# DEBRE BERHAN UNIVERSITY

## COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES

# DEPARTMENT OF BIOLOGY

## ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS IN MORETNAJIRU DISTRIC, NORTH SHEWA, AMHARA REGIONAL STATE ,ETHIOPIA.

MSc THESIS

BY:

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**DEPARTMENT OF BIOLOGY**

**APPROVAL SHEET I**

This is to certify that the thesis entitled **"Ethnobotanical study of medicinal plants in Moretnajiru district"** submitted in partial fulfillment of requirements of Degree of masrer in Biology**,** College of computational and Narural science **,** Debre Berhan University and is a faithful record of original research work carried out by Amsal Dejene Gizaw under my guidance and supervision. No part of this thesis has been submitted for any other degree or diploma.

It is further assures that the various sources used during the course of investigation has been duly acknowledged. Therefore, I recommend it be accepted as fulfilling the thesis requirements.

Abiyou Tilahun (Ass Professor )

_____          _____          _____

Major Advisor                              Signature                      date

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**APPROVAL SHEET II**

We, the undersigned members of the board of the examiners of the final open defense by Amsal Dejene Gizaw have read and evaluated her thesis entitled "Ethnobotanical study of Medicinal  plant in Moretna jiru District and examined the candidate performance. This is, therefore, to certify that the thesis has been accepted in partial fulfilment of the requirements for the degree of Master of Science in Biology.

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Major Advisor                                     Signature                            Date


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Name of External examiner            Signature                            Date


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Name of Internal examiner             Signature                            Date


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Name of Department Chairman       Signature                            Date

## Acknowledgements

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# LIST OF ABRIVIATIONS

MPs - medicinal plants

WHO - world health organization

FAO - food and agricultural organization

UNEP - united nation environment program

MJWGCO - moretna jiru wereda government communication office

MJWLEPO - moretna jiru wereda land and environmental protection office

MJWARDO - moretna jiru wereda agricultural and rural development

CBD - Conservation of biodiversity

NMSA-National metrological service  agency

*ABSTRACT*

*Ethnobotany is the study of interaction between people and medicinal plants.This research was done to document the medicinal plants and associated indigenous knowledge of the local people in Moretna jiru district of Amhara Region, Ethiopia.Ethnobotanical data were collected by preparing semistructured interview.Guided field work was performed.Informant consensuses factors , fidelity level, preference ranking, direct matrix ranksing and paired comparision were applied. A total of 90 medicinal plants belonging to 87 genera and 49 families were collected to treat human ailments.The majority of medicinal plants were collected from the wild habitat. Data were analyzed using basic analytical tools and descriptive statistics. The family Lamiaceae occupied the first rank with eight species followed by Fabaceae with seven species,Asteraceae with six species and Solanaceae with four species.The most frequently used plant parts were leaves (49.77%)followed by seeds (17.32%) and roots (15.02%).Freshly harvested plant parts (69.06%) were mostly used for remedy preparation compared to dried forms (29.28%).Crushing( 47.71%) and powdering (19.3%) were the most widely used methods of remedy preparation.Oral routes of administration was the most common used routes of administration which accounts 49.01%,followed by dermal routes of administration (24.5%) in the study area. Allium sativum is the most commonly used medicinal plants to treat different human ailments,which cited by 65(86.66%) informants.Informant consensus factor analysis indicates that fibril illness ranked first was treated by 11 medicinal plants.Fidelity level analysis indicates that Linum ustitatissimum ranked first and the most effective medicinal plants to treat herps zoster.Preference ranking analysis indicates that Clerodendrum myricoides ranked first to treat rabies.Paired comparison analysis also indicates that Allium sativum ranked first to treat wound.There were multi purpose and marketed medicinal plants in the study area.The principal threatening factors for medicinal plants were farm land expansion(83.3%),followed by fire wood(74.6%) and charcol production(72%).*

**Keywords: Ailment, Ethnobotany, Medicinal plants,Moretna jiru,indigenous knowledge**

# 1. INTRODUCTION

## 1.1. Background of the study

Ethno botany is the study of relation ship between people and medicinal plants (Sheng-ji, 2001; Dubey and Sao, 2018).It has an important role to show the relation ship among biodiversity, social and traditional system (Bekele and ReddyPR, 2015).

Medicinal plants are plants that possesses some remedial activities for healthy of human or animal body (Ahmad et al., 2009ab; Ahmad et al., 2010; Ullah et al., 2013).They are useful for medication and providing ecological, economic , cultural ,provision and regulation services. Plants have been rich sources of medicines during ancient time (Russel et al, 2006). About 64% of the total world population is dependant on traditional medicine to fight disease of amimals and plants (Phondani et al, 2016). According to the World Health Organization (WHO) nearly 3.5 billion people in developing countries including Ethiopia use medicinal plants regularly for ailments treatment (WHO, 2003).Ethiopia has many and different plant species(Dawit ,2001).Medicinal plants are highly needed in rural area of  Ethiopia. Because of the believe of communities on the high abilities of medicinal plants to treat different ailments ,low cost of medicinal plants, lack of health center around their localities,shortage of antibiotics and drug in healthcenter(Ensermu et al,1992). But the sustainable utilization and documentation of scientific name,use,ecology and conservation of medicinal plants particularly in Ethiopia is very poor and it has not give give attention as much as possible .Therefore traditional medication faced with problem due to lack of quality control and loss of taxa of medicinal plants.(Zemede ,1998).The main causes for the loss and decline of diversity of plants in Ethiopia are human-made factors such as Habitat destructions and deforestation for timber production, agricultural expansion ,charcoal production, roadconstructi on, lack of awareness and enforcement (Admasu ,et al .2019);Ensermu ,et al ,(1992) ; Edward(2001);(Demissie ,1998) .In addition to these the medicinal plant  are being loss because of lack of conservation and sustainable utilization.The oral transmission of traditional knowledge causes declining and eradication of indigenous knowledge about traditional medication .Therefore investigating and documenting of the medicinal plants along with their useful medicinal parts, use and ecology in Ethiopia are necessary for better conservation and sustainable utilization.

**1.2. Statement of the problem**

The use of medicinal plant in indigenous people are widely distributed through out the country.Indigenous people prefer traditional medicine than modern medicine.Because traditional medicines are less expensive and they applied singularly or in combination to treat and prevent illness (WHO,2008) But the use and type of medicinal plants in Moretna Jiru wereda are declining through time like other part of Ethiopia and there is rapid loss of the components of ecosystem.These problem are sensitive and requires urgent conservation and management practiceThe unsustainable utilization of the resource may leads to extniction of medicinal plants that used to treat human ailments .In local communities still there is no Forest that are protected by the guards.Local people collect fire wood and construction materials in un sustainable manner (Admasu ,et al.2019).

**1.2.1. Initiative reason for the study**

The major initiative reason of this study was described as follows.

1. B**ased on traditional medication and component of ecosystem**

According to Yimer ,(2012), most people those live in rural area and almost half and above of the urban people are dependent on traditional herbalists.This traditional knowledge was depends on society's custom,belief,tradition and input of ecosystem.It also has strong relation ship with natural resource and biodiversity.Traditional herbalists suffered to abig problem to get enough medicinal plants.Medicinal plants are part of biodiversity and they being disappearing time to time by anthropogenic activities and natural disasters (Ensermu ,et al.,1992).This change and loss of component of ecosystem has direct effect on traditional medicine.This means difference in component of ecosystem causes diseases and difference in input of medicinal plants place to place.Based on the components of ecosystem (topography and weather condition in this case) and location of traditional herbalists the three selected kebele of moretna jiru district were identified during the primary survey.

2. **Based on primary survey of researcher and past experience**

In 2006 E.c.I was conducted research on the title "medicinal plants and spices that sold around Debrebirhan town " to full fill bachelor's degree program.This helps to me to know about the dependency of human on medicinal plants.On the study district traditional herbalists were gave medicine for patients by physical examination like by observing physical appearance,speakings,feeling ,face ,urine and by touching with their hands to different body

parts like forehead,neck,hand and chest.When they do give plant's medicine properly by identify the type of disease,method of diagnosis and proper amount of medicine they considered as remedies for ailments but when they do not give medicine properly in the case of dosage and without identify the type of disease and method of diagnosis they might be the cause for illness even death.Therefore to know and record about the methods of diagnosis and type of diseases this title of the study was selected.

### 3. Based on researcher's life habit from indigenous people

In my locality indigenous people perform different remedies activities when member of societies affected by different type of diseases.For instance when some one affected by typhoid fever,fibril illness,tapeworm,ascaris and intestinal wound indigenous people gave for patients mixture of *lepidium sativum and Allium sativum* with injera, juice of *Ocimum lamifolium* with coffee or tea, *Hagenia abyssinica,ju*ce of *Leontis ocymifolia* and boiled *Linum ustitaissimum* respectively.When child's *uvula* affected they were put the mixture of *Citrus aurantifolia* juce and charcoal's ash on the top of head and they cut the seven leaves of c*itrus aurantifolia a*nd *Rhamnus prinoides* by spritual name of child and they also gave the juice of *verbena officinalis* for patients orally.If some one's skin is affected by toxin of spider,scorpion and snake they were add the chewed *Lens culinaris,Asparagus africanus* and *Carissa spinarum r*espectively on the affected part.

## 1.3. Research Questions

The study tried to give answer for the following research questions:

- o What are the medicinal plants used to treat different human diseases?

- o Which parts of plants is used for traditional medicine?

- o How traditional plant medicines are prepared and administered?

- o What are the threatening factors and conservation practice of medicinal plants and associated indigenous plants.

## 1.4. Objectives

### 1.4.1. General objective

The main objective of the study was to document the traditional medicinal plants with the associated indigenous knowledge used for the treatment of various human ailments in and around moretna jiru wereda.

### 1.4.2. Specific objectives

The specific objectives of the study were to

- Record medicinal plants used to treat human diseases;

- Identify the plant parts that used to make medicine;

- Investigate preparation methods of medicinal plants and its application;

- Determine the threatening factors of medicinal plants and;

- Describe traditional conservation practices of medicinal plants.

## 1.5. Significance of the study

The aim of this study was to focus on medicinal plants used by indigenous people of moretna jiru woreda that used to treat human aliments traditionally .It identifies part of plants that used for medicine, method of preparation for medicine, the main threating factor of medicinal plants and it describe conservation practice for medicinal plants.This research also act as reference for young generation who are interested to conduct a research on medicinal plants and associated knowledge .

## 1.6. Scope of the Study

The study focuses on the traditional medicinal plants used to treat human ailments. It focused to identify and document medicinal plants in and around Moretna jiru woreda. The study was conducted to study of plant medicine preparation by local people to used their indigenous knowledge which have strong relationship to the plant communities in and around moretna jiru woreda.It limit its scope in regarding to title of the study ,knowledge and interest of respondents.In regard to title that studied in selected kebele of moretna jiru woreda touch about traditional medicinal plants ,part of plants that used to treat human ailment,preparation and useage of traditional  medicine .It select three kebele based on location of traditional herbalists ,availablity of medicinal plants and suitability of the area for the study.

# 2. REVIEW LITERATURE

## 2.1. Historical Development of medicinal plants

Medicinal plants have been discovered and used in traditional medicine practices since prehistoric times.They produce many of chemical compounds to fight against insects, fungi, diseases and herbivorous mammals.This implies that plants are most essential to human wellbeing specially in supplying basic needs for life. Thus plants have been the main wealth of human society .Man depends on plants in many aspects including treatment of diseases in their local place (Yimer, 2012).According to Haile , (2005) Ethiopian traditional medicinal system is one part of the African traditional medical system. The traditional living habit of Ethiopian people were characterized  by wide spread use of traditional medicinal plants with various levels of sophistic within the indigenous remedies  activities.Many phytochemicals with their biological activity have been identified. However, since a single plant contains many phytochemicals the phytochemical content and pharmacological activities of many plants having remained unidentified by scientific research. The bark of willow trees contains salicylic acid, the active metabolite of aspirin, and has been used for millennia to relieve pain and reduce fever (Thulin, 2004). The ancient historical records of herbs are found from the Sumerian civilisation where many medicinal plants including opium are listed on clay tablets, c. 3000 BC. The Ebers Papyrus from ancient Egypt, c. 1550 BC describes over 850 plant medicines.Drug researchers usually use of ethnobotany to find out  pharmacologically active substances and this activities has yielded hundreds of useful and common drugs like aspirin , digoxin , quinine and opium.The compounds found in plants are many types but the major biochemical classes grouped  under four classes these are alkaloids , glycosides ,polyphenols and terpenes.The ancient Egyptians wrote the information about 850 and above plant medicines including Garlic, Juniper, Cannabis, Aloe, (Patricia et al., 2003).Hippocrates wrote about the practice of western traditional medicine including Greek and Rome before 15000 B.c.Theophrastus also wrote about the first systematic botanical work in 4th century.From the colonizers Christopher columbus take tobacco, lemon species and other important medicinal plants from Cuba to Europe in 1492.This shows colonizers documented medicinal plants during their colonization (FAO, 2003).

The long history about use of medicinal plants in Ethiopia is reflected in various medico-religious manuscripts produced on parchments and believed to have originated several centuries ago (Fassil ,2001). Reviews of medicinal textbooks that have been written in Geez or

Arabic between 17th and 18th centuries indicated that the majority of Ethiopians with the exceptions of few privileged groups starting from the time of the Italian occupation have been depending almost entirely on the traditional medicine (Edwards (2001).

## 2.2. Distribution and actual situation of medicinal plant in Ethiopia

Ethiopia is the home for about 6000 species of higher plants with approximately 10% endemism and hence one of the six plant biodiversity rich countries of Africa.The diversity is also considerable in the lower plants but exact estimate of these have to be made. The genetic diversity contained in the various biotic make up is also high thus making the country a critical diversity hot spot for plants (UNEP, 1995). As one of the 12th Vavilovian centers of origin/ diversity for domesticated crops and their wild relatives Ethiopia is home of many endemic crops and genetic stocks (Vavilov, 1951; Endashaw,1978). Ethiopia has the two world's 25 biodiversity rich areas (hot spots) i.e. the Eastern Afromontane Biodiversity Hotspot and the Horn of Africa-Biodiversity Hot Spot. These hotspots are the house of many wild biodiversity particularly that of medicinal plants. The biodiversity richness of Ethiopia was known since 5000 years ago when ancient Egyptians, Greeks and Romans used it as a source of unique commodities like Frankincense, Myrrh and other plant products which are also used for medicine preparation (Thulin, 2004). French, British and Italian travelers, naturalists, pharmacogonists and plant collectors who visited Ethiopia between about 1830 and 1930 gave lists of plants used medicinally and their conception by the local traditional medicine (Griaule, 1930). Most Ethiopian traditional medicinal knowledge is kept in strict secrecy; however, it is dynamic in that the practitioners make every effort to widen their scope by reciprocal exchange of limited information with each other or through reading the traditional pharmacopeias (Dawit ,1986).

