulatu, 1015; Tadesse *et al*., 2015) in which herbs were the dominant life forms of medicinal plants that followed by shrubs and trees. This suggests that herbs relatively better abundance as compared to other life forms in the study area.

Table 3 Habitat and habit of medicinal plant species that are collected in the study area

№	Habitat	Habit										Total in №	In %
		Herb		Shrub		Tree		Climber		Epiphyte			
		№	%	№	%	№	%	№	%	№	%		
1	Wild	45	41.28	40	36.7	10	9.17	11	10.1	3	2.75	109	58.92
2	Domestic	21	42.86	9	18.37	16	32.65	3	6.12	-	-	49	26.49
3	Both wild and domestic	10	37.04	7	25.93	8	29.63	2	7.41	-	-	27	14.59
	Total	76	41.08	56	30.27	34	18.38	16	8.65	3	1.62	185	100

4.1.3. Plant Parts Used For Preparation of the Remedies

From the data obtained, the most widely used plant part for the preparations of remedies were leaves, which accounted for 280 (37.7%), followed by roots with 163 (21.9%), and then seeds 76 (10.2%). Other parts of plants are also reported (Table 4). This result was in line with the finding of other investigators (e.g. Mengistu, 2010; Mekonnen, 2013; Mulatu, 2015) in which leaves were the most commonly used plant part followed by roots and seeds. Remedies preparations from leaves did not have pronounced negative effect on the survival and continuity of mother medicinal plants. The use of leaves rather than other parts of the plant helps to reduce the threat rate of medicinal plants. However, roots and seeds were the second and the third most used parts to treat human and livestock aliment. This implies that such harvesting has negative impact on the survival and continuity of useful medicinal plant species in the study area.

Table 4 Plant parts used in preparation of remedies

№	Parts used for remedies preparation	Number of citation	Percentage
1	Leaf	280	37.7
2	Root	163	21.9
3	Seed	76	10.2
4	Whole plant part	63	8.48
5	Fruit	40	5.38
6	Bulb	23	3.1
7	Fruit and Seed	16	2.15
8	Latex /sap	16	2.15
9	Twig leaf	15	2.02
10	Root and leaf	10	1.35
11	Stem	9	1.21
12	Bark	6	0.81
13	Rhizomes	6	0.81
14	Flower	5	0.67
15	Others	15	2.02
	Total	743	100

4.1.4. Methods and Condition of Preparation of the Remedies

Remedies were mostly (80.27%) prepared when plants were in fresh form followed by dry form (11.76%) and both in fresh and dried form (7.97%). This result is similar to the finding of previous an investigator (e.g. Sintayehu, 2011; Mekonnen, 2013; Moa *et al*., 2013; Seyoum and Zerihun, 2014) in which fresh form was the dominant form of remedies. Plants in fresh form were most preferred due to the belief that by traditional healers and local people have fresh plant parts have more effective therapeutic potential.

Concerning the preparation of medicine, the local people used various methods of preparation of traditional medicines for different types of diseases. The top three popular methods of preparation of traditional medicine remedies were crushing (39.7%), pounding (22.1%), crushing and boiling (7.81%) (Table5). This finding in line with other investigators (Moa *et al*., 2013; Balcha, 2014; Getaneh *et al*., 2014; Habtamu *et al*., 2014; Gonfa *et al*., 2015) in

which crushing takes the first and pounding the second method of preparation of remedies. As the result of the study revealed that, the majority of remedies, which account 554 (74.56%), were prepared from single plant species and few which account 189 (25.44%) were prepared from combination of more than two medicinal plants. Some of remedies are prepared with different additives such as water, honey, butter, milk, coffee, oil, sugar, *hojja, ashere-buna,* and food. This finding agrees with the result of (Sintayehu, 2011). These additive substances are added to improve the flavor, test, reduce adverse effect, and enhance the efficiency and effectiveness of remedies.

Table 5 Methods of preparation of medicinal plant remedies

№	Method of preparation	Number of citation	Percentage
1	Crushing	295	39.7
2	Pounding	164	22.1
3	Crushing, boiling	58	7.81
4	Crushing, Squeezing	35	4.71
5	Chewing	25	3.36
6	Boiling	22	2.96
7	Pounding, Boiling	21	2.83
8	Roasting, powdering, mixing	19	2.56
9	Chopping	16	2.15
10	Smoking	14	1.88
11	Squeezing	11	1.48
12	Powdering	7	0.94
13	Collecting	6	0.81
14	Pounding, Squeezing	6	0.81
15	Others	44	5.92
	Total	743	100

4.1.5. Route of Administration

The local people were using various route of administration to take the prepared medicine. The major routes of administration in the study area were oral, dermal, nasal, optical, auricular, anal and vaginal. In the study area oral administration is the most leading route of administration by 473 (63.66%), followed by dermal 206 (25.73%), auricular (1.48%), anal (1.35%), nasal (1.08%), Optical (0.81%), vaginal (0.27%) and others (3.63%). Similar results were obtained by other investigators (Assegid and Tesfaye, 2014; Getaneh *et al*., 2014; Habtamu *et al*., 2014; Gonfa *et al*., 2015, Mulatu, 2015) who were indicated oral route administration ranked first in frequency followed by dermal administrations.

4.1.6. Dosage of Remedy Preparation

The finding of the study revealed that there is disagreement among traditional healers and nontraditional healer informants considering the dosage system used, duration and time at which remedies to be taken for the same kind of health problem. As a result, traditional medicine administrations are not uniform, precise and standardize. However, traditional healers' prescription depends on sex, age, and physical fitness, stage of illness, pregnancy, presence or absence of any additional disease. Especially traditional healers in the study area used almost the same materials and unit to measure the dosage. These common local materials are spoon of tea, spoon of soup, spoon of *merka (shummoo*), cup of coffee, cup of tea, *kassa of hojja*, *mesti,* finger length, finger tip, capsule of soft drink, pinches, thumbful, count number are used to estimate and fix the amount of medicine. The duration and frequency of administration depend on the type of illness and its severity.

According to the traditional healers (key informants) report, in most case traditional remedies have not serious adverse effects. In order to reduce the effect, they use antidotes for any adverse effect caused by traditional medicine. As a result, they recommended milk, yogurts, coffee, lemon, soil, gravy (decoction), and liver of hen as antidotes in some especial remedies case and in any adverse effect.

4.2. Ethnomedicinal Plant Importance and People Use Knowledge

4.2.1. Informant Consensus Factors

All cited human diseases were categorized into 15 categories based on the site of incidence of disease, condition of the disease as well as treatment resemblance of the disease in the study area (Appendix 3). Informant consensus factor (ICF) was calculated for each categories. However, the analysis of data focuses on the 10 most common health problems of humans in the study area. The result of the study indicated that the highest ICF was obtained from disease related with Skin and subcutaneous tissue (0.81) followed by Circulatory system related diseases (0.8), and then Respiratory and throat infection by (0.72) and Headache, Fever and Febrile illness (0.72). The least ICF was obtained with Bite and external parasite related infection (0.56) and Wound and swilling body part related diseases (0.63). This suggest that, there was greater agreement between informants to over which plant species to use more to treat diseases ranked 1-3 and also they were well agreed on the number of plant species used to treat the last six diseases categories. Generally ICF value of all categories of diseases was close to one and above 0.5. This high value of ICF indicates that the local people agreed on the same taxa to manage specific health problem.

