

Traditional Uses and Medicinal Value of Aromatic Plant Species in Home Gardens of Sodo-Zuria District in Wolayta Zone

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Abstract: *This study was conducted in Sodo-Zuria district between October 2017 and July 2018. It was focused on the investigation of traditional uses of aromatic medicinal plant species of the study area. A total of 63 (13 male and 50 female) informants, aged between 25-95 years old were identified from 9 kebeles. Relevant information was collected by using semi-structured interview, field observation, field guided interviews, group discussion and open ended questions. Frequency distribution, percentage and preference ranking method were used to analyze the collected data. 20 aromatic medicinal plant species were identified and collected from the selected home gardens. The reported medicinal plant species were distributed in 8 families with Apiaceae 2 species, Asteraceae 4 species, Brascaceae 2 species, Lamiaceae 6 species, Solanaceae 3 species, Myrtaceae, poaceae, and Rutaceae each contributed 1 species. The category of reported species includes shrubs 9 (45.00%) species, herbs 8 (40.00%) species, climbers 2 (10.00%) species and grass 1 (5.00%) species. The most important parts utilized for preparation of remedies were leaves from 10(50.00%) species, rhizome from 1(5.00%) species, seeds from 3(15.00%) species, flowers from 5(25.00%) species and fruits from 1(5.00%) species. The most common diseases identified in the study area were stomachache, eye disease, tonsillitis, evil eye, evil spirit, chill, common cold and pneumonia were treated by medicines prepared from aromatic species. The knowledge of medicinal value of aromatic plant species is wider among elderly women and men while the young are comparatively less knowledgeable. This indigenous knowledge on aromatic medicinal plants was gradually disappearing due to the secrecy, unwillingness of the young generation to gain the knowledge, disinterest of the young generation in traditional medicine and the influence of modern education. Local administration, NGOs and other stockholders must involve in awareness creations on traditional healers to transfer their knowledge to the next generation without secrecy and biodiversity conservation.*

Keywords: Aromatic plant species, Traditional knowledge, Home garden, Medicinal plants, Traditional healers

1. Introduction

Home gardens are ancient and widespread agro-forestry systems in the tropical and sub-tropical areas. Home gardening is reported to have first been recorded from the third Millennium B.C. of the Near East (Brownrigg, 1985). Limited studies have focused on the evolution of home gardens but it has been supposed that they arose from shifting cultivation to overcome resource constraints and to ascertain rights to land resources (Fernandes and Nair, 1990).

Humankind apart from the nomadic life, had begun to exploit the surroundings and cultivate plants for food, medicinal and other purposes in home gardens and this helped the process of prehistoric humans (Maheshwari, 1988; Jain, 2000). Plant domestication most likely began around the dwelling of human settlements. The immediate area around the homestead offers increased availability of water, better soil fertility due to organic waste inputs and easier protection of the crop against animals. The farming system developed through processes of intensification by adopting the strategy of mixing appropriate crops, organic manuring, and diversification of the biotic components, labor intensification and space optimization.

Home gardens are lands surrounding a house in all directions close to the house that referred as backyard; which is the land at the back of the house, front yard; that is the land before the house, and side yards; those lands which are right and left sides of the house. They are commonly referred to as Back yard gardens, Compound farms, Kitchen

gardens, and Homestead farms, House gardens, Mixed gardens, Horticulture, Dooryard gardens, and the likes in different cultures. Very common vernacular equivalent terms for home gardens in Wolayta language are Eremya, Darkkuwaa, Darinchchaa, Santta'aquwaa, Sinta, Baasuwa, Kariya, Soqomuwa or Soxadiya referring the directions of the land to the house. In Wolayta language the land behind the house is said to be Darkkuwaa, Darinchchaa, Eremya or Santta'aquwaa (backyard), the land before the house is known as Baasuwa, Kariya, Dirsappe Sobaggaa or Sinttaa (front yard). The side yards of the house are referred to as Soqummuwaa and Soxaddiya. These terms are very common in Wolayta culture and are important to indicate the directions of land which surround the house.