Different vegetation types that are found in the various agroecological zones of Ethiopia accommodate various types of medicinal plants Edwards ,(2001).As Edward  reportes the woodlands, montane vegetation including grasslands and forests and the evergreen scrubs and rocky areas contain more medicinal plants with higher concentrations in the woodlands and observed that the microphylous vegetation of the wood lands listed more medicinal plants species followed by the montane-grassland and riverine vegetation while the afroalpine vegetation ranked last. The number of different languages spoken in Ethiopia approaches 90 (Maffi, 1999) and each corresponds to its unique sociocultural population thus amounting to the high human cultural diversity. Each of these cultural domains has its own set of written or

oral pharmacopoeias with the medicinal use of some species being restricted to that given culture.Jansen, (1981) asserts that Ethiopia has rich medicinal plant lore and points out that almost all plants of the Ethiopian flora are used somewhere  medicinally.

Haile, (2005) indicated that the various parts of medicinal plants have been used such as leaves, roots and barks of the stem. However, leaves are regarded as the most cited plant parts used by healers for the preparation of traditional medicines. The various literature available show the significant role of medicinal plants in primary healthcare delivery in Ethiopia where 70% o of human and 90% of livestock population depend on traditional medicine similar to many developing countries particularly that of Sub-Saharan Africa countries.

## 2.3. Uses of medicinal plants

Plants are used for traditional medicine in Ethiopia to treat different ailments of human and livestock (Asfaw, et al., 1999). It was applied solely for healthcare before modern medicine was introduced for prevention, diagnosis and treatment of social, mental and physical illness (Dawit 1986).Traditional medicine was one part of the culture of the Ethiopians people due to its long period of practice and existence (Mirgissa , 1998).There is a large interest of using of medicinal plants in Ethiopia because of its accessibility and biomedical benefits (Dawit , 2001).

Plants provided effective sources of traditional medicines against many ailments since ancient times. Peoples of the world especially in Africa and Asia with their various culture and rich plant flora use plants medicine for their health needs.Medicinal plants contain many pharmacologically active compounds which have useful therapeutic applications and many are utilized in the development of the drug industry.About thirty percent of the drugs sold world-wide contain compounds derived from plants.Herbal medicines contain active and toxic constituents. Inorder to increase access to health care provision of safe and effective herbal therapies could thus become critical tools (Asfaw et al,1999).Medicinal plants that  used  for traditional  medicine have an inportant role in the health care of the majority of people in Ethiopia.The traditional  herbalists provided many traditional medication to their patients disease such as abdominal cramp ,evil eye ,skin

diseases ,headache ,gonorrhea ,wound ,toothache ,tonsillitis and so on (WHO,2008).

Medicinal plants are used to maintaining health to be administered for a specific condition whether in modern medicine or in traditional medicine (Dawit ,2001). According  to FAO,

2003 and Schippmann, et al,2002, over 50,000 medicinal plants are used across the world .In other systems of medicine medicinal plants may constitute the majority of what are often informal attempted treatments not tested scientifically (WHO,2008). The World Health Organization estimates about 80 percent of the world's population depends on traditional medicine.The use of plant-based materials including herbal or natural health products with supposed health benefits is increasing in developed countries (Ekor and Martins 2012).This brings attendant risks of toxicity and other effects on human health despite the safe image of herbal remedies.The World Health Organization formulated a policy on traditional medicine in 1991 and since then has published guidelines for them with a series of monographs on widely used herbal medicines (Nigussie et al., 2018).Medicinal plants may provide three main kinds of benefit: health benefits to the people who consume them as medicines, financial benefits to people who harvest, process, and distribute them for sale and society-wide benefits such as job opportunities, taxation income and a healthier labour force. However, development of plants or extracts having potential medicinal uses is blunted by weak scientific evidence, poor practices in the process of drug development and insufficient financing.

## 2.4. Side effects of traditional medicine

Plant medicines can cause a wide effects even death by side-effects of their active substances, contamination, and overdose or in appropriate prescription. Many such effects are known while others remain to be explored scientifically.There is no reason to presume that because a product comes from nature it must be safe. Older plants may be much more toxic than young ones.Pharmacologically active plant extracts can interact with conventional drug both because they may provide an increased dose of similar compounds and because some phytochemicals interfere with the body's systems that metabolise drugs in the liver which making the drugs last longer in the body and have a more powerful cumulative effect.Plant medicines can be dangerous during pregnancy.Since plants may contain many different substances plant extracts may have complex effects on the human body(Nigussie *et al.,* 2018).

## 2.5. Treats to medicinals plants

According to Martin (1995), Medicinal plants face both general threats such as climate change and habitat destruction and the specific threat of over-collection to meet market demand. Traditional botanical knowledge of indigenous communities related to the uses and management of wild plants resources is extensive. Some studies have shown that most of medicinal plants used in Ethiopia are harvested from the wild (Zemede, 1999). The teristerial

habitat of the country accounts for the presence of about 6000 higher plant species.Among them 800 plant species are employed in traditional health care system of the country and 600 of them have been collected and identified.habitat destruction,urbanization ,over harvesting ,loss of forest , deforestation ,agricultural expansion and fire are the main cause for loss of medicinal plants(Endashaw ,2007).Because of these medicinal plants  are being declined and lost with their habitats.

## 2.6. Sustainable utilization and Conservation of medicinal plants

According to Endashaw Bekele,(2007),sustainable use of medicinal plants has now grown to be dangerous  problem in Ethiopia because of rapid resource degradation.The idea of medicinal plant conservation in Ethiopia today initiated for urgent studies and documentation before the increasing ecological and indigenous  traditional  knowledge transformation distort the physical entities and the associated knowledge base(Endashaw ,2007).There are some conservation activities that have been aimed to protect threatened  and endangered medicinal plants from further damage (Cunninghum, 1996). This includes in-situ and ex-situ conservation measures. Both in-situ and ex-situ conservation efforts are implemented to save medicinal plant genetic resources. In-situ conservation is conservation of species in their natural habitats. Some traditional medicinal plants have to be conserved in-situ due to difficulty for domestication and management (Zemede , 2001). Medicinal plants can also be conserved by growing them in special places traditionally such as around churches, mosques, farm margin, river bank and in special medicinal plants areas (e.g.medicinal plant hotspot areas).The second one is ex-situ conservations means conservation outside their natural habitats. This includes gen bank, botanical gardens and establishment of Institutions of biodiversity conservation (Zemede , 2001; Endashaw , 2007).Plantation of medicinal plants can be done in degraded areas.There are many medicinal of medicinal plants of Ethiopia that have good properties for land rehabilitation and erosion control which could be planted in agro ecological setting (Endashaw , 2007).Careful documentation of indigenous knowledge through ethnobotanical studies is also important for uses of biological and cultural diversities as well as sustainable utilization of resources (Nigussie et al., 2018).

# 3. RESEARCH METHODS

## 3.1. Description of study area

## 3.1.1. Geographical Location and Physical Background

MoretenaJiru is one of the twenty seven woredas of North Shewa Zone Administration. It covers 705 square kilometers.It located at a distance 85 kms from Debre berhan,563 kms from Bahir dar and 216 kms from Addis Ababa and located between $9^0 49'$ N to $10^0 07'$ N latitude and $38^0 57'$ E to $39^0 19'$ E longitudes (MJWGCO, 2018).Moretena Jiru woreda is bordered in the south by Seyadebrinawayu, in the south west by Ensaro, in the northwest by Merhabetie, in the northeast by MenzkeyaGebreal and in the east by Basonawerana
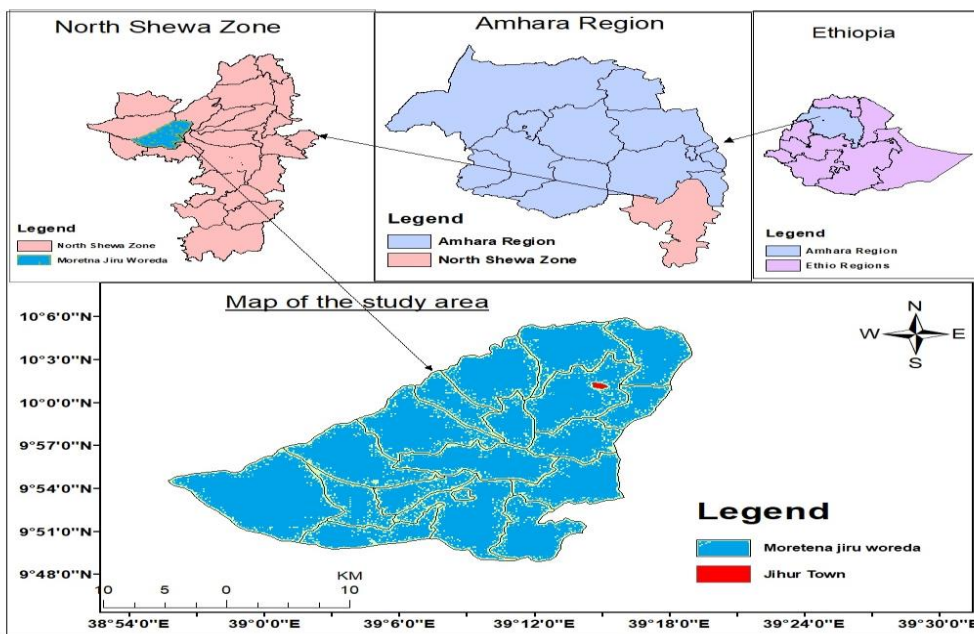


wereda .

Figure3.1. Locational Map of Mortena Jiru woreda (Source: Etho.GIS) Manipulated by the researcher

### 3.1.2   Topography and Climatic Conditions

Moretina Jiru is found an altitude between 1400m and 2650 meter above sea level (MJWLEPO, 2018).It has different topographic features.These include mountain which account about 3 percent, plateau and plain account about 57 percent and 40 percent respectively (MJWLEPO, 2018).According to National Meterological services agency (NMSA)from Dessie station (2006-2015),Moretina Jiru has  favorable climate with sufficient rainfall and temperature amount throughout the year.It receives about 1000mm-1500mm total rain annually and it has a temperature of $12^0$c to $22^0$c in a year .The Wereda has two rainy seasons namely summer and Belg. Summer has long rains usually begin from June to the

beginning of September and the Belg season has short rains which usually fall between January and April. However, the Belg season is highly unreliable being characterized by variability and delay or absence of rain.

The most common types of soils are Vertisols, Nitosols, Sandy soils and others. Among these Vertisols are the most dominant which accounts 55 percent followed by Nitosols and Sandy soils with 38 %and 5 % respectively (MJWARDO, 2018).The most dominant tree species are *pedocarpus ("zigiba"), cordial africana* ("wanza"), *oleaeuropea* ("woira"), *prunusafricana* ("Tikurenchet") etc and some tropical vegetations like acacia and ficussur ("Shola") are other types of vegetation grown in the area. But they are on the way of disappearing due to deforestation for the expansion of agricultural land. Now adays the most dominant vegetations are man grown such as white and red *Eucalypts and juniperusprocera (*"Tid''").
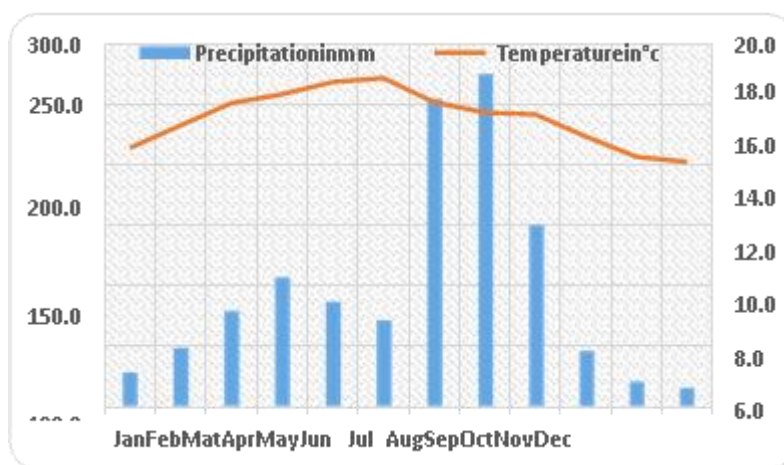


Figure 1: Climadogram of Moretna jiru district

## 3.2 Materials

Materials used to cutting, collect, dried, pressing, tied, attaching and labeling of MPs data were diggers, knives, different plastic bags, plasters, note books, pens, plant press, photo camera and scissors.

## 3.3. Reconnaissance Survey

Reconnaissance survey of the study area was conducted from February 25/2014 to March 1/ 2014 E.c.During the survey information regarding topography of the study area, distribution of plants and vegetation coverage were determined.

## 3.4. Selection of the study site

From the total twenty kebele eleven rural villages belong to three kebele were purposively selected. Woiramba, Bolo and Jihur were the three targeted kebeles.Chrawenz, Woira, Bolo, Woiramba, Betaso, Chaso, Jihur, Sertesos, Koseamba, Midk and Embusamba were the eleven rural villages.The study site were targeted in the selected kebele based on plant species distribution and availability of herbalists through nomination of elders.

A total of 75 informants (51 males and 24 females) aged 21 -78 were selected and interviewed.64 general informants were selected by random sampling type known a s snow ball sampling techniques.The eleven key informants (Males=10, Females=1) were selected by purposive sampling based on comments from local communities and leaders.Due to their good knowledge they are popular in the societies.Purposive sampling seeks to identify participants based on selected criteria .Snow ball also often used to find and recruit hidden population that is groups not easily accessible to researcher through other sampling strategies .

## 3.5. Ethnobotanical Data Collection Techniques

The ethnobotanical data were collected from informants using a semistructured interview, participant observation and guided field walk.Ethnobotanical data collection sheet was prepared in English and translated to Amharic language to collect ethnobotanical information from informants. Information was carefully recorded during an interview  including local names of the medicinal plants, habitat of the plant, disease which treated by plants, parts used, methods of remedy of preparation, ingredients added, dosage prescriptions and routes of administration.

## 3.5.1. Face to face/individual interviews

Face to face interview was applied to collect secret indigenous knowledge/data from all informants based on semi-structured checklist questions prepared in English and translated into Amharic.The interview focused on medicinal plant parts used, method of remedy preparation, dosage of the remedy, route of remedy administration, used antidotes or

ingredients, interaction of healers to the plants ailments treated, threats and conservation practices of medicinal plants.

## 3.5.2. Guided field walks /field observation

During the study field observation was applied to obtain real information about medicinal plants and to proof the reality of information that was obtained during face to face interview.Information regarding to medicinal plant, local name, habit, habitats, their status and market demand of medicinal plants were collected.The medicinal plant specimen collections and photo of medicinal plants were taken during guided field walks.

## 3.5.3. Plant identification

Medicinal plant specimens were dried, pressed and identified at species ,genus and family level using flora of Ethiopia and Eretria by comparing with authentic specimen .Voucher specimen were prepared and placed in Debreberhan university's herbarium .