Table 6 Informant consensus factor (ICF) of major categories of human disease

№	Disease categories	Use citation (N_{Ur})	№ of species used (N_t)	Informant consensus factor
1	Skin and subcutaneous tissue related diseases	234	46	0.81
2	Circulatory system related diseases	156	32	0.8
3	Respiratory and throat infection	229	64	0.72
4	Headache ,Fever and Febrile illness	130	37	0.72
5	Intestinal parasite and worms	270	83	0.7
6	Nervous system related diseases	88	28	0.69
7	Gastrointestinal related diseases	361	120	0.67
8	Genitourinary and venereal diseases	224	78	0.66
9	Wound and swilling body part related diseases	287	106	0.63
10	Bite and external parasite related infection	120	53	0.56

4.2.2. Fidelity Level Index

The fidelity level index was calculated for the most ten cited medicinal plants for the most frequently reported human diseases. The fidelity level index of *Phytolacca dodecandra* and *Alysicarpus rugosus* was the highest by 100% which used for the treat of gonorrhea and cough, followed by *Premna schiniperi* with 97.297% used for the treat of swollen body part, and then *Melia azedarach* and *Allium sativum* each by 95.652% used for the treatment of diarrhea and common cold (Table 7).This indicate that medicinal plants that were widely used by the local people have higher fidelity level value than those that are less used or popular.

Table 7 Fidelity level index of the most frequently reported medicinal plants

№	Disease treated	Botanical name MPs used to treat	Local name of MPs used	NP	N	FL	FL%	Rank
1	Febrile illness	*OtostegiaI ntegrifolia* Bentham	Xunjiitii	58	69	0.84	84.06	8
2	Kidney problem	*Aloe bertemariae* Sebsibe and Dioli.	Harggisa	41	49	0.84	83.67	9
3	Typhoid	*Carica papaya* L.	Paappaayyaa	46	51	0.9	90.2	7
4	Diarrhea	*Melia azedarach* L.	Kiniinzaaf	44	46	0.96	95.65	4
		Calpurnia aurea (Ait.) Benth.	Ceekaa	36	39	0.92	92.31	6
5	Cough	*Alysicarpus rugosus* (Willd.) DC.	Alii-hanqaa	39	39	1	100	1
6	Common cold	*Allium sativum* L.	Qulubbii-adii	44	46	0.96	95.65	4
7	Urine retention	*Foeniculum vulgare* Miller	Kamoona	32	41	0.78	78.05	10
8	Gonorhea	*Phytolacca dodecandra*	Handodee masheenaa	35	35	1	100	1
9	Body part swilling	*Premna schiniperi*	Urgeessaa	36	37	0.97	97.3	3

Key: NP= the number of informants that claimed the use of medicinal species to treat a particular disease
N= the number of informants that used the plant to treat any given disease
FL= fidelity level of index

4.2.3. Preference Ranking

In this study, most humans and livestock health problems were reported to be treated by multiple medicinal plant species. Therefore, among those reported health problems, preference ranking was conducted for the most frequently cited human diseases, which is thyroid; and also for blackleg for livestock diseases. Typhoid was reported to be treated by over 10 different plants species of which 10 of them were randomly selected and given to 10 randomly selected respondents to put plants in rank of their preference by giving maximum value 10 for the most preferred one and 1 for the list preferred one. According to preference ranking of selected informants among the 17 cited medicinal plants that used for treating typhoid, *Carica papaya, Ocimum basilicum and Eugenia apicalata* were ranked the first, second, third respectively (Table 8).

Table 8 Preference ranking of the top ten selected medicinal plants based on the degree of their curative power of typhoid as perceived by key informants

№	Botanical name of medicinal plant	Local name of medicinal plant	Respondents										Total	Rank
			R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	R_9	R_{10}		
1	*Carica papaya*	Paappaayyaa	9	10	10	10	9	10	10	8	10	9	95	1
2	*Ocimum basilicum*	Mosolbaa	7	8	9	8	10	9	9	7	8	10	85	2
3	*Eugenia apicalata*	Adas	10	6	7	9	8	8	8	10	9	5	80	3
4	*Aloe bertemariae*	Hargisa	8	9	6	7	7	6	7	6	6	8	70	4
5	*Allium sativum*	Quulbbii –adii	6	7	8	6	5	7	6	9	7	7	68	5
6	*Conium maculatum*	Shukaar	5	4	5	4	6	5	5	5	4	6	49	6
7	*Brassica oleraceae*	Miidhan-raafuu	4	5	4	5	4	4	4	3	5	4	42	7
8	*Artemisia afra*	Urgooftuu –adii	3	3	2	3	1	3	1	4	2	3	25	8
9	*Ruta chalepensis*	Xaalaasan	2	1	3	2	2	2	3	2	3	1	21	9
10	*Maesa lanceolate*	Balaa-adii	1	2	1	1	3	1	2	1	1	2	15	10

Blackleg also the most frequently cited livestock diseases in the study area. This disease was reported to be treated by nine different plant species and given to 10 randomly selected respondents by giving maximum value nine for the most preferred one and one for the list preferred one. According to the preference ranking *Senna didymobotra* was the most preferred medicinal species followed by *Allium sativum* and *Crambe abyssinica* (Table 9).

Table 9 Preference ranking of cited medicinal plants based on the degree of their curative power of blackleg as perceived by key informants

№	Botanical name of medicinal plant	Local name of medicinal plant	Respondents										Total	Rank
			R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	R_9	R_{10}		
1	*Senna didymobotra*	Shakamsaa	9	9	9	8	9	7	8	8	7	9	83	1
2	*Allium sativum*	Qulubbii-adii	6	7	4	5	8	8	9	9	8	8	72	2
3	*Crambe abyssinica*	Fujuul	8	6	7	7	6	9	5	4	9	7	68	3
4	*Conium maculatum*	Shukaar	7	5	8	6	7	6	6	7	4	5	61	4
5	*Agave sisalana*	Algee	5	8	6	9	4	3	7	5	6	6	59	5
6	*Gossypium barbadense*	Jibrii-bukkee	4	2	5	2	5	1	4	6	5	4	38	6
7	*Zaleya pentandra*	Mararree-qal'oo	3	4	2	3	3	4	3	3	2	3	30	7
8	*Alternanthera sessillis*	Mararree-furdoo	2	3	1	2	2	5	2	1	3	2	23	8
9	*Hordeum vulgare*	Garbuu	1	1	3	1	1	2	1	2	1	1	14	9

4.3. Acquisition and Transfer of Indigenous Knowledge of Medicinal Plant in the Study Area

As it could be understood from respondent, the major mechanism for acquisition of ethno medicinal indigenous knowledge is through oral transfer with secrecy along the family line. This result agrees with reports of most available studies conducted so far in different parts of the country (Reta, 2013; Mathewos *et al*., 2013a, b; Brhane *et al*., 2014; Tadesse *et al*., 2015). As traditional healers revealed, they take care and need to evaluate the most appropriate son with same criteria. Some of these are intellectual ability, afflation to ward family and acceptance among others, faithfulness, and honesty. If such kind of son is absent in the family, the second option may transfer to the most appropriate daughter or wife. If also such person is absent, the next option is transferred to the most appropriate relative. If such kind of relatives

is absent, the last option is transfer to the most appropriate beloved neighbor. In addition to traditional healers, indigenous knowledge was also in the hands of non-traditional healers and they share the knowledge freely. This confirms that the indigenous knowledge of ethnomedcinal plants of the local people is culturally deep rooted.

4.3.1. Socio-Demographic Factors Influencing Indigenous Knowledge

As the data collected from the study area showed that, the numbers of medicinal plants cited by female informants were less than the male informants (Table 10). In addition to this, the number of traditional healers of female was less than the male healers. This confirms that the traditional medicinal system was dominated by male and the existence of variation of indigenous knowledge of ethno medicinal plant between male and female. The females' indigenous knowledge best with those medicinal plants that are available in home gardens, around house and in the home. This is related to the role of females in the management of home gardens and cultivation of medicinal plants, and most of the time stays in home and around home. In addition to this secrecy, transfer of knowledge has its own contributions. But male informants are best with those plants that grow in the wild where they expend most of their time. These results consistent with several studies have been conducted in different part of the country (Tesfaye and Sebsibe, 2009; Sintayehu, 2011).This result confirms that the indigenous knowledge of medicinal plants in the study area differ among sex within the same community.