Home gardens are said to have been components of human subsistence strategies that refer to the land surrounding a house on which a mixture of annual and perennial plants are grown and managed by the house hold members for their uses or commercial purposes. The immediate area around the homestead offers increased availability of water, better soil fertility due to organic waste inputs and easier protection of the crop against animals. There is a close relationship between home garden and the culture of the community. As the process of plant domestication and crop evolution is ongoing it can be expected that continuously new germ plasm will develop. Consequently, home gardens contain unique and rare genetic diversity that has evolved or been developed locally. The facilitated close interactions between humans and plants within a home garden, setting many new crops have been developed in home gardens.

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Home gardens are microclimates containing high levels of species and genetic diversity within large farming systems. These gardens are not only important sources of food, fodder, fuel, medicines, spices, constructional materials, aromatic species and income sources in many countries in the world, but are also important for in-situ conservation of a wide range of plant genetic resources. They are dynamic systems; their structure, composition, new species and cultivars diversity are influenced by changes in the socio-economic circumstances and cultural values of the households that maintain these gardens. These complex ecosystems close to the house where plants can be closely observed and managed makes it a convenient site for traditional plant experimentation and domestication. Some wild species are continually brought under cultivation in home gardens to renew the vigor of the germplasm for planting in large fields.

The importance of home gardens in the production of food, medicines and other use full products for human beings is widely recognized; consequently, regular attempts to improve the productivity of this widespread agro ecosystem have usually been initiated with specific objectives. They contribute to the improvement of nutritional status of rural and urban families by increasing the production of vegetables, fruits, and spices. This farming system is also an important reservoir of unique genetic diversity.

Ethiopia is a country of diverse agro ecologies with a long history of agriculture. It is an important world center of domesticated plants and a primary center of diversification for many important crops (Harlan 1969). The country's rich crop resources that originated through domestication, introduction, and adaptation have traditionally been conserved *in situ* in crop fields and home gardens. Home gardens critical functions in fulfilling community and household needs ranging from food provision and food security to augmenting family nutritional status, ensuring primary healthcare, income generation and fulfilling other utility functions (Zemedu Asfaw, 2002). The aromatic plant species dominantly cultivated managed and controlled by women in Wolayta culture. The women have full right to use the products of aromatic plant species in this part of land. Therefore, the main thrust of this study would be to assist women in the sustainable establishment of income generating activities to be undertaken in or near the home. One very striking aspect, related to the traditions of a family as a part of a large community is the key role of women in managing the garden and utilizing its produce, either in her own kitchen or by selling it in the market. Different studies indicate that the greater the amount of income under women's control the greater amount devoted to their children's education, health and nutrition. Generally incomes of women are used for the increase of the well being of the family. However it is essential to guarantee that women will have the control of the resources and the free disposal of them to implement.

The role played by women in agricultural activities varies from region to region and between different ethnic groups within the same region. Such roles are related to the culture of the people concerned. It is generally observed that women play important role in the management of home gardens as

well as in the introduction and maintenance of plant diversity. Women are primarily responsible for the daily preparation of food for the family, and decide what to prepare and how to prepare it, so they exert a large influence on the composition and structure of home gardens. They have also been found to introduce diversity in home gardens by bringing new plant species from their parental home.

2. The Study Area

The study on aromatic medicinal plant species traditional uses and their medicinal values to treat human ailments was conducted in 9 kebeles of Sodo-Zuria district in Wolaita zone, Southern Nations, Nationalities, and Peoples' Regional State (SNNPRS). The area is found at South Central Ethiopia between 6.4⁰-6.9⁰N latitude and 37.4⁰-37.8⁰E longitude and is located at 390 km south of Addis Ababa and 160 km from Hawassa, the capital of the Regional State. Sodo-Zuria district is one of the 12 rural districts of Wolaita zone. The district encloses two agro-climatic zones, high land (Dega), and mid land (Woina dega) covers 5% and 95% of the total area of the district respectively. The Dega is above 1800 m.a.s.l. and Woina Dega 1500-1800 m.a.s.l. These climatic zones are highly degraded because of over cultivated for long periods of time and densely populated with easily erodible landscape. The total population of Sodo-Zuria district is estimated to be 153,521 out of which 79,871 male and 73,651 female (2008 census) and average population density is estimated to be 600 in per square km. Population density is very high in both agroclimatic zones (Dega and Woina Dega). The Total area of Sodo-Zuria district is 40,808.4 ha. Of which 5% is Dega, 95% is Woina Dega. For administration purposes the district is divided into 30 rural kebeles. The topography of the district is 70% flat land, 13% rugged and 17% is mountainous. Elevation of the district is ranging from 1500-2950 m.a.s.l.