## 3.6. Data Analysis Techniques

### 3.6.1. Descriptive statistic

Information about medicinal plants like parts used, preparation, route of applications, disease treated, habit and habitat were gathered and analyzed through descriptive statistical analysis techniques using percentage and frequency.Ethnobotanical clustering techniques such as informant consensus,informant consensus factor,fidelity level and ranking methods including preference ranking and data matrix ranking were applied for data analysis. To calculate simple quantitative ethno botanical data MS Excell spread sheet was applied .Qualitative ethno botanical was also expressed through content analysis and description.

### 3.6.2. Informant consensus

Informant consensus was used to know the agreements of informants on the traditional medicinal application of plants species and to evaluate the reliability of information.

### 3.6.3. Informant consensus factor /ICF

In order to identify the agreement of informants about medicinal plants ICF was calculated for each disease category.According to Trotter and Logan(1986);Alexiades,(1996) Informal consensus factor was calculated by number of informants who list medicinal plants for each disease category (Nur) minus number of medicinal plant species that are listed to treat each disease category (Nt) divided by number of informants who list medicinal plant for each disease category minus one. ICF = Nur−Nt /

Nur─1, Where: ICF: Informant consensus Factor, Nur: number of use citation Nt: number of species used.The result of ICF must be found between 0 to 1.High value of ICF indicate for high rate of informant consensus.

### 3.6.4 Fidelity level index

The fidelity level (FL) is the percentage of the ratio of informant's number who list medicinal plants and number of informant who use medicinal plans to treat frequently repeated disease.FL (%) = (Np/N) x 100, where Np were the number of informants that claimed a use of a plant species to treat a particular disease and N is the number of informants that use the plants as a medicine to treat any given disease as stated by Alexiades ,(1996). The total overall use and particular use reports of informants were recorded and its fidelity level index was calculated.

### 3.6.5. Preference ranking

Preference ranking was used to identify the most preferred medicinal plants to treat rabies based on informants' personal perception. Six key informants were used base on their experiences to compared five medicinal plants to treat rabies.Each individual was asked to rank the plants based on their degree of preference.The highest value (5) was assigned to the most preferred medicinal plant species where as the least preferred plant was given the lowest value (1). Scores of each mps were then summed and ranked.

### 3.6.6. Direct matrix ranking

Direct matrix ranking was used to compare multipurpose medicinal plant ,to know their status of utilization by the categories and to identify the  usefulness of the plant species for each use categories.Important multi purpose species were selected based the recommendation of informants .Five key Informants were interviewed to rank multi purpose medivinal plants.Out of a total medicinal plants most were used for medicinal, source of energy, construction and fence of the furniture (5 = best, 4 = very good, 3 = good, 2 = less used, 1 = least used and 0 = not used).The values of each species were summed up and rank.

### 3.6.7. Paired comparison

Paired comparisons was used for evaluating the degree or levels of importance of certain selected plants.This method was used to know the capabilities of five medicinal plants species used to treat wound.The procedure described by Martin (1995).Seven key informants were randomly selected by lottery method to show their responses independently for pairs of five

medicinal plants that are noted for treating wound.Then their responses were recorded. The total value summed and the rank made based on the total score of the informants.

# 4. RESULT AND DISCUSSION

## 4.1. Medicinal Plant Species Diversity and Treated Ailments

A total of 90 medicinal plant species belonging to 87 genera and 49 families were used by local people to treate 46 different human diseases (Appendix2) in *Moretna* jiru woreda.The family *lamiaceae* contains the highest number of medicinal plant 8(16.3%) followed by *fabaceae 7(14.3%)* and *Asteraceae 6*(12.2%) .*Solanceae* have 4(8.16%) medicinal plants.*Euphorbiace,Brassicaceae, malvaceae,myrtacea*e and poaceae each contain 3 (6.12%) medicinal plants where as *verbenaceae, Apocynacea, Oleaceae, Polygonaceae, Cucurbitaceae and Rosaceae* each contain 2(4.1%) medicinal plants. The rest 34 families each contains1(2.04%) medicinal plants (Table1),*Lamiaceae,Fabaceae and Asteraceae* were dominant medicinal plant families in the study area respectively.The reason for different in availability of medicinal plants that belong to different families in the study area might be due to abiotic factors such climatic factors, edaphic factors, physiographic factors and biotic factors such as diseases, grazers and anthropogenic activities such as deforestation, fire burn and other natural disaster.In other ways there might be suitable growing condition like suitable temperature, soil type, physical features of land and suitable moisture of soil for the most dominant families of medicinal plants in the study area. Similar ethno botanical studies show similar result (Admasu and Yohanis, 2019).

Table 1: Medicinal plant families and number of species in each

| Families | No.of MPs | Percent (%) |
|---|---|---|
| *Lamiceae* | *8* | 16.3 |
| *Fabaceae* | *7* | 14.3 |
| *Asteraeae* | *6* | 12.2 |
| *Solanaceae* | *4* | 8.16 |
| *Poaceae* | *3* | 6.12 |
| *Euphorbiaceae* | *3* | 6.12 |
| *Malvaceae* | *3* | 6.12 |
| *Brassicaeae* | *3* | 6.12 |
| *Myrtaceae* | *3* | 6.12 |
| *Oleaceae* | *2* | 4.1 |
| *Verbenaceae* | *2* | 4.1 |
| *Polygonaceae* | *2* | 4.1 |
| *Cucurbitaceae* | *2* | 4.1 |
| *Rosaceae* | *2* | 4.1 |
| *Apocyanaceae* | *2* | 4.1 |
| The rest 34 families | 1 | 2.04 |

 Medicinal plants that prepared by traditional herbalists are very inportant to regulate health problem of local communities in their villages in traditional ways.As the study shows both the effectiveness of medicinal plants and indigenous knowledge of traditional herbalists were popular by local communities.Other ethno botanical studies that performed other part of Ethiopia reports similar finding. (Admadu and Yohanis , 2019).In addition to these contributions to traditional medications and cultural values they also provide regulating, provisioning and supporting services.For instance they could provide regulating services via regulating soil erosion, climate change, disease, pollution and pollination they also provide provisioning services such as fuel wood, timber for house construction, food (fruits, honey) and fodder and shelter for wild animals. Hence, almost all of the medicinal plants are multipurpose species providing more than one benefits (Admasu and Yohanis 2019).

In the study area peoples use about 90 and above medicinal plants to treat 46 and above human ailments type .The diseases type mostly treated by various medicinal plants were grouped in to nine major group each major group diseases contain many different diseases as listed on table 2.Skin diseases were the major diseases type which treated by 30(33.33%) medicinal plants.

Gastrointestinal diseases were treated by 22(24.44%) medicinal plants. Diseases of breathing system were treated by 26(28.88%) medicinal plants. Diseases caused by animal bite were treated by 23(25.55%)medicinal plants.Spritual diseases were treated by 21(23.33%) medicinal plants.Diseases of reproductive system were treated by 13(14.44%) medicinal plants.Diseases of circulatory system were treated by 11(12.22%) medicinal plants,fibril illness were treated by 10(11.11%) medicinal plants and bone diseases were treated by 5(5.49%) medicinal plant.This indicates that there were many medicinal plants that used to treat skin related diseases followed by diseases of respiratory system and diseases of gastrointestinal tract.The finding also proved that one medicinal plant species can be used for treating more than one disease types.Most of the patients who come from rural areas with their perspective disease types have been treated by traditional healers before coming to health center.

Table 2: List of human diseases and number of medicinal plants that treat different ailments in the study area

| No | Diseases treated | No.of Mps | Percent (%) |
|---|---|---|---|
| 1 | Spritual diseases(evil eye,diblotic and magic sprites ) | 21 | 23.33 |
| 2 | Bone diseases and Rheumatoid | 5 | 5.49 |
| 3 | Gastrointestinaldiseases(stomachache,intestinal wound ,ascaris,tape worm,curtain ,typhoid ,tooth worm) | 22 | 24.44 |
| 4 | Fibrill illness (mich,headache ,eye disease ) | 10 | 11.1 |
| 5 | Diseases breathing system (common cold,cough ,asthma ) | 26 | 28.88 |
| 6 | disease of circulatory system (hypertension ,diabetes ) | 11 | 12.22 |
| 7 | disease of reproductive system (impotency,Rh factor,retained placenta,mariate,infertility ,abortion ) | 13 | 14.44 |
| 8 | diseaseofskin(eczema ,itch,alergy,dandruff,wound,wart,kunchir, herpes zoster,cancer ,joro degif,abscess ,goiter ) | 30 | 33.33 |
| 9 | disease of animal bite(rabies ,malaria ,snake bite,scorpion ,wof) | 23 | 25.55 |

## 4.2. Source of Medicinal Plants

As the research shows most medicinal plants were collected from the forest of Bolo and Jihur kebele those found in low land (kolla).These forests are found on spritual area and they are protected areas .From 90 medicinal plants 55(61.11%) were collected from these area and the other 23(25.55%) medicinal plants were collected from home garden where as the remaining 12(13.33%) medicinal plants were harvested both from home garden and forest. The number of medicinal plant species in each village varied in distribution.This finding point out most medicinal plants in the study area were found on the low land area than high land area. This is due to medicinal plants were unevenly distributed in the different landscapes and habitat features. Medicinal plants were good available along the edges of river/streams and wetlands.Similar findings were reported Eloy (2014). Nigussie  et al. (2018); Admasu  et al (2019) in their investigation.There is litte activities by local peoples to cultivate and protect from extiniction of medicinal plants .The plants were collected only when they are needed by patients.This may lead to extiniction of medicinal plants.Some were grown in home-gardens

either for medicinal use or non-medicinal purpose.The local people area was dominated by *Eucalyptus species, juniper, Allium* and *Lepidium sativum, Artemesia* species, *Cordia Africana* and *Ocium lamifolium.*

Table 3: Sources of medicinal plants

| Source of medicinal plants | Number of medicinal plants | Percent (%) |
|---|---|---|
| Wild | 55 | 61.11 |
| Home garden | 23 | 25.55 |
| Both | 12 | 13.33 |

In order to document  medicinal plants distribution and associated knowledge for the next researcher who are interested to do reaserch in Moretna jiru district the number of medicinal plants that found in each kebele were recorded as follows .There were the highest number of medicinal plants,28(31.11%) in all study kebele(Bolo,Woiramba & Jihur) and also there were 24(26.66%)medicinal plant species in only Jihur kebele followed by 17 (18.9%) were found both in Jihur and Bolo kebele.7(7.78%)  medicinal plants were found in only in Bolo kebele.This implies that Peoples that lived near to the forest  and in low land area that contain many plant diversity had strong interaction for medicine. There for forests that found in Jihur and Bolo kebele were very important interms of providing medicinal plants.The result of this finding agreed with the finding of other studies including Seble et al. (2018).

## 4.3. Growth Forms of Medicinal Plant Species Used to Treat Human Diseases

Among medicinal plants found in the three kebele of moretna jiru district the majority of medicinal plants had herbal and shrub habit each contains 36(40%)medicinal plants.They found around wet land areas and had the highest proportion that compared with other growth forms.Tree growth form was the second most harvested to treat human ailments and contains 11(12.2%) medicinal plants.Climbers growth form contain the lowest medicinal plants which account only 7(7.8%) medicinal plants and they were the least abundant medicinal plants in the study area.The high usage of herbs and shrub as medicinal plants among Moretna jiru district people could indicate their better abundance as compared to trees and climbers.Studies

conducted in other part of Ethiopia (Mirtus , 2003) also indicate the common use of herbs and shrubs as a source of medicine.

According to Seble , et al.2018) the affinity to use medicinal plants could be attributed to strong bio active compounds.Studies in various parts of the world's have showed that herps contain phytochemicals like alkaloids and flavanoids that have strong anti bacterial and anti fungal effect.A number of studies carried out elsewhere in Ethiopia have documented that herbs and shrubs were plant species mostly used by indigenous peoples of Ethiopia to treat different human and animal diseases (Mesfin, et al.,2009).
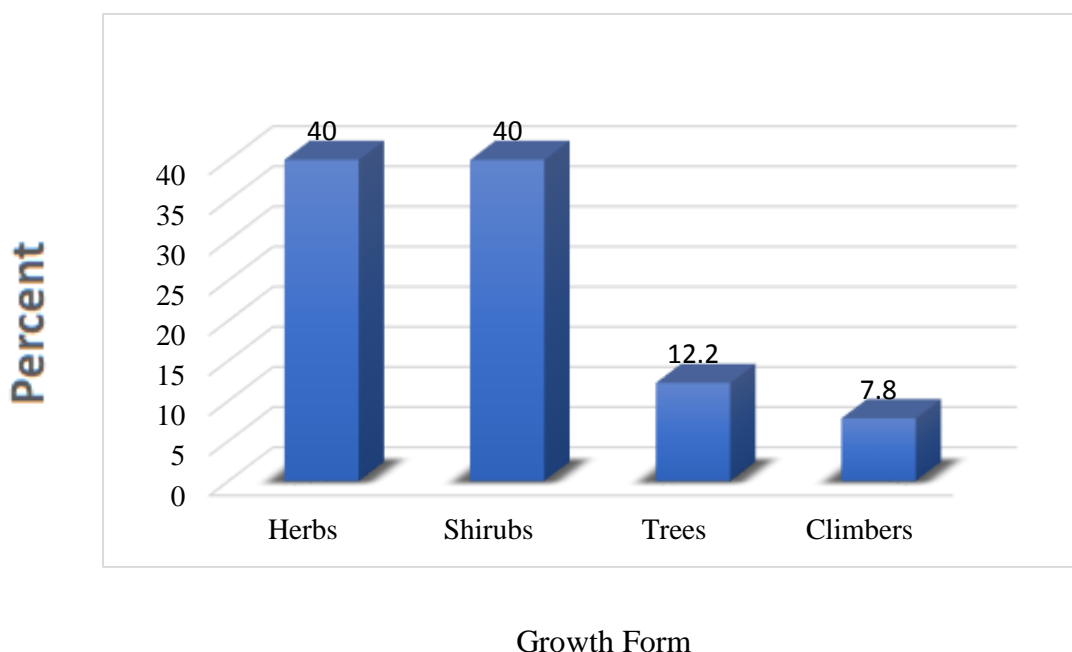


Figure 2: Growth forms of MPs to treat human ailments

## 4.4. Part of plants that used for medicine

For most medicinal  plants that found in the study area Leaves were the most commonly used plant part for the preparations of remedy which have frequency of 106 (49.77%)   times followed by seed 37(17.37%) and root which account   32( 15.02%). For some plants fruit,bulb,latex & stem were   used for preparation of medicine each has afrequency of 8(3.76%),9(4.23%),8(3.76%)and(1.4%)  respectively.Few were harvested from their blood, bark,mixture of seed and latex, mixture of leaf and fruit,mixture of leaf and seed and mixture of root and leaf(Table 4).This finding is the same with the finding of different ethno botanical researchers(Admasu and Yohanis ,2019; Nigussie et al. 2018; Seble et al.2018).