Table 10 Variation of indigenous knowledge of medicinal plant with respect to sex

Sex	Non key informants				Key informants				Sum total of informants			
	In №	In %	№ of cited Plants	In %	In №	In %	№ of cited plants	In %	In №	In %	№ of cited plants	In %
Male	82	59.85	1060	46.99	42	30.66	995	44.11	124	90.51	2055	91.09
Female	8	5.84	92	4.08	5	3.65	109	4.83	13	9.49	201	8.91
Total	90	65.69	1152	51.07	47	34.31	1104	48.94	137	100	2256	100

As the data of the study revealed that the number of medicinal plants cited by the 40-49 age group with 76 (33.73%) is ranked first, then followed by age group of 30-39 with 553 (24.51%), 50-59 with 492 (21.81%), ≥ 60 with 335 (14.85%) and then 20-29 age grouped with 115 (5.10%) is ranked the least (Table 11). This indicates that the elder are rich with indigenous knowledge than young generation. This could be because of the fact that the elders have accumulated knowledge through their life long experience of interactions with their environments, and due to young generation was under the influence of modernization and globalization (Assegid and Tesfaye, 2014; Berhane *et al*., 2014; Seyoum and Zerihun, 2014; Engidasew *et al*., 2015). As informants confirm that, the young generation especially educated groups disinterested toward traditional practice. Therefore; this indicates that indigenous knowledge of medicinal plants differs among the same community members within different age level.

Table 11 Variation of indigenous knowledge of medicinal plant among different age level of informants in the study area

Age of informants	Informants		Total cited medicinal plants	Percentage of cited medicinal plants
	№	%		
20-29	11	8.03	115	5.10
30-39	38	27.74	553	24.51
40-49	46	33.58	761	33.73
50-59	26	18.98	492	21.81
≥ 60	16	11.68	335	14.85
Total	137	100	2256	100

The result of the study also shows that there was a negative relationship between the education level of informants and their indigenous knowledge of ethnomedicinal plants. As the data revealed, the frequency of cited medicinal plants by those who were not able to read and write (Illiterates) informants were ranked the first with 846 (37.5%), followed by those who were able to read and write, grade 1-4, grade 5-8, grade 9-12, and certified (480 (21.277%), 361 (16.001%), 211 (9.353%), 61 (2.704%), and 2 (0.975%) respectively). As the educational level of informants increases, the number of medicinal plants cited by informants decrease. This confirms that low level of educated informants were rich with indigenous knowledge of medicinal plants than educated informants. Therefore, modern education has contributed to the loss of indigenous knowledge of ethno medicinal plants in the study area.

However, religious educated traditional healers are more professional on traditional medicinal systems. From the field observation and discussion with them show that they developed their profession from their parents, community, through experience sharing with healers, try and error and also from Arabic documented herbal medicine books. They have contributed significant contribution for the traditional healing system of the study area. Therefore, this result disagrees with the finding of some studies (Mersha, 2011; Mathewos *et al*., 2013 a) that who suggested religious belief has impact on use and transfer indigenous knowledge of medicinal plants.

Table 12 Variation of indigenous knowledge of medicinal plants with educational level of Informants

Educational Status	Informants		Frequency of cited medicinal plants	Percentage of informants
	№	%		
Illiterate	55	40.15	846	37.50
Read and write	26	18.98	480	21.28
Grade 1-4	22	16.06	361	16.00
Grade5-8	16	11.68	211	9.35
Grade9-12	4	2.92	61	2.70
Certified	2	1.46	22	0.98
Religious education	12	8.76	275	12.19
Total	137	100	2256	100

According to informants, access to modern health also contributed for the loss of indigenous knowledge of ethno medicinal plants. As they said, especially modern health healers or professionals consider the traditional medicinal practice as harmful, backwardness, dangerous practice. This implies modern health system had negative impact on the traditional medicinal system.

4.4. Conservation and Threat of Medicinal Plants and Associated Indigenous Knowledge in the Study Area

4.4.1. Threat of Medicinal Plants and Associated Indigenous Knowledge in the Study Area

The result of the present finding indicates that both natural and anthropogenic factors contributed for decline and loss of medicinal plants and associated indigenous knowledge in the study area. Informants were reported 13 treating factors of medicinal plants. These are agricultural expansion, expansion of invasive species, drought, over grazing by domestic and

wild animals, need for fuel, need for construction and building of house and live fence, harvesting for medicinal value, disease and pest, bushfire, urbanization, agricultural and house hold tools, timber production, and fragment land by erosion perceived by local informants. Among these threatening factors agricultural expansion ranked first with 124 (13.99%), expansion of invasive species ranked second with 115 (13.19%) and then drought ranked third with 108 (12.39%) (Table13). This finding confirmed that all the above factors were happening due to population growth, deforestation, environmental change, and lack of awareness. The present study goes with the result of several studies in different part of country (e.g. Abreha *et al*., 2013; Mathewos *et al*., 2013a, b; Tolosa *et al*., 2013; Solomon *et al*., 20015). In the study area, invasive plant species, especially *Lantana camara*, and *Parthenium hysterophorus* expanded on grazing land, mountain, forest, rode side and riverside (Figure3). This result confirms that the local medicinal plants were under various threats of manmade and natural constrain.

Table 13 List of different threaten factors that affect medicinal plant species in the study area

№	Treating factors	Citation of informants		Rank
		In Number	In percentage	
1	Agricultural expansion	124	13.99	1
2	Overgrazing by domestic and wild animals	106	12.16	4
3	Need for house and live fence building	82	9.40	6
4	Agricultural and house hold tools	28	3.21	11
5	Need for fuel (fire wood and charcoal)	98	11.24	5
6	Drought	108	12.39	3
7	Disease and pests	46	5.28	8
8	Harvesting for medicinal value	47	5.39	7
9	Expansion of invasive species	115	13.19	2
10	Timber production	18	2.06	12
11	Urbanization	42	4.812	10
12	Bush fire	44	5.05	9
13	Fragment land by erosion	8	0.92	13
	Total	872	100	

Figure2. The expansion of agricultural fields in the study area

Figure3. The expansion of invasive species (*Lanthana camara*) in the study area

As the result of study showed that, all informants' even non key informants could cited significant number of medicinal plants and also explained their medicinal values (Appendix 1). In addition to this, the number of traditional healers (key informants) those found in each selected kebele was large (Table 1). This result suggested that, the local people widely used traditional system of health service and also rich in indigenous knowledge of ethnomedicinal plants. However, indigenous knowledge transfer has been influenced by its secrecy, oral based

knowledge transfer to close relatives, unwilling of young generations, lack of awareness, expansion of modern education and health system. Although these were among the factors that could hinder the indigenous knowledge transfer, in this study it was found that the knowledge was not shrinking and vanishing just as different previous studies revealed. Therefore, this result disagree with the finding of (Mersha, 2011; Sintayehu, 2011; Mekonnen, 2013) which indicated indigenous of medicinal plants vanishing and shrinking.

4.4.2. Conservation of Medicinal Plants and Associated Indigenous Knowledge of the Study Area

From the present study, it was observed that some domestic ethnomedicinal plants in and around home garden, farm field, and around home. Mostly the local people planted trees, shrubs and herbs of medicinal plants for the purpose of medicinal value and other multipurpose values. In addition, most traditional healers have been planting the most rare and sparse wild and domestic medicinal plants in their home garden. This confirms the existence of traditional conservation practice in the study area though it was being practiced by a few.