Maximum and Minimum temperature of the district is 28⁰c and 18⁰c respectively. The average annual rainfall ranges from 900mm to 1100mm. From the total area of the district 5,424.75 ha, is covered by perennial crops, 22,326 ha, is also covered with annual crops. 9351ha. of land is occupied by vegetation and 644.5 ha, of land is used for grazing. The rest 3062.15ha is for other uses like settlement, construction and some of it is highly degraded, rugged, and deforested lands.

3. Methodology

Data Collection

Preliminary survey of the study area was conducted in October 2017 and July 2018. These months were selected purposively because, October is the begging of the dry season and July is the rainy season (wet season) and in these two seasons the aromatic plant species are not in the same situation. During this survey, information about the physical features of the study area was collected. 9 local kebeles were identified by the help of district administrative office and agricultural department of Sodo-Zuria district. They were selected purposefully for data collection, based on availability of traditional healers, elders (women and men) and different agro-climatic zone (Dega, and Woina Dega) of the district. The type of aromatic plants and their distribution

depends on the agro-climatic conditions. The identification was assisted by the district and local authorities, elders and knowledgeable persons to gather diversified information on the management, use and conservation of plant species.

The first field data collection was done in October 2017 and the second round data was collected in July 2018. Sixty-three Home gardens were selected by random identification of seven home gardens from each Kebele. Interview based field work was conducted with the owners of home gardens who were used as informants and all are belongs to the Wolayta people. The ages of the informants ranged between 25-95 years. Participatory Rural Appraisal (PRA) and semi-structured interviews were made on plant names, planting practices, sources of planting materials, plant use systems, plant uses, management methods, and other traditional and socio-economic practices. Traditional, cultural and spiritual sayings, songs and beliefs were recorded. All aromatic plant species that were found in home gardens which the community described as useful were listed according to their vernacular names. Voucher specimens were collected for each plant species in the field for further identification. The specimens were identified by using the published volumes of the Flora of Ethiopia and Eritrea (Hedberg and Edwards, 1989; Edwards et al., 1995 and 1997) and by comparing with authentic specimens in Department of Biology, Wolayta Sodo University.

The presence and absence of the most frequent species were identified in each home garden. The data were collected using purposive sampling method. This technique was preferred because the study focuses on specific issues that it was gathered from the most knowledgeable representatives of the society.

The methods employed in the data collection were group discussion, semi-structured interviews, open ended questions, field observation, market survey and preference ranking method. All the relevant data including the vernacular name of the plants, human diseases treated, system of management (cultivated), status, parts of plants used for medicine preparation, methods of preparation, routes of administration, noticeable adverse effects of remedies, and other uses of the aromatic plant species, existing threats to these species and traditional conservation practices were gathered during the interviews.

Factors affecting cultivation of medicinal plants

The main factors which generally affect the cultivation of medicinal plants can be stated as (i) proximity to plant source, (ii) time spent in collecting the plant, (iii) number of ailments perceived to be healed i.e., frequency of usage, (iv) retention of activity, (v) acceptance to use plants which are cultivated, (vi) ease to cultivate - availability of seeds or grafts, soil quality, vulnerability to pests, modest water requirements, maintenance etc, (vii) impact on other plants, (viii) market value and economic potential, (ix) drought, (x) land owning conflict and (xi) awareness amongst people that they have been causing adverse effect on large trees due to plucking shrubs around its vicinity and willingness to conserve indigenous forests.

Size, position and distribution of plant species in study area home garden.

Home gardens are the lands that encircle/surround the house in all directions that are the backyard, front yard, and side yards. The size of the land of home gardens in study area is depends on the total land size that individual household possesses. The average size of home gardens ranges from 0.0625 ha to 0.25 ha. The immediate land that surrounds the house at all directions is the first part of the home garden which is cared and managed by the female, whether the head of the household is male or female. This part of home garden is the immediate part which encircles the house. At the front it ranges 4 to 6 meters with the area nearly about 30 square meters and at back side it ranges 2 to 3 meters surrounding / circling the house. This part of home garden is always clean and managed by women and in Wolayta culture the woman who managed this part according to the culture may considered as wise and skilled.