According to Tilahun and Megersa (2018),those cited on Admasu and Yohanis (2019),traditional herbalists prepare their most remedies were from leaves due to their accessibility and preventing plants from extinction of medicinal plants .Harvesting of root parts of the medicinal plant has negative effect on the existence of the plants for the future.Most of the medicinal plants are currently at risk and reducing highly due to using their root parts in unsustainable manner.

Table 4: part of medicinal plants that used for preparation of medicine

| Part used | Frequency | Percent (%) |
|---|---|---|
| Leaf | 106 | 49.77 |
| Seed | 37 | 17.37 |
| Root | 32 | 15.02 |
| Fruit | 8 | 3.76 |
| Bulb | 9 | 4.23 |
| Latex | 8 | 3.76 |
| Stem | 3 | 1.4 |
| Blood | 2 | 0.94 |
| Root +leaf | 3 | 1.4 |
| Leaf+Seed | 2 | 0.94 |
| Bark | 1 | 0.47 |
| Leaf+fruit | 1 | 0.47 |
| Latex+Seed | 1 | 0.47 |
| Total | 213 | 100 |

## 4.5. Preparation and Applications of Medicinal Plants

### 4.5.1. Modes of preparation

Traditional herbalists and local communities use different forms for remedy preparation to treat disease in the study area .Cushing,powdering, boiling and decoction ,squeeze ,peel ,cut and heat were method of preparation of remedies .For most preparation of remedies crushing is the most frequently used method which has a frequency of 104(47.71%) times followed by powdering 42(19.3%).Boiling and decoction have a frequency of 31(14.2%) and squeezing

which has a frequency of 28(12.84%) .The other mode of preparation were the least frequently used.These are peel, cut and heat each contains frequency of 5(2.29%), 4(1.83%) and 4(1.83%) respectively. For oral consumption squeezing of juice from the fresh plants was the most preferable method used than others.Different researchers reported similar finding in their investigation (Tilahun et al., 2018).

Table 5: Methods for remedies preparation from medicinal plants

| Mode of preparation | Frequency | Percent (%) |
|---|---|---|
| Crushing | 103 | 47.71 |
| Powder | 42 | 19.3 |
| Boil and decoction | 31 | 14.2 |
| Squeeze | 28 | 12.84 |
| Peel | 5 | 2.29 |
| Cut | 4 | 1.83 |
| Heat | 4 | 1.83 |
| Total | 218 | 100 |

**4.5.2 Conditions of preparation of herbal remedies**

As the research shows the highest number of remedies were prepared in fresh form which accounts about 125(69. 06%) and 53(29.28%) were prepared in the form of dried one.The least 3(1.66%) remedies were prepared in both dried and fresh form(Table 6).This indicates that traditional herbalists and local people in the study area were highly prefer fresh medicinal plants than the dried one. According to Admasu and Yohanis (2019), healers mostly used fresh specimens from commonly available plants to prepare remedies for their patients this might be mostly due to the effectiveness of fresh medicinal plant .Ethno botanical study of medicinal plants else where in Ethiopia have documented the same mode of preparation that cited on Syoum and Zerihun  (2014).

Table 6: Conditions of plant materials used for medicinal purposes

| Condition of preparation | Frequency | Percent (%) |
|---|---|---|
| Fresh | 125 | 69.06 |
| Dried | 53 | 29.28 |
| Both | 3 | 1.66 |
| Total | 181 | 100 |

## 4.5.3. Route of administration, dosage, antidotes and ingredients on traditional medicinal plant remedies

### 4.5.3.1. Route of administration

According to Seyoum and Zerihun ,(2014),the route of administration mostly depend on the nature of ailments to be treated.Based on this the most commonly used administration of remedies in the study area were oral which accounts 74(49.01%) followed by dermal 37(24.5%)and nasal 23(15.23%).The least popular way of administration of remedies were tie on and ocular each accounts 16(10.6%)and 1( 0.66%) respectively.Ethno botanical study of medicinal plants else where in Ethiopia have documented the same route of administration in Seyoum and Zerohun ,(2014);Admasu and Yohanis ,(2018); Mesfin , (2009).
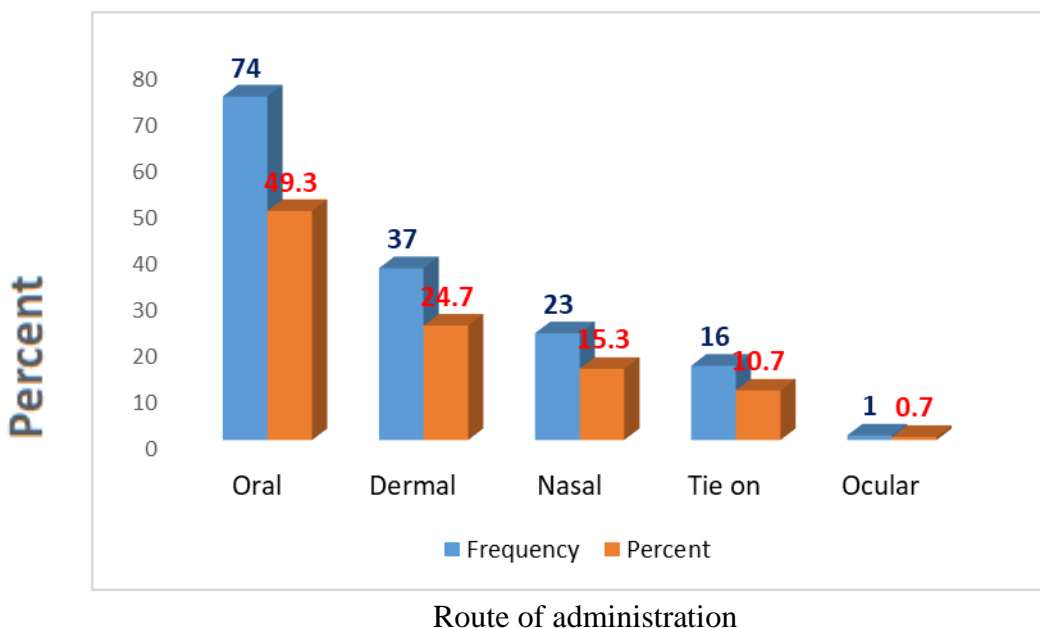


Route of administration
Figure 3: Route of administration of medicinal plants used for human ailments

### 4.5.3.2. Dosage

Traditional healers did not used modern measurement in the study area.They use different traditional equipments like Sini,Kubaya,Tea spoon ,Hand full (efign) and counting (e.g seven leaves ).For example seven leaves of *Rhamnus prinoides* and *Buddleja polystachya* were cut to treat uvulitia.The type of measurement varies depending on sex and age of patients .For example two efign heated *Cucurbia pepoa* was given for pregnant woman ,one bread (kita in amharic) which is made from the mixture of two spoon Hagenia abyssinica and red teff were given for adults and half of this bread was given to older finally the boiled mixture of *Hagenia abyssinica* and tea with sugar were given for child to prevent tape worm(Appendix2).Giving of remedies with out standardized equipment  might be causes serious health problem even death .This has been considered as the drawbacks of traditional medication  as mentioned on Seble et al.,2018.Some times traditional herbalists give pre caution for patients before and after taking some remedies.For example for the patients who take remedies against snake bite herbalist notice that the patients must not sleep for 12 hours.Other ethno botanical researchers were reported similar finding (Seble et al.,2018;Seyoum  and Zerihun ,2014;Mikiyas,2021).

### 4.5.3.3. Antidotes and ingredients

Most traditional herbalists and local communities use antidotes like coffee ,tela,fresh milk,decoction  and liver of chicken and birz to minimize the side effect like diarrhea ,vomiting,fibril illness , nausea, headache and other discomforts.They also use accessory ingredients like fresh bitter ,fresh milk,honey ,vaseline ,sheep's lipids that extracted from tail and hen's lipid to increase the curing abilities of remedies .Water was mostly used as solvent for plant extraction which can reduce the high concentration of remedies.This finding was similar to the research of Nigussie  et al., (2018);seble ,(2018);Seyoum and Zerihun ,(2014).Some traditional herbalist prevent that the patients should not take some crops that have stalk like sorghum and maize after they were take remedies because they cause infection.Traditional healers in the study district also have their own  way of diagnosis. For instance if the following happened such as un usual blackness of edage of tongue ,unusual changing of urine color,increasing of saliva,lose of appetite ,nausea and vomiting ,tiredness and yellowish color of eye and nail  the ailment might be wof (liver).On the other hand if the following happened such as un usual feeling of hungry ,decreasing of the vision of the eye,having sugar taste on patient's urine,anexity and sweating and un usual decreasing  of

weight the ailment might be diabetes.

## 4.5.3.4 Clustering and ranking results

## 4.6.1. Informant Consensus

In the study area some medicinal plants were the most known medicinal plants than others.*Allium sativum* was the highest available and useable medcinal plants which cited by 65(86.66%) informants to treat evil eye,stomachache ,wound,common cold,snake bite and malaria.Aloe species and *Clematis hirstua* were the second most abundant medicinal plant which cited by 61(81.33%) informants to treat skin diseases and wound .*Lepidium sativum and Clerodendrum myroidaceae* were the third most abundant medicinal plants they were cited by 60(80%) informants to treat spritual and fibril illnes.Croton macrostachyus,Carissa Spinarum,Verbena *Officina,Phytolacca dodecandra,Olea eupopea and Rhamnus* prinoides were the forth most abundant Medicinal plants in the study area.They cited by 57(76%) informants to treat skin diseases ,snake bites ,spritual diseases,uvulitia and reproductive diseases.*Citrus aurantifolia* was the 5 th most abundant Medicinal plants which cited by 41(54.66%) informants to treat digestive diseases and uvilitia.*Artemisia abysinica* and *Bankisa integrifolia* were the sixth most abundant medicinal plants they cited by 39(52%) informants to treat spritual diseases .*Vernonia hymeno and Zehneria scabra* were the seventh most abundant medicinal plants to treat circulation diseases ,tonsility and skin diseases (table 7).The famousness of medicinal plants in the area was depends on the effectiveness and availability of the species to treat the ailments.Even if some local people have similar knowledge towards the medicinal values of some plants others have limited knowledge. Because some of the medicinal plants were relatively known by fewer informants.For example *Clutia abysinica,Impatients roth,Ricinis communis L,saliva nilotica,Laggera tomentosa* and others having informant consensus of 10(13.33%). When they compared with the seven most abundant medicinal plants those were familiar to most of the informants and have less medicinal value for the local people than others having high informant consensus value. But it does not mean that they were not used by the local people rather still given by traditional healers.

Table 7: List of MPs with the relatively higher informant consensus value

| Scientific name | No of informants who cited MPs | Percent (%) | Rank |
|---|---|---|---|
| *Allium sativum* | 65 | 86.66 | 1 |
| *Aloe species ,Clematis hirsuta* | 61 | 81.33 | 2 |
| *Lepidium sativum,Clerodendrum myroidaceae* | 60 | 80 | 3 |
| *Croton macrosatachyus,Carissa spinarum,Verbena officina,Phytolacca dodecandra,Olea eupopea,Rhamnus prinoides* | 57 | 76 | 4 |
| *Citrus aurantifolia* | 41 | 54.66 | 5 |
| *Artemisiaabysinica,Bankisa integrifolia* | 39 | 52 | 6 |
| *Vernonia hymeno,Zehneria scabra* | 37 | 49.33 | 7 |

### 4.6.2. Informant consensus factors

About 10 disease categories were identified from the total of 46 various human ailments reported in the study area. These categories were spritual disease ,bone disease ,fibril illness,disease of circulatory,breathing and reproductive system,skin disease,gastrointestinal disease,sense organ disease and disease caused by animal/insect bite.Among these categories fibril illnes (mich and headache)  were the most prevalent diseases they score 0.84 ICF value.Disease of gastrointestinal system,reproductive system,sense organ(eye and nose)and breathing system were more common diseases than the others  and they have ICF value of 0.83,0.81,0.75 and 0.77respectively .Medicinal plants used to treat those ailments were more popular and effective to cure.Moreover, almost all highest ICF results of the present study suggest that the informants were more agreed on the plant species reported in the treatments of respected ailments.The lowest ICF value (0.33) was recorded for the bone disease.

Table 8: Disease category and their ICF value

| Categories | Ailments | Species | Use citation | ICF | Rank |
|---|---|---|---|---|---|
| Fibril illness | Mich,headache | 9 | 52 | 0.84 | 1 |
| Gastrointestinal disease | Stomachache,intestinal wound,diarrhea,curtain,vomiting,tape worm,ascaris,typhoid fever | 22 | 126 | 0.83 | 2 |
| Disease of reproductive system | Impotency,Rhfactor,retained placenta,infertility,abortion,mariat | 13 | 66 | 0.81 | 3 |
| Disease of sense organs | Eye disease,bleeding of nose | 3 | 9 | 0.75 | 7 |
| Disease of breathing system | Common cold,cough,asthma, Tonsillitis,uvulatia | 26 | 110 | 0.77 | 5 |
| Disease of skin | Eczema,itch,dandruff,wound,wart,kun chir,cancer,herpes zoster,jorodegif,abscess,goiter | 30 | 149 | 0.80 | 4 |
| Disease of animal bite | Snake,bite,rabies,scorpion bite,jaundice | 23 | 91 | 0.76 | 6 |
| Spritual disease | Evil eye,diablotic and magic sprite | 21 | 66 | 0.69 | 9 |
| Disease of circulatory system | Hypertension,diabetes | 11 | 39 | 0.73 | 8 |
| Bone disease | Bone ache,rheumatoid | 5 | 7 | 0.33 | 10 |

### 4.6.3. Relative healing potential of medicinal plants

The relative healing potential of each reported medicinal plant used against human ailment estimated using an index called Fidelity level. The fidelity level calculation results showed that all have more than 0.5 values. *Lens culinaris* scored the highest fidelity level values (85%).This medicinal plant was highly known with high efficacy to treat herps zoster. *Linum ustitatissimum* scored the second highest fidelity level (84%) to treat intestinal wound.*Hagenia abssinica* score the third highest fidelity level (83%) to treat tape worm.*Artemisia abyssinica (*80%) and *Grewia ferruginae* (75%) were more common medicinal plants than to treat evil eye and dandruff respectively.The high fidelity level of plants shows high abilities of plants to treat particular disease and having biological active ingredients.Similar reports by (Trotter R. et al., 1989*).Catha edulis s*cored the lowest fidelity level (58%).This indicates that this medicinal plants had the least potency having biological active ingredients in treatment as compared to plants with high fidelity level value.