There was belief that had played great role for conservation of medicinal plants in the study area. They believed that cutting medicinal plants without *tufta* (Slaughter of elders) and *wan libaneta/ujra* result morbidity by evil spirit (*jinni*), and the sprit makes the medicine fails to cure. In addition, cutting medicinal plants without having hygiene (*xahara*) was forbidden in the study area.

As informants revealed that, the district agricultural and land management office have been taking some conservation activities in the study area to seedling and distributing some medicinal plants (*Podocarpus gracilio, Juniperus procera, Carica papaya, Dovayalis abyssinica, Moringa oleifera, Citrus limonia, Melia azedarach, Psidium guajava,* and *Casimiroa edulis).* However, the conservation activities and the attention given to medicinal plants are very low. Moreover, there was low level of awareness about the role of ecosystem conservation especially about medicinal plants in the local community. Therefore, it needs to ensure sustainability of medicinal plants in the study area through expanding conservation awareness and efforts to the ground roots for effective community based conservation activities.

5. SUMMARY AND CONCLUSION

This study indicates that the study area was rich in its medicinal plant composition and the associated indigenous knowledge. A total of 185 medicinal plant species distributed among 148 genera and 72 families were collected and documented from the study area as traditional medicine for the treatment of 89 diseases of humans and live stocks.). Of these185 medicinal plant species, 96 plant species (51.9%) were reported as remedies for human, 8 plant species (4.32%) as live- stock medicine, and 81 plant species (43.78%) for both human and live- stock remedies. Family Asteraceae and Lamiaceae each contributed the largest species (15 species), followed by Fabaceae with 14 species and then Solanaceae by 9 species.

High percentage of medicinal plants were obtained from wild (58.92%), followed by domestic by (26.49%) and both wild and domestic by (14.59%). Most of them were (41.08%) herbs, followed by shrubs (30.27%), trees (18.38%), climber (8.65%) and epiphyte (1.62%) species.

Leaves were found to be the most frequently used plant part followed by root and seed. The three top popular methods of preparation of traditional medicine remedies were crushing 39.7%, pounding 22.1% and crushing and boiling 7.81 %. Fresh form of remedies preparation was ranked first (80.27%), dried use ranked second (11.76%) and both fresh and dried ranked last (7.97%). Majority of preparation were drawn from single plant species which account 554 (74.56%) while the remaining which account 189 (25.44%) were from mixture of different plant species with different additive substance like water, honey, butter, milk, coffee, oil, sugar, *hojja, ashere-buna,* and food. Oral application was the the most commonly used route of application by 473 (63.66%) followed dermal by 206 (25.73%).

The highest fidelity level index (100%) was for two species; *Phytolacca dodecandra* and *Alysicarpus rugosus* for the treatment of gonorrhea and cough, respectively. In preference ranking *Carica papaya* and *Ocimum basilicum* were ranked first and second, respectively among 10 selected Medicinal Plants to treat typhoid; and also for blackleg treatment *Senna didymobotra* and *Allium sativum* were the first and second most preferred medicinal species among nine reported medicinal plants in the study area. The highest ICF value was observed

for Skin and subcutaneous tissue related diseases, and Circulatory system related diseases (ICF > 0.80).

The study indicates that both anthropogenic and natural treating factors were highly affected to loss and decreased different medicinal plant species. The main factors to decline and loss of medicinal plants in the study area were agricultural expansion, expansion of invasive species (especially *Lantana camara*, and *Parthenium hysterophorus)*, drought, over grazing of domestic and wild animals, need for fuel, disease and pest, need for construction and building for different purpose, timber production, household and agricultural tools, land fragment, overharvesting and destructive harvesting, urbanization, and lack of awareness. Among these informants ranked, the three most threatening factors were agricultural expansion, expansion of invasive species and drought respectively. This finding confirmed that all the above factors are happening due to population growth, deforestation, environmental change, and lack of awareness. Therefore, the study confirms that the threat and loss of medicinal plants of the study area was beyond the natural rate of regeneration. Indigenous knowledge transfer has been influenced by its secrecy, oral based knowledge transfer to close relatives, unwillingness of young generations, lack of awareness, expansion of modern education and health system. Although these were among the factors that could hinder the indigenous knowledge transfer in the study area, it was found that the knowledge was not shrinking and vanishing in the study area.

6. RECOMONDETION

Based on the result of the study, the following recommendations were fore ward:-

- The district administration, agricultural experts, DAs, and NGOs have to support and work together with farmers to facilitate the task of cultivation and to ensure the sustainability of the medicinal plants.
- The district agricultural experts and DAs should involve in identifying threatened medicinal plants and encouraging the local people to cultivate medicinal plants in their home gardens, farmland and live fence.
- The traditional healers and other members of the community should take the initiative to cultivate or grow medicinal plants in their home gardens, on farmlands, and live-fences.
- The district health office and health experts should give training to the practitioners on the best way to collect, document, use, and store and conserve the medicinal plants. This training helps practitioners to widen the already existing knowledge of their own and helps to improve the quality of the herbal drugs.
- The district health office, health professionals and local educated community should encourage and respect the contribution of traditional medicinal system in the process of ensuring that all local community to have access to preventive, curative and rehabilitative health services.
- The district administration must work on awareness creations on traditional healers to transfer their knowledge to the next generation without secrecy in order to minimize the loss of indigenous knowledge in the district.
- The district administration should encourage the establishment of traditional healers Associations by providing supports like land; fund and assistances for cultivations of medicinal plants in the district would helps to conserve medicinal plants.
- The district administration should support the activities of plantations of medicinal plants in degraded and degrading areas through forming youth association in the countryside to make them beneficial from the product of the plantations.

- The district administration, and the district agricultural and land management office needs to ensure sustainability of medicinal plants in the study area through expanding conservation awareness and efforts to the ground roots for effective community based conservation activities.
- The district administration, and the district agricultural and land management office needs to promoting both in-situ and ex-situ conservation; establishing community based parks, protecting areas, botanical garden, home garden in each kebeles.
- The local community should work incorporate with government and nongovernmental organization in order to ensure sustainable the medicinal plants and associated indigenous knowledge for future generation.
- Further researches especially to identify and isolate bioactive constituents of different medicinal plants that can be developed in modern medicines enabling to control various human and livestock diseases should be carried out in the future through giving recognition to the local health practitioners and their knowledge.
- The district agricultural and land management office should give attention to the most threatened and endangered medicinal plants in the study areas especially *Eugenia apicalata, Syzygium guineensevar, Ximenia americana, Kleinia longiflora, Pavonia hildebranditii, Lysimachia ruhmeriana, Tamarindus indica, Zizyphus spine, Citrus paradise, Silene macrosolen, Hagenia abyssinica, Citrus medica,* may be cultivated them in nurseries and distribute to the local people in order to grow in their home garden.
- The district agricultural and land management office need to promote large and small scale farming of medicinal plants and also give attention and conduct research to ward to alleviating some medicinal plants affected by invasive species and external parasite.