Table 9 : Fidelity level values of MPs reported by informants for being used against ailment.

| Species name | Primary use | N | NP | NP/N | FL(%) | Rank |
|---|---|---|---|---|---|---|
| *Lens culinaris* | Herps zoster | 27 | 23 | 0.85 | 85 | 1 |
| *Linum ustitatissimum* | Intestinal wound | 19 | 16 | 0.84 | 84 | 2 |
| *Hagenia abyssinica* | Tape worm | 6 | 5 | 0.83 | 83 | 3 |
| *Artemisia abyssinica* | Evil eye | 15 | 12 | 0.80 | 80 | 4 |
| *Grewia ferruginae* | dandruff | 20 | 15 | 0.75 | 75 | 5 |
| *Zingiber officinate* | Common cold | 16 | 10 | 0.63 | 63 | 6 |
| *Eragrostic teff* | Retained placenta | 21 | 13 | 0.62 | 62 | 7 |
| *Trigonella foenum* | hypertension | 18 | 11 | 0.61 | 61 | 8 |
| *Catha edulis* | Snake bite | 24 | 14 | 0.58 | 58 | 9 |

## 4.6.4. Medicinal plants preference to treat ailment

Some medicinal plants were more popular than the others.Based on the information obtained from the informants preference ranking of 5 medicinal plants those reported for treating rabies of was conducted after selecting of 6 key informants.The informants were asked to compare the given medicinal plants in treating rabies.5 was gave for the most effective medicinal plant and 1 for the least effective medicinal plant (Table 10).The analysis of preference ranking values showed that *Clerodendrum myricoides* ranked first followed by *Croton macrostachyus* for the treatment of rabies.*Vernonia amygdalina* and *Aleo macrocarpa* ranked third and fourth most preferable plants.*Bersama abysinica* was the fifth ranked and the least effective medicinal plants in the study area .

Table 10: Preference ranking on five medicinal plants used to treat rabies

| Species name of MPs | Key informants | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | I-1 | I-2 | I-3 | I-4 | I-5 | I-6 | Total | Rank |
| *Clerodendrum myricoides* | 5 | 4 | 5 | 3 | 4 | 3 | 24 | 1 |
| *Croton macrostachyus* | 4 | 3 | 5 | 4 | 2 | 5 | 23 | 2 |
| *Vernonia amygdalina* | 5 | 5 | 3 | 3 | 2 | 4 | 22 | 3 |
| *Aleo macrocarpa* | 3 | 5 | 5 | 4 | 2 | 2 | 21 | 4 |
| *Bersama abysinica* | 4 | 5 | 3 | 4 | 2 | 2 | 20 | 5 |

## 4.6.5. Paired comparisons of medicinal plants

Paired comparison was made to evaluate the degree of effective medicinal plants from five species that used to treat wound.Seven key informants were participated.*Allium sativum* was the most effective medicinal plants.*Datura stramonium* and *Chenopodium s*pecies were the second most abundant medicinal plants to treat wound (table 11).But in other similar study *Brucea antidysenterica* ranked first to treat wound followed by *Calotropis procrra* and *Stephania Abyssinica* (Seyoum and Zerihun , 2014 ).

Table 11.Paired comparison on medicinal plants to treat wound

| *Medicinal plants* | Key informants | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | I-1 | I-2 | I-3 | I-4 | I-5 | I-6 | I-7 | Total | Rank |
| *Allium sativum* | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 35 | 1 |
| *Datura stramonium* | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 32 | 2 |
| *Chenopodium species* | 5 | 4 | 5 | 3 | 5 | 4 | 5 | 31 | 3 |
| *Aloe macrocarpa* | 5 | 5 | 5 | 5 | 2 | 3 | 4 | 29 | 4 |
| ***Ramnus prinoides*** | 4 | 3 | 4 | 2 | 4 | 4 | 4 | 29 | 5 |

## 4.6.6. Multipurpose use of medicinal plants

People in the study area were mainly depend on the woody plants that found in their locality for various purposes such as construction, charcoal production and furniture.Based on the degree of application seven different medicinal plants were selected and ranked and also five key informants were selected for comparison.Those multifunctional medicinal plants were scored and ranked (5 best, 4 very good, 3 good, 2 less, 1 least used).In the ranking seven commonly reported multifunctional plant species and seven function of each category summed up, calculated and ranked (Table 12).As this study shows all the listed plants were used for fire wood, charcoal production and shade.*Olea eurpopea,Carissa spinarum* and *Croton macrostachyus* had most medicinal value than the rest.*Ziziphus spina* and *Cordia Africana* were edible medicinal plants.*Olea eupopea,Juniperus procera* and *Eucalyptus* species were the most preferable plants for construction than others.C*arissa spinarum ,Zizphus spina,Olea eupea* and *Eukalyptus* species were the most preferable for fences.*Cordia africana,Olea eupopea* and *Juniperus procera* were the most important plants for furniture.*Carissa spinarum* had no any importance for furniture and construction. In general *Ziziphus spina* ranked first due to the multi purpose role followed by *Cordia africana, Olea eupopeae and Juniperus* procera.But in other ethno botanical study *Olea europea* ranked first followed by *Eucalyptus*

species and *Juniperus procera*(Seble , 2018).Those multipurpose medicinal plant species are currently deforested for fire wood,charcoal production, fence ,furniture and construction additional to their medicinal role. Similar reports showed by Ermias et al.,2008.

Table 12: Direct matrix ranking of 6mp species by five informants based on five use criteria

| Species of medicinal plants | Use categories | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Medicine | Food | Firewood/charcoal | Construction | Fence | Furniture | Shade | Total | Rank |
| *Ziziphus spina* | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 32 | 1 |
| *Cordia africana* | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 31 | 2 |
| *Olea eupopea* | 5 | 0 | 5 | 5 | 5 | 5 | 5 | 30 | 3 |
| *Juniperus procera* | 4 | 0 | 5 | 5 | 4 | 5 | 5 | 28 | 4 |
| *Crotonmacrostachyus* | 5 | 0 | 5 | 4 | 4 | 4 | 5 | 27 | 5 |
| *Eucalyptus species* | 4 | 0 | 5 | 4 | 5 | 2 | 5 | 25 | 6 |
| *Carissa spinarum* | 5 | 0 | 3 | 0 | 5 | 0 | 3 | 16 | 7 |

## 4.6.7. Marketed Medicinal Plants

From 90 medicinal plants 25 medicinal plants were marketed medicinal plants that were sold for medicinal and other purpose.12(48%) medicinal plants were purchased for food ,8(32%) medicinal plants were for food spices,1(4%) medicinal plants were for fumigation and 4(16%) medicinal plants for Medicinal purpose(Appendix3).Most traditional herbalists sold medicinal plants in their homes in secret ways rather than in open market.This might be the cause for loss of knowledge about medicinal plants because as Seble W., et al. (2018), described mostly traditional knowledge was transferred between family members orally.These medicinal plants have dual purposes which facilitates deforestation and extinction rate of medicinal plants if they not managed and conserved in a sustainable manner.Therefore these medicinal plants in the study area require urgent conservation and management practice.This finding also was reported in Miruts  et al., (2009).

## 4.7 Sources knowledge about traditional medicine

From 75 informants 42(56%) informants gained knowledge about medicinal plants from their families member especially from their fathers. 20(26.7%) informants were acquired knowledge from their neighbor.This might be the cause for loss of knowledge about medicinal plants.Similar findings were reported by Endeshaw ,(2007), Zemede et al., (2013), Seble et al. (2018). About 10(13.3%) informants were acquired knowledge from ortodox spritual books.Only 3(4%) informants were gained knowledge from education since they are biology teachers at Jihur general secondary school.

Table 13: Source of knowledge about traditional medicine

| Source of knowledge | Mumber(total= 75) | Percent (%) |
|---|---|---|
| Families | 42 | 56 |
| Experience from neighbor | 20 | 26.7 |
| Education | 3 | 4 |
| Spritual books | 10 | 13.3 |

## 4.8 General Background information of Respondents

Seventy five informants were reporte remedies for 46 different ailments.Of them 51(68%) were males and 24(32%) were females.Most females informants reported remedies to diseases associated with children such as common cold,fibril illness,uvulitia,evil eye and parasitic intestinal diseases.Most of the time the knowledge of females was restricted to home garden medicinal plants.Because they might be limited on house hold activities.Most informants were found between the age of 61-70 which accounts 20(26.67%)informants.Of them 17 were males and 3 were females followed by51-60 age group which account 18(24%)informants.This indicates that elders did have more knowledge about medicinal plants than younger.In contrary the young generation didn't have enough knowledge about medicinal plants than elders.This might be due to lack of interest of young generation on indigenous knowledge.This finding is the same to that of Mirutes ,(2001),Seyoum and Zerihun ,(2014).From 75 informants 43(57.33%) were educated and 32(42.67%) informants were non educated.From educated informants19 informants were learnt from grade 1-4,16 informants were learnt up to 8 grade.5 informants were learnt up to 10-12 grade and only 3 informants were learnt above 12th grade.From educated informants more informants were not

well educated.Much knowledge of traditional medicine was redirected to non educated informants.From 75 informants 52(69.33%) were married ,11(14.67%) were un married and 12(16%) were widowed and also 72(96%) were farmers and 3(4%) were biology teacher at Jihur general secondary school.All informants were believer of ortodox tewahido church.

**Table 14: General background information of respondents**

| Characteristics | Number | Percent (%) |
|---|---|---|
| Age category 20 – 30 31 – 40 | 13 9 | 17.33 12 |
| 41 – 50 51 – 60 61 – 70 71 – 80 | 11 18 20 40 | 14.67 24 26.67 5.33 |
| Sex category Male Female | 51 24 | 68 32 |
| Marital status Married Unmarried Widowed | 52 11 12 | 69.33 14.67 16 |
| Education status Litrtae Illitrate | 43 32 | 57.33 42.67 |
| Job status Farmers Teachers | 72 3 | 96 4 |
| Religion Orthodox | 75 | 100 |

## 4.9. Threats of Medicinal Plant

Anthropogenic activities were the main threats to medicinal plants in moretna jiru district.According to informants report the most threatening facors was farm land expansion (81.3%) followed by firewood and charcoal production which account 74.6% and 72% respectively.fence,over grazing and construction each score 65.3%,45.9% and 41.3% respectively.Similar findings were reported by previous researchers (Endeshaw , 2007; Nigussie  et al., 2018).
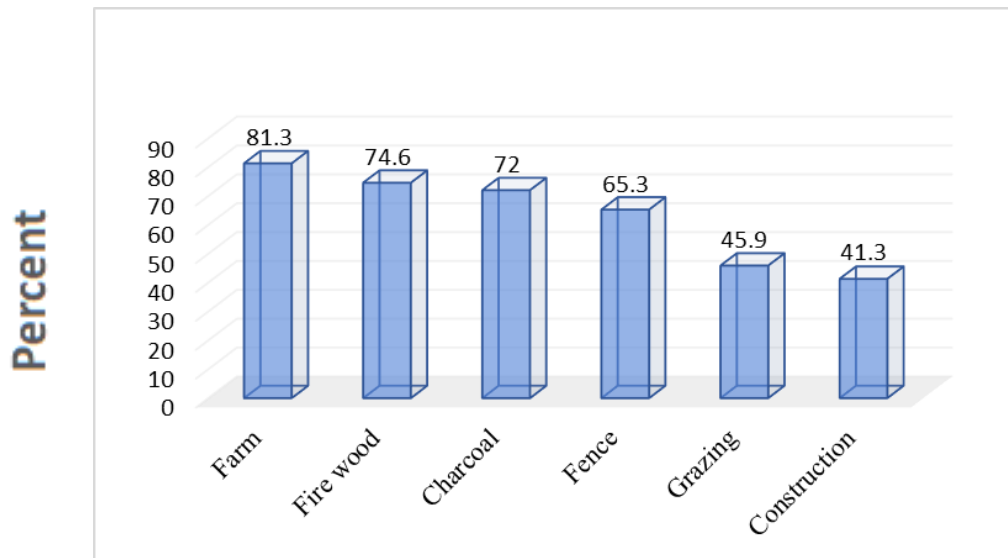
Threat

Figure 4: Threats to medicinal plants in the study area

## 4.10 conservation of medicinal plants

The conservation activities of medicinal plants in the study area was very poor.But some local people and traditional herbalists planted some medicinal plants. some medicinal plants those cultivated by female informants to treat common child ailments were *Allium sativum,lepidium sativum,linum ustitaissimum,Ocimum lamifolium and Salva nilotica* .Some medicinal plants were cultivated around home and spritual places for construction,fence,shade,food and forage.This implies that local communities tried to conserve medicinal plants for different purpose.Therefore to obtain sustainable and multi directional benefit from medicinal plants they must be conserved and used in a sustainable way by providing either in situ or ex situ conservation methods. The result of this finding agreed with the finding in (Endeshaw ,2007; Ermias et al., 2008).

# 5. CONCLUSION AND RECOMMONDATION

## 5. 1. Conclusion

Ninety medicinal plants species were identified and documented in moretna jiru wereda.They were grouped under 87 genera and 49 families.They were so many medicinal plants in this wereda.46 different human ailments were identified and reported by informants.From identified medicinal plants 55 medicinal plants species were collected from wild habitat,23 Medicinal plants were collected from home garden and only 12 medicinal plants species were collected from both home garden and wild habitat.Some medicinal plants have best capabilities to treat different human ailments like typhoid,evil eye,liver and rabies.

Shrubs and herbs were the best preferable habit of medicinal plants in the study area followed by tree and climbers.Most medicinal plants were prepared from leaves followed by roots.Fresh medicinal plants were more preferable than dried one.Oral route of administration was the most common route of administration followed by dermal.Crushing was the most methods of remedies preparation followed by powdering.

Most remedies were measured by traditional equipments those found in the villages of selected kebele.Traditional herbalists and indigenous people were used different antidotes and accessory ingredients to minimize the side effect of medicinal plants.Most indigenous knowledge was handled by non educated elder people.The transferring of knowledge was family limited.This and other factors like lack of interest of young generation and lack of attention by educated person could lead to eradication of indigenous knowledge and this limits the transfer of knowledge from one generation to the next generation.Some medicinal plants did have more than one function.There were many marketed medicinal plants in the study area.

Medicinal plants were threatened by different factors in the study area.Anthropogenic factors were the main threats of medicinal plants in the study area.There were poor conservation activities in the study area.

## 5.2. Recommendations

Based on my result and discussion the following recommendations are forwarded .
- ➢ Multi purpose medicinal plants are under threatened due to deforestation for different purpose .They require urgent conservation and management practice.There fore local communities and herbalists should conserve these plants in sustainable manner.

- Most marketed Medicinal plants have dual purpose which facilitate deforestation and extniction rate of Medicinal plants they need to conserved .There fore locol communities ,traditional herbalists and other stalk holders should provide special protected area.

- Allium sativum,Lepidum sativum,Clerodendrum myroidaceae and other medicinal plants are important medicinal plants.But deforestation for farm land expansion and fire wood are very challenging problem herbalist should to cultivate such plants in their home land area.

- Most herbalists gain knowledge about traditional medication from family member.This is the cause for decline of indigenous knowledge .Therefore traditional herbalists should be tell information for society openly .

- Most traditional herbalist did not use standardized equipment .This may cause series health problem .Therefore Ethnobotanist should to do research on measurement of traditional medicine.

.Traditional herbalists diagnose their patients by physical examination with out standardized diagnosis .This is the cause of series health problem .Therefore ethnobotanist and health professionals should to give training for healers.

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# APPENDIXES

**Appendix 1: Check list of semi-structured Interview and other group discussion questions for collecting ethno botanical data for medicinal plants**

First I thanks to you for your willingness

**Part I. General information**

Name of informants-----------------------------------sex---------

Occupation place (village) ---------------------date      ---------Time------------

Educational status---------------------a).Litrate ------------b).illiterate -------------

Martial status---------------------a).married ------------b).un married ------------c).widowed -----

Informant type a/ general informant ----------- b/ key informant------------

1. What is the type of plant that used for traditional medicine in your locality?

2. Which type of disease treated by each medicinal plant?

3. Which part of plant used as a medicine?

A.flowers ---------------D.seed ----------Fruit ----------

B.leaf -------------        E.root ----------

C.stem ---------        F.Bark ----------

4. What is the growth form or habit of medicinal plants?

A.tree---------C.climbers ----------

B.shrub----------D.grass---------

5. Where do medicinal plants grow?

A.forest ----------

B.home gardens ----------

C.both forest and home gardens ----------

6. What is the mode of preparation of medicine from medicinal plants ?

A.Crushing----------c.pouder---------E.decoction ----------

B.squeezing ---------D.Boil----------f.heating..........g.fumigation

7. What are the conditions of preparation of herbal remedies?

a.fresh ----------

B.dried---------

C.both----------

8. What is the route of administration medicine? Or how medicine is taken ?

a.oral----------e.dermal ---------

b.nasal---------f.Tie on---------

c.eye---------g.tooth---------

d.ear--------h.reproductive organ---------

9. Is there any accessory ingredients those are added to traditional medicine? If your answer is yes, which ingredient is added to medicin?

a.water ---------d.honey ---------

b.coffee --------e.milk---------

c.tella---------f.other ---------

10. Is there any antidotes those are added to traditional medicine? If your answer is yes, which antidote is added to traditional medicine?

a.water ---------d.honey ---------

b.coffee --------e.milk---------

c.tella---------f.other ---------

11. How do you measure the dose of medicine ?

12. Do medicinal plants those found in your locality have other purpose ?

    A.yes                B.no

If your answer is yes, for what purpose are used?

I.for food ---------                         III.for buildings --------

II.for fire wood and charcoal -------- Iv for fodder --------v.others --------

13. Is there any medicinal plant that sells or buys in market?

14. How traditional knowledge is transfer from generation to generation?

15. What are the treating factors for medicinal plants in your locality?

16. How people protect medicinal plants from damage?

17. Have you ever use each medicinal plants as amedicine?If your answer is yes which Medicinal plants is most preferable than others for you?

18.Which type of disease is frequently repeated ?

I thank you very much for your cooperation!

**Question only for key Informants**

1.Which Medicinal plants used to treat rabies and wound .

# Appendix 2:

**List of human medicinal plant species recorded in the study area**

**H= Herb ,S= Shrub ,T= Tree ,CL= Climber ,HG=Home garden, W= Wild,Bo=Both HG and W,B=Bulb.Se=seed,fr=Fruit,La=latex,St=stem,Bd=blood**

| Disease type | Scientific/family name | Local name of MPs | Part | Habit | Habitat | Mode of preparation | Routes of administration | Side effect | Dosage | Antidotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Evil eye | *Carissa spinarum (Apocynaceae)* | Agam | R | S | W | Crush the fresh part of these all plants together then dry and prepare powder | Fumugat | It may causes breathing organ diseases | | |
| | *Artemisia abyssinica (Asteraceae)* | Chiksugn | L | H | W | | | | | |
| | *Allium sativum (Amaryllidaceae)* | Nech shinkurt | B | H | HG | | | | | |
| | *Vernonia hymeno (Asteraceae)* | Weynagift | R | S | W | | | | | |
| | *Acakonthera periscim(Apocyanaceae)* | Mirenz | R | H | W | | | | | |
| | *Becium grandiflorum (Lamiaceae)* | Muatish | R | S | W | | | | | |
| | *Banksia integrifolia (Proteaceae)* | Tinjut | L & R | S | W | | | | | |
| | *Pennisetum spnacelatum(poeceae)* | Sindedo | R | H | W | | | | | |
| | *Sida acuta forssk (Mallaceae)* | Chifrig | R | S | W | | | | | |
| | *Verbascum,sinaiticum(Scrophulariaceae)* | Yahiyajoro | L | H | W | | | | | |
| | *Maytenus arbutifolia* | Atat | R | S | W | | | | | |
| | *Withania somnifera (Solanaceae)* | Gizawa | R | S | W | | | | | |
| Magic and diablotic sprites | *Carissa spinarum (Apocynaceae)* | Agam | R | S | W | Crush fresh part of ten part of medicinal plants and the dried seed of Lepidium sativum and the fresh and | Wash the patient's body by mixture of all these medicinal plants for | | | |
| | *Bankisia integrifolia (proteaceae)* | Tinjut | R & L | S | W | | | | | |
| | *Artemisia,abyssinica(Asteraceae)* | Chikugn | L | H | W | | | | | |
| | *Allium sativum (Amaryllidaceae )* | Nechishinkurit | B | H | HG | | | | | |
| | *Lepidium sativum (Brassicaceae)* | Feto | se | S | HG | | | | | |
| | *Rosa abyinica* | Kega | R | S | W | | | | | |

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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *(Rosaceae)* | | | | | dried part of Bankisia integrifolia together and mix with cold water and keep for seven days | three days every morning befor break fast | | | |
| | *Clerodendrum myricoides(Lamiaceae)* | Misrich | R | S | W | | | | | |
| | *Olea eupopea (Oleaceae)* | Weyra | R | T | W | | | | | |
| | *Rhamnus prinoides (Rhamnuaceae)* | Gesho | L | S | HG | | | | | |
| | *Ricinus communis (Euphorbiaceae)* | Gulo | L | T | W | | | | | |
| | *Citrus aurantifolia (Rutaceae)* | Lomi | L | T | HG | | | | | |
| | *Verbena officimalis (Verbenaceae)* | Atuch | L | H | W | | | | | |
| | *Withania somnifera (Solonaceae)* | Gizawa | L | S | W | | | | | |
| | *Vernonia amygdalina(Asteraceae)* | Girawa | L | T | HG | | | | | |
| Bone disease(kurti mat) | *Verbascum sinaiticum(Scrophulariaceae)* | Yeahiyajoro | | | | Crush and pound the fresh part of these medicinal plants and make flour or powder then measure two tea spoon flour and mix with honey | Drink one cup per day for three days every morning before break fast | | Cup | Honey |
| | *Kalanch apetitiana (Crassulaceae)* | yezinjero kita | L | H | W | | | | | |
| | *Clutia abysinica (Peraceae)* | Fiyelefej | L | S | W | | | | | |
| | *Thymus schimpen (Lamiaceae)* | Tosign | L | H | W | | | | | |
| Rheumatoid (rih) | *Olea eupopea (Oleaceae)* | Weyra | L | T | W | Squeeze the fresh leaf and mix with water | Wash the affected part | | | |
| Stomachache | *Zingiber officinale (Zingiber zingiberaceae)* | Zingible | B | H | HG | Peel and crush fresh bulb | Chewing | It might be leads to intestinal wound | | |
| | *Allivum sativum (Amaryllidaceae)* | Nechishin kurt | B | H | HG | Peel and crush fresh bulb | Chewing | | | |
| | *Oryris quadripartita (solanaceae)* | Keret | St | S | W | Crush fresh leaf and seed | Chewing | | | |
| | *Rumex nepalensis (Polygonaceae)* | Tult | R | H | Bo | Crush the fresh root | Chewing | | | |
| Intesti | *Linum* | Telba | S | H | HG | Boil the | Drink | | K | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| nal wound | *ustitatissimum(Linaceae)* | | e | | | dried seed by mixing with water and sugar | one kubaya( glass)b efore meal | | ub ay a | |
| | *Cucurbita pepoa (Cucurbitaceae)* | Duba | Fr | H | HG | Boil and Cook fresh fruit | Eat with injera | | | |
| | *Urtica simensis (Urticaceae)* | Sama | L | H | Bo | crush fresh leaf and squeeze with barley flour to avoid spin then cook properly | Eat with injera | | | Barle y flour |
| | *Aleo macrocarpa (Asphodelaceae)* | Eret | L a | S | W | Crushand choop fresh latex and mix withwater honey | Drink one sini before meal | | si ni | Hone y |
| Curtai n | *Vernonia amygdalina(Asteraceae)* | Girawa | L | T | W | Crush & squeeze Fresh leaf &mix with water | spray on the body and around home | | | |
| | *Cucumis ficifolius (Cucurbitaceae)* | Yemidr embuay | L | cl | W | Crush fresh leaf and dry it | Fumug at | It may cause breathi ng difficult y | | |
| | *Bankisia integrifolia (Proteaceae)* | Tinjut | L | S | W | Crush the dried&fres h leaf | Fumug at | | | |
| | *Nigella sativa (Ranunculaceae)* | Tikur azmud | se | H | HG | Prepare dried seed | Fumug at | | | |
| | *Cymborogon citrates(poeaceae)* | Tejsar | L | H | HG | crush fresh and dried leaf | Chewin g | It maycau se gastroin testinal disease | | |
| | *Ruta chalepensis (Rutaceae)* | Tenadam | L & S e | H | HG | Crush fresh leaf and seed | Chewin g | | | Drin kcoff ee |
| | *Allium sativum (Amaryllidaceae)* | Nechishin kurt | B | S | HG | Crush fresh bulb | Chewin g | | | |
| Ascari s | *Leontis ocymifolia (Lamiaceae)* | Fereszeng | L | S | W | Squeeze fresh leaf and mix with water | Drink one kubaya | Vomiti ng &diarrh oea | | Drin k tella |
| | *Brassica nigera* | Senafich | S | S | HG | Pound | Eat | | | |

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| Disease | Scientific name (Family) | Local name | Part | Habit | Source | Preparation | Dosage | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | roch(Brassicaceae) | | e | | | dried seed &make flour&mix water | with injera | | | |
| | Bersama anysinica (Melianthaceae) | Azamir | L | S | W | Crush fresh leaf and mix with water | Drink one sini | | | |
| Tapeworm | Hagenia abyssinica (Rosaceae) | Koso | R&se | T | W | Crush fresh/dried part boil with tea for child,mix2 spoon flour with red tef flour and bake as bread/kita for older | Drink one kubaya for child&eat bread for older one | Vomiting &diarrhea | Spoon | Tela |
| | Cucurbita peopoa (Cucurbitaceae) | Duba | Se | H | HG | Heatdried seed&mix with salt | Eat two handful /rfign for pregnant | Diarrhoea | Efign | Tela |
| | Cordia africana (Boraginaceae) | Wanza | Se | T | W | crush the dried seed&mix with water | Drink one sini per day | Vomiting | | Tela |
| Lose of appetite | Citrus aurantifolia (Rutaceae) | Lomi | Fr | T | HG | Peel fresh fruit&squeeze to produce juce | Drink the juce | | | |
| | Allium sativum (Amaryllidaceae) | Nechshin kurt | B | H | HG | Peel fresh bulb | Eat & inhaled | | | |
| Typhoid | Lepidium sativum (Brassicaceae) | Feto | Se | H | HG | Crush the dried seed,fresh bulb and fresh fruit of these plants &mix with water | Eat with injera | | | |
| | Allium sativum (Amaryllidaceae) | Nechshin kurt | B | H | HG | | | | | |
| | Citrus aurantifolia (Rutaceae) | Lomi | Fr | T | HG | | | | | |
| | Brassica nigra (Brassicaceae) | Senafich | Se | H | HG | | | | | |
| Diarrhoea | Lepidium sativum (Brassicaceae) | Feto | se | H | HG | Crush dried seed&Mix | Eat | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | with honey | | | | |
| | *Ocium basilicum (Lamaceae)* | Besobila | L | H | HG | Crush & squeeze the fresh leaf | Drink | | | |
| | *Rumex nepalensis (Polygoceae)* | Tult | R | H | W | Crush fresh root &make decoction | Drink one birchiko | | Bi rc hi ko | |
| Mich | *Ocimum lamifolium (Lamaceae)* | Damakese | L | S | Bo | Squeeze fresh leaf& mix with tea or coffee | Drink orally | | Si ni | Coffe e |
| | *Eucalyptus globules(Myrtaceae)* | Nechbahir zaf | L | T | Bo | Crush the fresh leaf &boil with water | Fumug at | | | |
| | *Laggera tomentosa (Asteraceae)* | Keskeso | L | S | Bo | Squeeze fresh leaf | Cream on the body | | | |
| | *Salvia nilotica (Fabaceae)* | Hulgeb | L | S | Bo | | | | | |
| | *Cynoglassum coerulem(poraginaceae)* | Chigogot | L | S | W | Crush fresh leaf &boil with water | Fumug ate | | | |
| | *Lepidium sativum (Brassicaceae )* | Feto | S e | H | HG | Pound the dried seed then mix with water | Cream on the body | | | |
| Heada che | *Mentha spicata (Lamaceae)* | Nana | L | H | HG | Crush fresh leaf&boil with water | Drink one sini | | Si ni | |
| | *Ocium basilicum (Lamaceae)* | Besobila | L | H | HG | Crush fresh leaf&boil with water | Drink one cup | | C up | |
| | *Myrtus communis L.(Myrtaceae)* | Ades | | H | W | Crush fresh leaf &boil with water | Drink one cup | | C up | |
| Eye diseas e | *Rumex nervosus (Polygonaceae)* | Enbuacho | L | S | W | Squeeze fresh leaf | Add in to water | | | |
| Comm on cold | *Artemisia abyssinica(Asteraceae)* | Chikugn | L | H | W | Crush fresh leaf&boil with coffee | Drink one sini or fumuga te | | Si ni | Coffe e |