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8. APPENDIX

Appendix 1 List and background information about informants

№	Residence/ Kebele	Name of Informant	Sex	Age	Marital status	Educational status	Occupation	Religion	№ of disease cited	№ MPs cited	Other identity
1	Bate	Abdi Mohammed Yousuf	M	47	Married	Religious education	Farmer	Muslim	21	13	
2	Bate	Almazu Demisse	F	65	Married	Illiterate	Farmer	Christian	20	28	Traditional healer
3	Bate	Amare Asfaw Beshashe	M	75	Married	Illiterate	Pensioner	Christian	20	26	Traditional healer
4	Bate	Halima Abdella Ali	F	42	Single	Illiterate	Farmer	Muslim	24	16	
5	Bate	Hassen Mommed Yousuf	M	26	Married	Grade 7	Farmer	Muslim	21	8	
6	Bate	Hussen Nure Hasseno	M	25	Married	Illiterate	Farmer	Muslim	21	13	
7	Bate	Ibsa Hassen Abdulla	M	35	Married	Grade 3	Farmer	Muslim	25	13	
8	Bate	Ingda Asfaw Baysasse	M	70	Married	Illiterate	Pensioner	Christian	25	19	
9	Bate	Mekonnen Shimellis	M	36	Married	Grade 3	Farmer	Christian	29	23	Traditional healer
10	Bate	Mellion Tilahun Tegene	M	38	Married	Grade 2	Farmer	Christian	25	20	Traditional healer
11	Bate	Meriyem Usmail Abrahim	F	35	Divorced	Illiterate	Farmer	Muslim	21	18	Traditional healer
12	Bate	Mohammed Ahmed Gelmo	M	56	Married	Religious education	Farmer	Muslim	27	18	Traditional healer
13	Bate	Mohammed Aliyyi Mohammed	M	45	Married	Illiterate	Farmer	Muslim	22	14	

Appendix 1 Continued

14	Bate	Mommed Umere Weday	M	72	Married	Illiterate	Pensioner	Muslim	31	27	Traditional healer
15	Bate	Mommodo Yousuf Aliyyi	M	28	Married	Diploma	Teacher	Muslim	21	7	
16	Bate	Muluneh Kebede Mersha	M	32	Married	Grade 5	Farmer	Christian	22	9	
17	Bate	Sh/Abdella Adem	M	50	Married	Religious education	Religious father	Muslim	36	30	Traditional healer
18	Bate	Shimekit Bayu Mengesha	M	35	Married	Grade 3	Farmer	Christian	24	11	
19	Bate	Shimekit Tesheme Mokria	M	36	Married	Grade 4	Farmer	Muslim	25	4	
20	Bate	Wondiye Adal Mandefro	M	35	Married	Grade 5	Farmer	Christian	17	16	
21	Bate	Workineh Tilahun Masresha	M	30	Married	Grade 10	Farmer	Christian	27	12	
22	Bate	Yousuf Mohammed Hammed	M	30	Married	Illiterate	Farmer	Muslim	23	9	
23	Gebiba	Abdo Mussa	M	40	Married	Illiterate	Farmer	Muslim	10	7	
24	Gebiba	Abdulehab Hamide Kemal	M	46	Married	Read and write	Farmer	Muslim	23	14	
25	Gebiba	Abrahim Abbdella Hammed	M	60	Married	Illiterate	Farmer	Muslim	32	18	
26	Gebiba	Ahmed Adem Ali	M	48	Married	Illiterate	Farmer	Muslim	30	14	
27	Gebiba	Ahmed Mohammed Hassen	M	42	Married	Illiterate	Farmer	Muslim	25	18	Traditional healer
28	Gebiba	Ahmed Umer Dadi	M	60	Married	Read and write	Farmer	Muslim	31	23	Traditional healer
29	Gebiba	Aliyyi Mommed Abdela	M	36	Married	Illiterate	Farmer	Muslim	19	21	

Appendix 1 Continue

30	Gebiba	Aliyyi Mussa Abdurke	M	35	Married	Grade 3	Farmer	Muslim	23	22	Traditional healer
31	Gebiba	Aliyyi Zekeriya	M	40	Married	Illiterate	Farmer	Muslim	14	10	
32	Gebiba	Amina Hamda Shandu	F	48	Single	Illiterate	Farmer	Muslim	29	15	Traditional healer
33	Gebiba	Hasseno Aliyyi	M	47	Married	Illiterate	Farmer	Muslim	21	17	
34	Gebiba	Kelifa Reshid Ali	M	45	Married	Grade 2	Farmer	Muslim	26	19	Traditional healer
35	Gebiba	Kemal Hamid	M	45	Married	Illiterate	Farmer	Muslim	16	5	
36	Gebiba	Mmmed Abdella Umer	M	40	Married	Illiterate	Farmer	Muslim	14	22	
37	Gebiba	Mohammedo Aliyyi	M	35	Married	Grade 2	Farmer	Muslim	12	8	
38	Gebiba	Mommed Ahmed Abdela	M	56	Married	Religious education	Farmer	Muslim	38	23	Traditional healer
39	Gebiba	Mommed Ziyad Adem	M	59	Married	Illiterate	Farmer	Muslim	30	6	
40	Gebiba	Mumme Abdo	M	36	Married	Illiterate	Farmer	Muslim	11	11	
41	Gebiba	Mustefa Mohammed	M	38	Married	Illiterate	Farmer	Muslim	13	4	
42	Gebiba	Nasir Jemal	M	30	Married	Grade 9	Farmer	Muslim	19	14	
43	Gebiba	Sh/ Harun Mommed	M	33	Married	Religious education	Religious father	Muslim	26	19	Traditional healer
44	Gebiba	Sh/ Mohammed Mommed	M	48	Married	Religious education	Father of religion	Muslim	26	24	Traditional healer
45	Gebiba	Sh/ Nasir Aliyyi	M	55	Married	Religious education	Religious father	Muslim	35	28	Traditional healer
46	Gebiba	Taju Urrde Ture	M	40	Married	Illiterate	Farmer	Muslim	10	4	
47	Hake-bas	Abdella Mohammed Hassen	M	40	Married	Grade 1	Farmer	Muslim	21	24	Traditional healer

Appendix 1 Continued

48	Hake-bas	Abdella Usman Yousuf	M	52	Married	Read and write	Farmer	Muslim	18	25	Traditional healer
49	Hake-bas	Abdukerim Aliyyi	M	38	Married	Illiterate	Farmer	Muslim	7	13	
50	Hake-bas	Ahmed Nure	M	40	Married	Illiterate	Farmer	Muslim	12	12	
51	Hake-bas	Ahmed Nure Bubba	M	44	Married	Illiterate	Farmer	Muslim	9	10	
52	Hake-bas	Ahmedo Aliyyi Godora	M	40	Married	Illiterate	Farmer	Muslim	14	13	
53	Hake-bas	Aliyyi Ahmedu	M	56	Married	Illiterate	Farmer	Muslim	12	12	
54	Hake-bas	Awguchew Asefa	M	37	Married	Grade 6	Farmer	Christian	12	11	
55	Hake-bas	Halima Kedir Umer	F	40	Single	Illiterate	Farmer	Muslim	13	11	
56	Hake-bas	Hammed Aliyyi Gendobe	M	47	Married	Grade 2	Farmer	Muslim	16	14	
57	Hake-bas	Hammed Nure Guba	M	48	Married	Grade 4	Farmer	Muslim	21	17	Traditional healer
58	Hake-bas	Hasseno Mommed Yousuf	M	53	Married	Religious education	Farmer	Muslim	30	23	Traditional healer
59	Hake-bas	Hawwa Ushe Ture	F	35	Single	Illiterate	Farmer	Muslim	12	7	
60	Hake-bas	Hussen Hammed	M	30	Married	Illiterate	Farmer	Muslim	10	10	
61	Hake-bas	Mommed Abdella Umer	M	46	Married	Read and write	Farmer	Muslim	34	19	Traditional healer
62	Hake-bas	Mommed Ziyad Hammed	M	45	Married	Illiterate	Farmer	Muslim	34	23	Traditional healer

Appendix 1 Continued

63	Hake-bas	Mumme Abdo Abrahim	M	42	Married	Illiterate	Farmer	Muslim	10	11	
64	Hake-bas	Mumme Usman	M	25	Married	Grade 6	Farmer	Muslim	16	12	
65	Hake-bas	Mumme Usman	M	48	Married	Illiterate	Farmer	Muslim	15	16	
66	Hake-bas	Sh/ Hasseno Mussa	M	44	Married	Religious education	Full time practitioner	Muslim	25	32	Traditional healer
67	Hake-bas	Sh/Yusus	M	40	Married	Religious education	Full time Practitioner	Muslim	35	29	Traditional healer
68	Hake-bas	Usmano Abdurke Roba	M	64	Married	Religious education	Farmer	Muslim	23	18	Traditional healer
69	Hake-bas	Yousuf Abdella Godora	M	50	Married	Grade 2	Farmer	Muslim	17	9	
70	Hake-bas	Zeneba Tariku	M	22	Married	Grade 10	Farmer	Christian	11	8	
71	Obbi	Abdella Mohammad Usman	M	26	Married	Grade 8	Farmer	Muslim	24	16	
72	Obbi	Abdella Mommed Hassen	M	39	Married	Grade 5	Farmer	Muslim	25	13	
73	Obbi	Abduljebar Aliyyi Tuko	M	38	Married	Illiterate	Farmer	Muslim	20	19	
74	Obbi	Abinet Alemayehu	M	52	Married	Grade 6	Farmer	Christian	26	19	
75	Obbi	Abrahim Kamilo Said	M	30	Married	Illiterate	Farmer	Muslim	26	25	Traditional healer
76	Obbi	Alemu Assegid Mengistu	M	47	Married	Read and write	Farmer	Christian	27	19	Traditional healer
77	Obbi	Anbesaye Tefera Alemayehu	M	42	Married	Grade 6	Farmer	Christian	28	19	Traditional healer
78	Obbi	Dawid Abdo Usman	M	38	Married	Grade2	Farmer	Muslim	21	16	

Appendix 1 Continued

79	Obbi	Fikadu G/hanna	M	68	Married	Read and write	Farmer	Christian	26	28	Traditional healer
80	Obbi	Getachew Zebene	M	40	Married	Read and write	Farmer	Christian	26	14	
81	Obbi	Harun Usman Aliyyi	M	43	Married	Read and write	Farmer	Muslim	29	10	
82	Obbi	Hashimo Abdella Gelmo	M	48	Married	Illiterate	Farmer	Muslim	20	12	
83	Obbi	Husseno Mohammed Dima	M	38	Married	Grade 4	Farmer	Muslim	27	14	
84	Obbi	Jemal Sufiyan Kebira	M	52	Married	Read and write	Farmer	Muslim	27	27	Traditional healer
85	Obbi	Kemal Doyyo Andu	M	75	Married	Illiterate	Pensioner	Muslim	23	11	
86	Obbi	Mebrate Tatek Dalle	M	59	Married	Read and write	Farmer	Christian	25	23	Traditional healer
87	Obbi	Mersha Fetene W/hanna	M	52	Married	Read and write	Farmer	Christian	23	16	
88	Obbi	Samuel suyoum Abeba	M	42	Married	Read and write	Farmer	Christian	20	22	
89	Obbi	Shemshedin Usman Weday	M	43	Married	Grade 2	Farmer	Muslim	24	17	
90	Obbi	Tatek Mogosse Asfaw	M	30	Married	Diploma	Teacher	Christian	21	15	
91	Obbi	Weletengus Tsegaye	F	58	Single	Illiterate	Farmer	Christian	18	16	
92	Obbi	Zakir Mommed Ali	M	38	Married	Grade 3	Farmer	Muslim	28	21	Traditional healer
93	Obbi	Ziyad Usman Abduurke	M	30	Married	Read and write	Farmer	Muslim	24	21	
94	Sebale	Abdella Usman	M	52	Married	Read and write	Farmer	Muslim	18	28	Traditional healer

Appendix 1 Continued

95	Sebale	Abrahim Aliyyi Kebira	M	40	Married	Grade 8	Farmer	Muslim	13	8	
96	Sebale	Abrahim Kebira Gelmo	M	58	Married	Illiterate	Farmer	Muslim	22	19	
97	Sebale	Ahmed Adem Ilmi	M	28	Married	Grade 5	Farmer	Muslim	16	13	
98	Sebale	Amme Mumme Abdo	M	72	Married	Illiterate	Pensioner	Muslim	22	32	Traditional healer
99	Sebale	Dejen Shimellis Mokria	M	45	Married	Grade 9	Farmer	Christian	29	27	Traditional healer
100	Sebale	Fatuma Abdella Habibe	F	41	Married	Illiterate	House wife	Muslim	20	19	Traditional healer
101	Sebale	Fikadu Suyume Hirko	M	62	Married	Religious education	Farmer	Christian	15	20	
102	Sebale	Gusu Ahmed Hussen	M	30	Married	Grade 4	Farmer	Muslim	19	9	
103	Sebale	Jemal Mohammed Ahmed	M	38	Married	Read and write	Farmer	Muslim	12	12	
104	Sebale	Juhar Aiyyi Wello	M	45	Married	Read and write	Farmer	Muslim	15	10	
105	Sebale	Ketema Tegene Mekonnon	M	55	Married	Read and write	Farmer	Christian	17	9	
106	Sebale	Mohammed Abrahim Tuki	M	58	Married	Illiterate	Farmer	Muslim	28	11	
107	Sebale	Mohammed Amin Abdella	M	29	Married	Grade 7	Farmer	Muslim	15	13	
108	Sebale	Mohammed Yonis Dage	M	65	Married	Illiterate	Farmer	Muslim	16	21	
109	Sebale	Mussa Mohammed Ali	M	45	Married	Illiterate	Farmer	Muslim	21	11	
110	Sebale	Usmail Abdella Hassen	M	34	Married	Grade 3	Farmer	Muslim	22	18	

Appendix 1 Continued

111	Sebale	Wondessen Woldeyes	M	55	Married	Grade2	Farmer	Christian	20	22	
112	Sebale	Woynishet Gebre Jenbere	F	43	Married	Illiterate	House wife	Christian	25	25	Traditional healer
113	Sebale	Yusufe Mammeye Luga	M	50	Married	Read and write	Farmer	Muslim	28	29	Traditional healer
114	Sebale	Zeyini Mohammed Adem	M	38	Married	Grade 6	Farmer	Muslim	27	16	
115	Surri	Abbas Usman Abubaker	M	65	Married	Read and write	Farmer	Muslim	18	16	Traditional healer
116	Surri	Abrahim Mumme Yousuf	M	64	Married	Read and write	Farmer	Muslim	20	12	
117	Surri	Adem Ebro Seid	M	30	Married	Read and write	Farmer	Muslim	18	14	
118	Surri	Adem ebro Seid	M	28	Married	Read and write	Farmer	Muslim	21	7	
119	Surri	Ahmed Yuyya Darimu	M	40	Married	Read and write	Farmer	Muslim	26	9	
120	Surri	Ahmedo Mammude Ali	M	27	Married	Grade3	Farmer	Muslim	18	12	
121	Surri	Alishu Mussa Shunna	M	55	Married	Illiterate	Farmer	Muslim	20	18	
122	Surri	Aliya Mohammed Yuyya	F	50	Single	Illiterate	Farmer	Muslim	21	8	
123	Surri	Aliyyi Usmano Dadi	M	50	Married	Read and write	Farmer	Muslim	23	27	Traditional healer
124	Surri	Asha Hassen Seid	F	40	Single	Grade 4	Merchant	Muslim	26	15	
125	Surri	Asha Hassene Mohammed	F	48	Single	Read and write	Farmer	Muslim	20	22	Traditional healer