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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Lippia abyssinica (Verbenaceae)* | Kese | L | S | W | Crush fresh leaf | Inhaled /fumigation | | | |
| | *Allium sativum (Amaryllidaceae)* | Nechshin kurt | B | H | HG | Peel&crush fresh bulb | Eat or inhaled | | | |
| | *Rutachalepensis (Rutaceae)* | Tenadam | L & s | H | HG | Crush fresh leaf &seed then boil with coffee or tea | Drink with sini | | | |
| | *Eucalyptus globules(Myrtaceae)* | Nechbahir zaf | L | T | Bo | Crush fresh leaf and boil with water | Fumugate/inhaled | | | |
| | *Eucalyptus camaldu(Myrtaceae)* | Keybahir zaf | L | T | Bo | | | | | |
| | *Zingiber officinale (Zingiberaceae)* | Zingible | B | H | HG | Crush fresh bulb&boil with water&sugar | Drink one cup | | C up | |
| Cough | *Carthamus tinctorius(Asteraceae)* | Suf | S e | H | HG | Pound the dried seed &boil with water&sugar | Drink with cup | | C up | |
| | *Ocimum basilicum Lamaceae)* | Besobila | L | H | HG | Crush fresh | Inhaled /fumigat t | | | |
| | *Malva verticillata (Malvaceae)* | Lut | L | H | Bo | Crush &boil frush leaf &boil with watet&tea | Drink with cup | | C up | |
| Asthma | *Guizotia abyssinica* | Nug | S e | H | HG | Pounds dried seed & boil with water &sugar | Drink with cup | | C up | Suga r |
| | *Mylica salicifolia (Myricacaeae)* | Shinet | L | S | W | Crush fresh leaf then dried it | Inhaled /fumugat | | | |
| | *Stephania abyssinica(Menispermaceae)* | Kelela | L | Cl | W | Squeeze fresh leaf | Drink two tea spoon | | Sp oo n | |
| | *Verbena officina (Verbenaceae)* | Atuch | L | H | W | Squeeze fresh leaf | Drink | | | |
| | *Clerodendrum* | Misirch | L | S | W. | Crush the | Fumug | | | |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | *myricoides(Lamaceae)* | | | | | fresh leaf then dried | at | | |
| | *Trigonella foenum (Fabaceae)* | Se | H | HG | Pounds dried seed &mix with water then stay for8-12hrs to remove bitter taste &derbis then filter &mix with sugar | Drink one kubaya per day before breakfast | | Kubaya | Sugar |
| | *Thymus schimpen* | L | H | W | Boil the dried leaf with water | Drink with cup | | Cup | |
| | *Cicer arietinum(Fabaceae)* | L | H | HG | Boil fresh leaf that contains salt | Drink with cup | | Cup | |
| Tonsillitis | *Vernonia hymeno (Asteraceae)* | L | H | W | Crush& squeeze fresh leaf by sit on black stone | Drink one spoon juce | | Spoon | |
| | *Foeniculum vulgaremill(Apiaceae)* | L | H | HG | Crush the fresh leaf | Chewing | | | |
| Uvulitia | *Rhamnus prinoides (Rhamnaceae)* | L | S | HG | Cut the seven leaf by spritual name | | | No | |
| | *Verbena officinalis (Verbenaceae)* | L | H | W | Squeeze the fresh leaf | Drink one spoon | | Spoon | |
| | *Asparagus africanus(Asparagaceae )* | L | Cl | W | Squeeze the fresh leaf | Drink one spoon | | Spoon | |
| | *Citrus aurantifolia (Rutaceae)* | Fr | T | HG | Squeeze the fresh fruit &mix with charcoal's ash | Add on the top patient's head | | | |
| | *Rumex nervosus (Polygonaceae)* | L | S | W | Squeeze the fresh leaf | Drink one spoon | | | |
| | *Beddleja polystachya(Scrophalari aceae)* | L | S | T | Cut fresh seven leaf by spritual | | | | |

The names Abish, Tosign, Shinbra, Woinagft, Enslal, Gesho, Atuch, Serity, Lomi, Enbuacho, Anfar appear in the second content column (local name) — they are placed between the scientific name and the single-letter part column.

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| | | name | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Lepidium sativum (Brassicaceae)* | Feto | Se | H | HG | Pound the dried seed &mix with honey | Eat/swallow | | | | Hony |
| | *Ruta chalepensis (Rutaceae)* | Tenadam | L | H | HG | Squeeze the fresh leaf | Drink one spoon | | | Spoon | |
| Bleeding of nose | *Artemisia abyssinica(Asteraceae)* | Chikugn | L | H | W | Crush the frush leaf | Inhaled | | | | |
| | *Urtica simensis (Urticaeae)* | Sama | L | H | Bo | Crush the fresh leaf | Inhaled | | | | |
| Eczema | *Croton macrostachyus (Euphorbiaceae)* | Bisana | L | T | W | Squeeze the fresh leaf | Cream on the affected part | It may affect healthy part | | | |
| | *Euphorbia tirucalli (Euphorbiaceae)* | Kinchib | Bd | S | W | Squeeze fresh leaf to produce blood | Cream on affected part | | | | |
| | *Clematis hirsuta (Ranunculaceae)* | Azoareg | L | Cl | W | Squeeze fresh leaf | Put on the affected part | | | | |
| Itch | *Vernonia amygdalina (Asteraceae)* | Girawa | L | T | W | Crush & pound the fresh leaf& mix with water | Wash the affected part | | | | |
| | *Rhamnus prinoides (Rhamnaceae)* | Gesho | Se | Sh | HG | Pound the dried seed &mix with vasline | Cream it on the affected part | | | | Vasline |
| | *Clematis hirsuta (Ranunculaceae)* | Azoareg | L | Cl | W | Pound the dried leaf &mix with fresh bitter | Cream on the affected part | | | | Butter |
| | *Croton macrostachyus(Euphorbiaceae)* | Bisana | L & se | T | W | Pound the dried leaf &seed with Lepidium sativum | Cream the affected part one times for 5 times | It may affect the healty body | | | |
| | *Bracea antydysentrica(Simaroubaceae)* | Abalo | Se | S | W | Heat &pound the dried seed &mix | Cream the affected part | | | | |

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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | with butter | until it cure | | | |
| | *Lepidium sativum (Brassicaceae)* | Feto | Se | H | HG | Pound the dried seed&mix with fresh butter | Cream the affected part until it cure | | | Butter |
| | *Brassica carinata (Brassicaceae)* | Gomen | Se | H | HG | | | | | |
| | *Olea eupopeo (Oleaceae)* | Weyra | L | T | W | Crush the fresh leaf &mix with water | Wash the affected part | | | |
| | *Phytolacca dodecandra(Phytolacca ceae)* | Endod | Se | S | W | Pound the dried seed & mix with two spoon fresh butter | Cream two times per day for 5 days | | Spoon | Butter |
| | *Vernonia amygdalina (Asteraceae)* | Atuch | L | H | HG | Pound the dried leaf mix with half spoon butter | Cream the affected part | | | |
| Shahign/kunchir | *Euphorbia tirucalli (Euphorbiaceae)* | Kinchib | st | S | W | Crush the fresh stem&squeeze to blood | Cream the affected part | | | |
| | *Clematis hirsuta (Ranunculaceae)* | Azoareg | L | H | W | Crush &squeeze the fresh leaf | | | | |
| Dandruff | *Zehneria scabra (Cucurbitaceae)* | Buhareg | L | Cl | W | Squeeze the fresh leaf | Cream it on the affected part | It may affect healty body | | |
| | *Rhamnus prinoides (Rhamnaceae)* | Gesho | L | S | HG | Pound the dried seed&mix with butter | Cream it on the affected part | | | Butter |
| | *Grewia ferruginae (Tiliaceae)* | Lenkuata | L | Cl | W | Crush the fresh leaf & mix with water | Wash the affected part | | | |
| | *Croton macrostachyus(Euphorbiaceae)* | Bisana | L | T | W | Squeeze the fresh leaf | Cream one spoon | | Spoon | |

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| | Scientific name (Family) | Local name | Part | Habit | Source | Preparation | Application | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | juce | | | |
| | *Clematis hirsuta (Ranunculaceae)* | Azoareg | L | Cl | W | Squeeze fresh leaf | Cream it on the affected part | Affect healthy part | | |
| | *Aleo macrocarpa (Asphodelaceae)* | Eret | La | H | W | Peal fresh latex & mix with water | Cream it on affected part | | | |
| Wound | *Allium sativum (Amaryllidaceae)* | Nechshin kurt | B | H | HG | Peal &heat fresh leaf | Heat the affected part | | | |
| | *Sleo macrocarpa (Asphodelaceae)* | Eret | L | H | W | Crush fresh latex | Tie it on the affected part | | | |
| | *Lepidium sativum (Brassicaceae)* | Feto | Se | H | W | Pound the dried seed &mix with butter &Allium sativum | Tie it on the affected part | | | Butter |
| | *Rhamnus prinoides (Rhamnaceae)* | Gesho | L | S | HG | Crush the fresh leaf | Tie it on the affected par | | | |
| | *Chenopodium (Ulmaceae)* | Amedmado | L | H | W | Crush &squeeze the fresh leaf | Cream it on the affected part | | | |
| | *Datura stramonium (Solanaceae)* | Etsefares | L | H | W | | | | | |
| | *Juniperus procera* | Yabesha Tid | L | T | Bo | Pound the dried seed & mix with butter | Cream it on the affected part | | | |
| Wart | *Clematis hirsuta (Ranunculaceae)* | Azoareg | L | Cl | W | Pound the dried leaf & mix with butter/Vasline | Tie it on the affected part | | | Butter |
| | *Aleo macrocarpa (Asphodelaceae)* | Eret | La | H | W | Cush fresh latex | Tie it on the affected part | | | |
| | *Olea eupopea (Oleaceae)* | Weyra | L | T | W | Pound the dried leaf | Cream it on | | | |

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| | | | | | Preparation | Application | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | & mix with water | the affected part | | | |
| | *Rhamnus prinoides (Rhamnaceae)* | Gesho | L | S | W | Pound the dried leaf &mix with butter/vasline | Cream it on the affected part | | | Butter |
| | *Ricinus communis L. (Euphorbiaceae)* | Gulo | Se | T | W | Pound the dried seed & mix with butter | Tie it on the affected part | | Spoon | Butter |
| | *Achyranthes ospera (Amaranthaceae)* | Telenj | L | Cl | W | Pound the dried leaf & mix with fat of sheep's tail | Cream it until it cure | | | |
| | *Euphorbia tirucalli (Euphorbiaceae)* | Kinchib | St | S | W | Crush fresh steam | Cream it on the affected part | It affect healty part | | |
| | *Citrus aurantifolia (Rutaceae)* | Lomi | Fr | T | HG | Peal,crush &squeeze fresh fruit | Cream the juce on the affected part | | | |
| | *Zehneria scabra (Cucurbitaceae)* | Buhareg | L | Cl | HG | Crush &pound the dried leaf then mix with butter | Tie it on the affected part | | | Butter |
| | *Malva verticillata (Malvaceae)* | Lut | L | H | Bo | Pound the dried leaf of these three plants & mix with fresh butter/fat of hen | Heat &tie on the affected part until it cure | | | Butter/hen's fat |
| | *Plantago lanceolata (Plantaginaceae)* | Gorteb | L | H | W | | | | | |
| | *Justica schimperiana (Acanthaceae)* | Sensel | L | H | W | | | | | |
| Herps zoster | *Lens culinaris (Fabaceae)* | Misr | Se | H | HG | Pound/chew the droed seed | Spray with mouth on the affected part | | | |
| | *Premna schimperi (Lamaceae)* | Chocho | Se | S | W | Crush&poud the fresh leaf then dry it | | | | |
| | *Croton Macrostachyus* | Bisana | L | T | W | Crush & | Tie it | | | |

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| Disease | Scientific name (Family) | Local name | | | | Preparation | Application | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *(Euphorbiaceae)* | | | | | squeeze the fresh leaf | on the affected part | | | |
| Cancer | *Aleo macrocarpa (Asphodelaceae)* | Eret | La | H | W | Pound dried latex &seed then boil with water | Tie it on the affected part when it brust drink acup of the mixture of whitehoney &flour of these plants | Brusting | | |
| | *Nigella sativa (Ranunculaceae)* | Tikur azmud | | | | | | | Cup | |
| | *Acacia nilotica (Fabaceae)* | Kentefa | L | S | HG | Crush&squeeze the fresh leaf | tie it on the affected part | | | |
| Allergy | *Chenopodium (Ulmaceae)* | Amedmado | L | H | W | Crush &squeeze the fresh leaf then mix with water | Wash the affected part until it cure | | | |
| | *Verbena officinalis (Verbenaceae)* | Atuch | L | H | W | | | | | |
| Mumps | *Pennisetum spnacelatum(Poeceae)* | Sindedo | St | H | W | Divide fresh stem in to two equal half symmetrically | Tie it on the neck | | | |
| Absess | *Kalanch oepetitiana (Crassulaceae)* | Yezinjero kita | L | H | W | Crush the fresh leaf &boil with fire | Heat the affected part | | | |
| Goiter | *Acacia nilotica (Fabaceae)* | Kentefa | L | S | W | Squeeze the fresh leaf &boil the juce | Heat the swelling by juce | | | |
| Hypertension | *Foeniculum vulgaremill(Apiaceae)* | Ensilal | L | S | W | Crush the fresh leaf &boil with water | Drink one cup per day | | | Cup |
| | *Trigonella foenum (Fabaceae)* | Abush | Se | H | HG | Pounds the dried seed | Drink one | | | Glass |

| Disease | Plant (Family) | Local name | Part | Habit | W | Preparation | Dosage | | Additive | Measure |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | &mix with water then stay for8-12hrs to remove bitter taste &derbis then filter &mix with sugar | glass per day | | | |
| | *Thymus schimpen (Lamaceae)* | Tosign | L | H | W | Crush the dried leaf then boil with water and sugar | Drink one cup per day from each medicinal plants | | Sugar | Cup |
| | *Bersama abysinica (Melianthaceae)* | Azamir | L | S | W | | | | | |
| | *Vernonia hymeno (Asteraceae)* | Weynagfit | L | H | W | | | | | |
| | *Rosmarinus officinalis(Lamaceae)* | Rosemary | L | H | W | | | | | |
| Diabetes | *Aleo macrocarpa (Asphodelaceae)* | Eret | La | H | W | Crush the fresh latex mix with one tasa water the filter by clean clothes | Drink one sini every morning for 15 days | | | Sini |
| | *Verbena officinalis (Verbenaceae)* | Atuch | R | H | W | Pound the dried part of these 3 medicinal plants &boil with one glass water then mix with one spoon white honey | Drink one sini per day before meal | | Honey | glass &spoon |
| | *Cucumis ficifolius (Cucurbitaceae)* | Yemidrenbuay | R | Cl | W | | | | | |
| | *Vernonia hymeno (Asteraceae)* | Weynagift | Se | H | W | | | | | |
| | *Plantago lanceolata (Plantaginaceae)!* | Gorteb | L | H | W | Pound the dried leaf & mix red teff bread,pounded nug & 2 spoon honey& make it round shape | Eat the round shape of the mixture of Plantago lanceolata,red teff | | Honey | Spoon |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | bread,pounded nug & 2 spoon honey | | | |
| | *Cicer arietinum (Fabaceae)* | Shinbra | Se | H | HG | Heat & pound the dried seed prepare for shiro | Eat with injera | | | |
| Impotency | *Ocimum lamifolium (Lamaceae)* | Damakese | R | H | HG | Pound the dried root of these plants then mix one spoon flour with one cup birz | Drink | Vomiting,diarrhea | Spoon | Hen's decoction |
| | *Mylica salicifolia (Myricaceae)* | Shinet | R | S | W | | | | | |
| | *Millettia ferruginea (Fabaceae)* | Birbira | R | S | W | | | | | |
| Rh factor | *Sida acuta forssk (Mallaceae)* | Chifrig | St | H | W | Pound the dried xerophyte (tekestila in Amharic) of these plants then mix one spoon flour with white honey then make round shape | Swallow every month for three days until mothers deliver healthy babies | | Spoon | Honey |
| | *Banksia integrifolia (Proteaceae)* | Tinjut | St | H | W | | | | | |
| | *Rumex nervosus (Polygonaceae)* | Embuacho | St | S | W | | | | | |
| | *Croton macrostachyus(Euphorbiaceae)* | Bisana | St | T | W | | | | | |
| | *Citrus aurantifolia (Rutaceae)* | Lomi | St | T | W | | | | | |
| Retained placenta | *Eragrostic teff (Poaceae)* | Tef | St | H | HG | Crush the dried stem& boil with water | Fumugate | | | |
| | *Clematis hirsuta (Ranunculaceae)* | Azoareg | L | Cl | W | Crush&dry the fresh leaf then pound it | Fumugate | | | |
| Mariat | *Buddleja polystachya (Scrophalariaceae)* | Anfar | L | S | W | Cut fresh seven leaf by spritual name | | | | |
| | *Aleo macrocarpa (Asphodelaceae)* | Eret | La | H | W | Cut the seven latex | | | | |