Appendix 1 Continued

126	Surri	Gussa Mohammed	M	35	Married	Grade 8	Farmer	Muslim	22	15	
127	Surri	Hawwa Mussa Sheko	F	55	Single	Illiterate	Farmer	Muslim	22	8	
128	Surri	Issa Abdurehman Kedir	M	23	Married	Grade 5	Farmer	Muslim	19	6	
129	Surri	Jundi Ahmed Mohammed	M	32	Married	Illiterate	Farmer	Muslim	19	22	Traditional healer
130	Surri	Ketema Welensu Junfu	M	79	Married	Illiterate	Pensioner	Christian	22	26	Traditional healer
131	Surri	Kimiya Ahmed Hasseno	F	32	Single	Illiterate	Farmer	Muslim	18	11	
132	Surri	Mohammed Adem Mussa	M	40	Married	Illiterate	Farmer	Muslim	23	26	Traditional healer
133	Surri	Mohammed Hasseno Dima	M	46	Married	Grade 3	Farmer	Muslim	27	33	Traditional healer
134	Surri	Mommed Ahmed Tule	M	58	Married	Illiterate	Farmer	Muslim	27	16	
135	Surri	Nejjash Muhammud Roba	M	75	Married	Illiterate	Pensioner	Muslim	20	10	
136	Surri	Sh/Misba Xahiro	M	53	Married	Religious education	Religious father	Muslim	21	22	Traditional healer
137	Surri	Yassin Godoro Taro	M	32	Married	Grade 7	Farmer	Muslim	28	17	

Appendix 2 Informants consensus factors of human health problems

№	Type of disease treated	Local name of disease	№ of use citation	№ of medicinal plant used	ICF
1.	**Genitourinary and venereal diseases**		**224**	**78**	0.66
1.1	Syphilis	Fanxoo	16	3	0.87
1.2	Gonorrhea	Cophxoo	80	**25**	0.70
1.3	Kidney problem	Dhibee kale	50	15	0.71
1.4	Urine retention	Fincaan diduu	53	20	0.64
1.5	Impotency	Feedhii saalaa dhabuu	25	15	0.42
2	**Gastrointestinal related diseases**		**361**	**120**	0.67
2.1	Bloating	Bokooka	27	17	0.39
2.2	Gastritis	Dhibee garaachaa	59	12	0.81
2.3	Constipation	Gogiina garaa	10	3	0.78
2.4	Vomiting	Qoqqifata	18	8	0.59
2.5	Nausea	Macheysaa	11	4	0.7
2.6	Heart burning	Gubduu	12	4	0.73
2.7	Dyspepsia (Stomachache)	Nyaanni daakamuu diduu	22	14	0.38
2.8	Uvula infection	Huba	25	14	0.46
2.9	Toothache	Dhibee ilkaanii	43	11	0.76
2.1	Jaundice	Dhibee shimbirroo	21	12	0.45
2.11	Cholera		1	1	###
2.12	Typhoid	Gowwaa ajjees	101	17	0.84
2.13	Poison detoxification		11	3	0.8
3	**Intestinal parasite and worms**		**270**	**83**	0.7
3.1	Tape worm	Raammoo minnii	38	4	0.92
3.2	Ascarid	Raammoo maagaa	32	2	0.97
3.3	Giardia	Demsiisa dhigaa	20	4	0.84
3.4	Amoeba	Ameebaa	46	9	0.82
3.5	Diarrhea	Garaa demsiisaa	92	31	0.67
3.6	Other intestinal parasite	Maxxantuu garaa	42	33	0.22

Appendix 2 Continued

4.	**Skin and subcutaneous tissue related diseases**		**234**	**46**	0.81
4.1	Ring worm	Roobii	37	7	0.83
4.2	Fungal skin infection	Baariilee	45	11	0.77
4.3	Dandruff	Fooroofoor	46	5	0.91
4.4	Eczema	Chifee	22	8	0.67
4.5	Skin warts	Kormammuu	26	5	0.84
4.6	Skin burn	Gubachu googaa	10	4	0.67
4.7	Boil	Dhullaa	24	1	1
4.8	Baaftaa	Baaftaa	8	2	0.86
4.9	Scabies	Cittoo	16	**3**	0.87
5.	**Sensorial related disease**		**54**	**18**	0.68
5.1	Ear disease	Dhibee gurraa	24	11	0.57
5.2	Eye disease	Dhibee ijaa	23	6	0.77
5.3	Nose disease	Dhibee funnyaanii	7	1	1
6	**Nervous system related diseases**		**88**	**28**	0.69
6.1	Paralysis (Nerve problem)	Faaliis(Faaliij)	46	17	0.644
6.2	Epilepsy	Gaggaba	14	2	0.92
6.3	Back pain	Dhibee duydaa	12	8	0.36
6.4	Mental problem	Rakkoo sammuu	16	1	1
7.	**Respiratory and throat infection**		**229**	**64**	0.72
7.1	Cough	Qufaa(Qakkee)	72	16	0.79
7.2	Common cold	Dunfafa	80	16	0.81
7.3	Asthma	Xiixxuu	30	7	0.79
7.4	Tuberculosis	Dhibee sombaa	36	5	0.89
7.5	Tonsillitis	Waan laagaa	32	15	0.55
7.6	Hiccups	Irqiffoo	8	3	0.71
7.7	Throat infection	Dhukkubbii qoonqqoo	6	2	0.8
8	**Circulatory system related diseases**		**156**	**32**	0.8

Appendix 2 Continued

8.1	Heart problem	Dhibee onnee	35	12	0.68
8.2	Hypertension	Dhibbaa dhigaa	15	7	0.57
8.3	Nasal bleeding	Funuuna	27	2	0.96
8.4	**Skin cut bleeding**	Akka malee dhigu	31	**7**	0.8
8.5	Malaria	Busee	48	4	0.94
9.	**Gynecological and obstetrics disorder related diseases**		**75**	**20**	0.74
9.1	Dystopia	Cimimmun dherachuu	14	2	0.92
9.2	Placental retention	Hobbaattin turuu	18	7	0.65
9.3	Abortion	Allaattin dhahuu	13	3	0.83
9.4	Uterus problem	Bu'aa	22	7	0.71
9.5	Excessive bleeding of menstruation	Laguun akka malee yaa'uu	8	1	1
10.	**Endocrine system related diseases**		**39**	**13**	0.68
10.1	Diabetes	Dhibee sukaraa	27	5	0.85
10.2	Insufficient milk supply	Annan gahaa keennuu dhabuu	12	8	0.36
11.	**Malnutrition and deficiency diseases**		**44**	**5**	0.91
11.1	Anemia	Maraammartoo	22	1	1
11.2	Gum bleeding	Dhiguu rigaanii	12	3	0.818
11.3	General body swilling	Furfura qaamaa	10	1	1
12.	**Headache ,Fever and Febrile illness**		**130**	**37**	0.72
12.1	Headache	Bowwoo mataa	60	13	0.8
12.2	Fever	Layidaa	22	4	0.86
12.3	Febrile illness	Michii	48	20	0.6
13.	**Skeletal system related problems**		**19**	**3**	0.89
13.1	Bone fracture	Cabinsa lafee	6	1	1
13.2	Rigidity joints and ligaments	Morgaa fi mitikaan jabaachuu	13	2	0.92
14	**Wound and swilling body part related diseases**		**287**	**106**	0.63

Appendix 2 Continued

14.1	Swollen body with oozing pus	Wiliistii		21	12	0.45
14.2	Swilling body part	Tufaa		61	25	0.6
14.3	Bone cancer	Goflaa		31	14	0.57
14.4	Breast cancer	Dhibee harmaa		41	8	0.83
14.5	Gland TB	Neqarsaa mormaa		8	2	0.86
14.6	Hemorrhoid	Buroo (Kintaarootii)		45	11	0.77
14.7	Wound	Madaa		45	22	0.52
14.8	Lymph node swilling	Xannachii it'uu		17	7	0.63
14.9	Tumor	Keledoo		18	5	0.77
15	**Bite and external parasite related infection**			**120**	**53**	0.56
15.1	Snake poison	Summii bofaa		30	15	0.52
15.2	Spider poison	Summii aroo		32	10	0.71
15.3	Worm poison	Summii raammoo		10	2	0.89
15.4	Rabies	Dhukkuba saree		17	9	0.5
15.7	Other external parasite (Louse, Flea, Tick, bed bug)	Maxxantuu qaama aalaa		31	17	0.47
	TOTAL		81	2984	706	0.76

Appendix 3 Informants consensus factors of livestock health problem

№	Type of disease	Local name of disease	№ use citation	№ of species used	ICF
1	**Livestock infectious diseases**		308	62	0.80
1.1	Black leg	Abbaa goorbaa	66	12	0.83
1.2	Pasturolosis	Goroora loonii	30	1	1
1.3	Anthrax	Abbaa sangaa	34	6	0.85
1.4	Mastitis	Jiigoo	20	9	0.58
1.5	Rabies	Dhukkuba saree	22	7	0.71
1.6	Diarrhea	Garaa kaassaa/Albaatii	63	15	0.77
1.7	Body swilling (Actinobacillosis)	Maashaa	16	2	0.93
1.8	Intestinal parasite	Maxxantuu garaa	57	10	0.84
2	**Livestock non infectious disease**		311	105	0.67
2.1	Grain over load	Nyaannii daakamuu diiduu	21	2	0.95
2.2	Bloating	Bokooka loonii	48	15	0.70
2.3	Urine retention	Fincaan diiduu	33	15	0.56
2.4	Febrile illness	Michii	22	5	0.81
2.5	Leech	Dhulaan dhula	12	4	0.73
2.6	External parasite (Tick, spider, poison)	Maxxantuu qaama alaa	53	11	0.81
2.7	Wound and hyena bite	Madaa fi cininsa waraabeessaa	22	7	0.71
2.8	Snake poison	Summii boofaa	16	10	0.4
2.9	Abortion	Rimaa darbuu	7	3	0.67
2.10	Dytocia	Cimimmuun turuu	19	10	0.5
2.11	Placental retention	Dil’uun turuu	14	2	0.92
2.12	Uterus problem	Rakkoo gadaameessaa	14	3	0.85
2.13	Insufficient breast milk supply	Harma googuu	18	15	0.18
2.14	Bone fracture	Laffee cabuu	12	3	0.82
	TOTAL	22	619	167	0.73

Appendix 4 Checklist of semi-structured interview question for collecting ethnobotanical data

1. General information

Name of respondent----------Sex: M----- F---- Age----------

Kebele----------Ethnicity---------- Occupation---------- Educational level-----

Marital status---------- Religion---------- For how long have you lived in the area? ----------Name of interviewer---------- Date of interview----------

I. Ethnobotanical Data

1. What are the most common diseases of humans in your local area or kebele?

2. What are the most common diseases of live-stock in your local area or kebele?

3. What are the major human and live-stock diseases in your local area or kebele?

4. How do you diagnose each human/live-stocks disease/health problem?

5. List plants species used to treat a given diseases in your area or kebele?

5.1. Plants used to treat human diseases

Keys: Part(S) used refers (Root, Bark, Fruit, Leave, Stem, Seed, Flower, Latex, Bulb, Rhizome, Small twigs with leaves, and Whole parts); Habit (Herb, Shrub, Tree, Climber, Ephite); Habitat (Wild, Cultivated or both); Route of administration (Oral, Anal, Nasal, Optical, Ear, Dermal); Form used (Fresh, Dried, Both Fresh and Dried); Source (Home garden, Live fence, Forest, Agricultural field, Grazing land, Road side, River side); Availability (Common, Rare, Sparse); treat of medicinal plants (agricultural land expansion, urbanization, over-grazing, construction and building, agricultural and house hold tools, need for fuel, drought, disease and pest outbreak, medicinal harvesting, expansion of invasive species, bush fire, timber production, land fragment).

Local name of plant	Habit	Habitat	Source	Availability	Disease Treated	Part used	Form Used	Ingredient added	Preparation	Application	Dosage	Route of Administration	Antidotes	Side effect	Other use of plant	Treat of Plant	Collection number

5.2. Plants used to treat animal diseases

Local name of the plants	Habit	Habitat	Source	Availability	Disease Treated	Part Used	Form Used	Ingredient added	Preparation	Application	Dosage	Route of Administration	Antidotes	Side effect	Other use of plants	Collection number

5.3. Plants used to treat both human and live stock diseases

Local name of the plants	Habit	Habitat	Source	Availability	Disease Treated	Part Used	Form Used	Ingredient added	Preparation	Application	Dosage	Route of Administration	Antidotes	Side effect	Other use of plants	Collection number

6. Which group of the community mostly uses the traditional medicine? Why?
7. What is the status of using traditional medicinal plants in the moment in your local area or kebele?
8. Does the dose differ among men, women, children, elder and condition like pregnancy?
9. What solutions people use to the side effects of the traditional medicinal plants?
10. Are there any beliefs/restrictions/taboos linked with utilization of medicinal plants in your local area or kebele? (Age, method, storage, time of collection, time of administration, condition like pregnancy)
11. How does the knowledge of traditional medicinal plants transfer from elder/healer to young generation? Are elders/healers willing to convey their indigenous knowledge of traditional medicinal plants? If you say not: what is the reason behind this?
12. Are there any interference modernizations with traditional medicine application and use? If it has impacts explain it?
13. Are medicinal plants marketable?
14. Are the medicinal plants easily accessible? If not, why?
15. Availability of medicinal plants as compared to the past: More---------- Less--------

If you say less, what is the reasons behind this condition.

16. List the most top ten treating factors that affect medicinal plant species in your local area or kebele. Then ranking each list in the order from the most to least?
17. How you rate, the level of distractive effects of each treating factors? The levels of distractive effects of each treating factors 1 and 5 score were assigned where one is for the least and five is the most distractive.

No	Treating factors	Ranking order					Example of medicinal plants treating by particular factors
		1	2	3	4	5	

18. Which medicinal plants commonly threatened in your local area or kebele? Is/Are there any medicinal plant (S) extinct from your local area or kebele? If there is/are; list the plant with its/their treating/extinct factor (S).
19. How do your local people manage and conserve these medicinal plant species through their traditional indigenous knowledge?
20. Is there any effort made to conserve the medicinal plants in your local area or kebele?
22. If you have any other additional information or comments

========== *THANK YOU!!!……*=======

Appendix 5 Distribution of collected medicinal plant species in different family

№	Name of family	Number of species	Percentage
1	Asteraceae	15	8.11
2	Lamiaceae	15	8.11
3	Fabaceae	14	7.57
4	Solanaceae	9	4.87
5	Cucurbitaceae	6	3.24
6	Euphorbiaceae	6	3.24
7	Poaceae	6	3.24
8	Barassicaceae	5	2.70
9	Rutaceae	5	2.70
10	Myrtaceae	4	2.16
11	Anacardiaceae	4	2.16
12	Malavaceae	4	2.16
13	Mensispermaceae	4	2.16
14	Rosaceae	4	2.16
15	Others	84	45.41
	TOTAL	185	100

Appendix figure 1 Wide use of tradtional medicne in the study area