| Infertility | Scientific | Local | Part | | | Preparation | Administration | Side effect | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | by spritual name | | | | |
| Infertility | *Eragrostic teff (Poaceae)* | Tef | St | H | W | Boil the dried stem | Drink one kubaya | | Kubsya | Milk |
| | *Phytolacca dodecandra(Phytolaccaceae)* | Endod | Se | H | W | Pound the dried seed & mix with water | Drink one kubaya | Vomiting | | |
| Abortion | *(Phytolaccaceae)* | Endod | Se | H | W | Pound the dried seed & mix with water | Drink one kubaya | Excess bleeding | | |
| Malaria | *Cucumis ficifolius (Cucurbitaceae)* | Yemidirembuay | R | Cl | W | Pound the dried root of these plants then mix 1spoon flour with 2spoon honey &1 glass water | Drink one glass before break fast until it cure | Diarrhea & vomiting | Spoon & glass | Coffe |
| | *Phytolacca dodecandra(Phytolacaceae)* | Endod | | | | | | | | |
| | *Brassica nigra (Brassicaceae)* | Senafich | Se | H | HG | Pound the dried seed &fresh bulb together | Eat with injera | | | |
| | *Allium sativum (Amaryllidaceae)* | Nechshin kurt | B | H | HG | | | | | |
| Snake bite | *Catha edulis (Clastraceae)* | Chat | L | H | W | Crush the fresh leaf | Chewing | | | |
| | *Maytenus arbutifolia (Celastraceae)* | Atat | L | S | W | Crush &pound the fresh leaf then dry it &mix with water | Drink one sini | Vomiting | | Sini |
| | *Dodonacea angustifolia(Sapindaceae)* | Kitkita | L | S | W | | | | | |
| | *Solanum nigrum (Solanaceae)* | Enbuay | Fr | H | W | Crush the fresh fruit | Eat | | | |
| | *Jasminum floribundum (Oleaceae)* | Tenbelel | L | Cl | W | Pound fresh leaf then dry it & mix with two spoon water | Eat | Vomiting | | |
| | *Ziziphus spina (Phamnaceae)* | Geba | St | T | W | Crush the frush stem | Chewing & swallo | Vomiting | | |

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| Disease | Scientific name (Family) | Local name | Part | Habit | Source | Preparation | Usage | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | wing | | | | |
| | *Nicotiana tobacum (Solanaceae)* | Tinbaho | L | H | W | Crush &squeeze fresh leaf | Drink | | | |
| | *Cicer arietinum (Fabaceae)* | Shinbira | L | H | HG | Crush & squeeze the fresh leaf that contains salt | Drink | | | |
| Scorpion biting | *Galium simensis frense(Rubiaceae)* | Ashikirt | L | Cl | W | Crush & squeeze the fresh leaf of all these plants | Drink | | | |
| | *Clerodendrum myricoides(Capparidaceae)* | Misrich | L | S | W | | | | | |
| | *Rumex nervosus (Polygonaceae)* | Enbuacho | L | S | W | | | | | |
| | *Asparagus africanus Asparagaceae)* | Serity | L | H | W | | | | | |
| Jaundice | *Clerodendrum myricoides(Lamaceae)* | Misrich | L | S | W | Pound the dried leaf then mix with one tasa water &boil it | Drink one glass per day before breakfast until it cure | | Ta sa | Hen's decoction &liver |
| | *Bersama abysinica (Melianthaceae)* | Azamir | L | S | W | | | | | |
| | *Croton macrostachyus (Euphorbiaceae)* | Bisana | Se | T | W | Pound dried seed of the first two plants,squeeze fresh leaf & latex of the second &third plants then mix with 1 tasa water &filter with clean cloth &mix it with 2 spoon white honey | Drink one cup before breakfast | | | |
| | *Verbena officinalis (Verbenaceae)* | Atuch | Se | H | W | | | | | |
| | *Justicia schimperiana(Acanthaceae)* | Sensel | L | S | W | | | | | |
| | *Aleo macrocarpa (Asphodelaceae)* | Eret | La | H | W | | | | | |
| Rabies | *Carissa spinarum* | Agam | R | S | W | Pound the | Eat | | Ta | Coffe |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *(Apocynaceae)* | | | | | dried part of these plants then boil with 2-3spoon water &mix with 2 spoon white honey then make it rounded shape | with milk | | sa & sp oo n | e /milk ,hone y |
| *Clerodendrum myricoides (Lamaceae)* | Misirch | R | H | W | | | | | |
| *Stephania abyssinica (Menispermaceae)* | Kelela | S e | Cl | W | | | | | |
| *Bersama abysinica (Melianthaceae)* | Azamir | L | S | W | | | | | |
| *Phytolacca dodecandra(Phytolacca ceae)* | Endod | L | H | W | | | | | |

# Appendix 3: Marketed medicinal plants

| Scientific name of medicinal plants | Local name | Used for |
|---|---|---|
| *Allium sativum* | Nechi shinkurt | Food spice |
| *Trigonella foenum* | Abish | For food |
| *Ruta chalepensis* | Tenadam | For food |
| *Linum ustitatissimum* | Telba | For food |
| *Guizotia abyssinica* | Nug | For food |
| *Brassica carinata* | Yabesha gomen | For food |
| *Brassica nigra* | Senafich | For food |
| *Ocimum basilicum* | Besobila | For spice |
| *Eragrostic teff* | Tef | For food |
| *Rhamnus prinoides* | Gesho | For alcoholic drinks |
| *Olea eupopeae* | Woira | For fumigation |
| *Lepidum sativum* | Feto | For medicine |
| *Cymborogon citrates* | Tej sar | For medicine |
| *Bankisa integrifaia* | Tinjut | medicine &fumigation |
| *Hagenia abyssinica* | Koso | For medicine |
| *Citrus aurantifolia* | Lomi | For food |
| *Catha edulis* | Chat | For food |
| *Zingiber officinale* | Zingible | For spice |
| *Pisum sativum* | Ater | For food |
| *Thymus schimper* | Tosign | For spice |
| *Nigella sativa* | Tikur azimud | For spice |
| *Lens culinaris* | Misir | For food |
| *Rosmarinus officinalis* | Rosemery | For spice |
| *Myrtus communis* | Ades | For cream |
| *Cicer arietinum* | Shinbra | For food |

**Appendix 4.List of Informant who participate in Ethno botanical data collection**

| Name of informants | Sex | Age | Education | Martial status | Job | Kebele |
|---|---|---|---|---|---|---|

| | | | status | | | |
|---|---|---|---|---|---|---|
| Besintwerk Demissie(k) | F | 72 | illiterate | Married | Farmer | Jihur |
| Taye Bereded | M | 53 | 1 | Married | Farmer | Jihur |
| Engdashet Estifo(k) | M | 58 | 6 | Married | Farmer | Bolo |
| Kabtamu Tegegne | M | 56 | 3 | Married | Farmer | Bolo |
| Hailu Negash(k) | M | 62 | 2 | Married | Farmer | Woiramba |
| Kabtamu Mengistie(k) | M | 58 | 8 | Married | Farmer | Jihur |
| Eshetu Zewge(k) | M | 67 | 5 | Married | Farmer | Jihur |
| Abebe Ayehu(k) | M | 63 | 2 | Married | Farmer | Jihur |
| Digafe Awlachew(k) | M | 66 | 3 | Married | Farmer | Jihur |
| Habtegeorgis Lakew | M | 78 | illiterate | Married | Farmer | Jihur |
| Abera Dagne(k) | M | 66 | illiterate | Married | Farmer | Bolo |
| Kasahun Yeshigeta | M | 42 | illiterate | Widowed | Farmer | Jihur |
| Mekedu Dagnaw | F | 26 | 10 | Un married | Farmer | Jihur |
| Lidetu Shibele | M | 22 | 11 | Un married | Farmer | Jihur |
| Etaferahu Mamo | F | 28 | 10 | Un married | Farmer | Jihur |
| Birtukan Belete | F | 23 | 10 | Un married | Farmer | Woiramba |
| Werknesh Mulu | F | 22 | 12 | Un married | Farmer | Jihur |
| Weinitu Wendesen | F | 25 | 10 | Un married | Farmer | Bolo |
| Asfaw Teshome | M | 68 | illiterate | Married | Farmer | Bolo |
| Eyob Tariku | M | 57 | 12 | Married | Farmer | Bolo |
| Kuchim Andarge | M | 33 | 8 | Married | Farmer | Woiramba |
| Elias Alayu | M | 38 | 8 | Married | Farmer | Woiramba |
| Addis Atnafe | F | 28 | 10 | Un married | Farmer | Jihur |
| Tesfaye Kuchim | M | 35 | illiterate | Married | Farmer | Woiramba |
| Bekele Tesfa | M | 38 | illiterate | Married | Farmer | Jihur |
| Abaynesh Abate | F | 46 | 6 | Married | Farmer | Jihur |
| Lasab Ababu | F | 52 | 8 | Married | Farmer | Jihur |
| Almaz Mulugeta | F | 27 | 9 | Un married | Farmer | Jihur |
| Abebu Gochel | F | 42 | illiterate | Widowed | Farmer | Jihur |
| Shambel Tesfaye | M | 69 | illiterate | Married | Farmer | Bolo |
| Ziraw Desta | M | 66 | illiterate | Married | Farmer | Bolo |
| Belaynesh Agonafir | F | 27 | illiterate | Widowed | Farmer | Bolo |
| Wesene Tamene | F | 42 | illiterate | Married | Farmer | Bolo |
| Wagaye Temitme | F | 69 | illiterate | Widowed | Farmer | Bolo |

| | | | | | | |
|---|---|---|---|---|---|---|
| Birku Shumew(k) | M | 57 | 6 | Married | Farmer | Bolo |
| Atale Bogale | M | 58 | illiterate | Married | Farmer | Bolo |
| Getachew Admasu | M | 49 | illiterate | Married | Farmer | Bolo |
| Moges Yeshitila(k) | M | 42 | illiterate | Married | Farmer | Jihur |
| Mogesie Ejigu | M | 39 | illiterate | Married | Farmer | Bolo |
| Belachew Bekele | M | 36 | illiterate | Married | Farmer | Bolo |
| Aselefech Desie | F | 62 | illiterate | Widowed | Farmer | Bolo |
| Askale Azerefegn | F | 65 | illiterate | Widowed | Farmer | Bolo |
| Ketemash Mamo | F | 38 | illiterate | Married | Farmer | Bolo |
| Debebe Atilie | M | 62 | illiterate | Married | Farmer | Bolo |
| Shitye Habtie | F | 71 | illiterate | Married | Farmer | Bolo |
| Feleke Tadesse(k) | M | 54 | illiterate | Married | Farmer | Bolo |
| Feleku Zeyede | F | 29 | illiterate | Un married | Farmer | Bolo |
| Shifera Gezahegn | M | 65 | illiterate | Married | Farmer | Bolo |
| Birkie Moges | F | 65 | illiterate | Un married | Farmer | Bolo |
| Difaw Abera | M | 42 | illiterate | Married | Farmer | Bolo |
| Fantaye Tafete | F | 48 | illiterate | Married | Farmer | Bolo |
| Yesh Mola | F | 59 | illiterate | Married | Farmer | Woiramba |
| Debebe Tesfaye | M | 24 | illitrate | Married | Farmer | Bolo |
| Ejigayehu Derese | F | 63 | illiterate | Married | Farmer | Bolo |
| Endalelet Silesh | M | 46 | illiterate | Married | Farmer | Woiramba |
| Alemu Ziraw | M | 35 | illiterate | Married | Farmer | Bolo |
| Geletaw Zewdu | M | 23 | illiterate | Married | Farmer | Bolo |
| Abush Abera | M | 42 | illiterate | Married | Farmer | Jihur |
| Abebe Admasu | M | 47 | illiterate | Married | Farmer | Jihur |
| Delelegn Lema | M | 52 | illiterate | Married | Farmer | Bolo |
| Goshu Bekele | M | 64 | illiterate | Married | Farmer | Woiramba |
| Mulugeta Asefa | M | 56 | 2 | Widowed | Farmer | Woiramba |
| Kasa Werku | M | 62 | 3 | Married | Farmer | Bolo |
| Kefelegn Habtie | M | 58 | 4 | Widowed | Farmer | Bolo |
| Begashaw Atale | M | 54 | 3 | Married | Farmer | Bolo |
| Zinaw Damitew | M | 55 | 6 | Widowed | Farmer | Bolo |
| Dereje Tasew | M | 56 | 6 | Married | Farmer | Bolo |
| Wendiye Tsegaw | M | 59 | 6 | Widowed | Farmer | Bolo |
| Admas Asefa | M | 61 | 6 | Widowed | Farmer | Bolo |

| Selemon Mengistie | M | 52 | 3 | Widowed | Farmer | Bolo |
|---|---|---|---|---|---|---|
| Tesfa Wubishet | M | 74 | 2 | Married | Farmer | Bolo |
| Sefu Getu | M | 66 | 2 | Married | Farmer | Bolo |
| Fikritu Yeshitila | F | 32 | Degree | Married | Teacher | Jihur |
| Abrham Selemon | M | 38 | Degree | Married | Teacher | Jihur |
| Fekede Milash | M | 33 | Degree | Un married | Teacher | Jihur |

**Appendix 5: photo of some medicinal plants and Photo during interviewing informants.**

Photo of some medicinal plants

# DECLARATION

This research  work entitled by ' ' **ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS IN MORETNAJIRU DISTRIC, NORTH SHEWA,AMHARAREGIONAL STATE ,ETHIOPIA.**has been submitted to the department of Biology, college of natural and computational science, Debre Berhan University in partial fulfillment of the requirements for the award of the degree of Master of Science in Biology. I certify that this research report is original work done by me and not submitted to any other higher education institutions for the award of any academic certificate.

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