The very common and important plant species cultivated in this part of garden are fully controlled and managed by the women. This part is the closest area to the house that is said to be Darkkuwaa or Darnichchaa (backyard) and Baasuwaa or Karyaa (front yard) and Soqommuwa and Soxaddiya (side yards). The common plant species that cultivated in this part of the home garden are aromatics/condiments, such as *Artemisia absinthium*, *Ocimum lamiifolium*, *Ruta chalepensis*, *Ocimum basilicum*, *Myrtus communis*, *Artemisia afra*, *Cymbopogon citratus*, *Coriandrum sativum*, *Echinops hoehnelii*, *Lepidium sativum* and other ornamental species like flowers. These plant species commonly have medicinal value and used as spices to make food flavor.

Next to this raw in Wolayta culture the back and side yards are fully dominated by *Coffea arabica* (Tukkiyaa) and restrict cared, controlled and managed by male. The female has no right to use the product from this part without permission of her husband. In this part with coffee trees other multipurpose species like *Croton macrostachyus*, *Erythrina brucei*, *Annona cherimola*, *Vernonia amygdalina*, *Pesca americana*, *Cordia africana* and *Mangifera indica*. These species are very important trees used as shade trees, provide fruits, wood for construction and fire, moderate micro climate, maintain soil fertility, prevent soil erosion and improve soil aeration.

The third part of the home garden that found between Coffee and Enset layers is the large open space in which the most important seasonal plants are cultivated. Some of these species are vegetables, fruits, root crops, rhizomes, leaves, and other types. This part of home garden land is used for breeding of some endangered species and medicinal plant species like *Impomoea batatas*, *Colocasia esculenta*, *Cucurbita pepo*, *Carica papaya*, *Plectranthus edulis*, *Lycopersicon esculenta*, *Catha edulis*, *Dioscoria alata*, *Malus sylvestris*, *Solanum tuberosum*, *Brassica oleracea*, *Allium sativum*, *Nicotiana tabacum*, *Daucus carota*, *Zingiber officinale*, *Echinops hoehnelii*, *Allium cepa*, *Moringa stenopetala*, *Aframomum corrorima*, *Hilanthus Annuus*, *Capsicum spp.*, *Amaranthus hybridus*, *Lactuca sativa*, *Brassia spp.*, *Musa paradisiacal*, *Zea mays*, *Saccharum officinarum*, and *Rhamnus prinoides*.

The last stratum/ layer of home garden in Wolayta gardening system is the Enset layer followed by the field crops. This part of home garden is the backbone of the community not only as the food for human but also used for domestic animals as a feed. The Enset is intensively cultivated monoculture species which provides raw materials for construction, animal feed, for fuel. It keeps soil fertility, protects soil erosion, and the main income generating resource. All parts of the Enset has economic and use value.

Data analysis

Descriptive statistical methods such as percentages and frequency were employed to analyze and summarize the data collected on aromatic plant species medicinal values and traditional uses in the study area. The most useful information gathered on medicinal values and traditional uses of the species reported by local people; medicinal

value, application methods, methods of preparation, routes of administration, diseases treated, and parts used and habits of the plants were analyzed through descriptive statistics.

4. Results and Discussion

The study revealed a total of 20 plant species belonging to 8 families of *Lamiaceae* 6 species, *Asteraceae* 4 species, followed by *Solanaceae* 3 species, *Brassicaceae* and *Apiaceae* each contributed 2 species, *Myrtaceae*, *Poaceae*, and *Rutaceae* each with 1 species were identified and used to prepare medicines and help to treat various human ailments. All these species were collected from home gardens of selected house holds. Beside these aromatic species other 59 plant species were reported from the home gardens of the study site.

Table 1: Aromatic plant species identified in the home gardens of study area.

No	Family	Scientific Name	Wolayta Name	Amharic Name
1	<i>Apiaceae</i>	<i>Coriandrum sativum</i> L.	Deebuwa	Dinblaal
2	<i>Apiaceae</i>	<i>Cuminum cyminum</i>	Katikalaa	Ensilal
3	<i>Asteraceae</i>	<i>Acmella caulirhiza</i>	Aydaamiya	
4	<i>Asteraceae</i>	<i>Artemisia absinthium</i> L.	Cuqqunniya	Chikugn
5	<i>Asteraceae</i>	<i>Artemisia afra</i> Jacq.ex Wild	Naatraa	Hariti
6	<i>Asteraceae</i>	<i>Echinops hoechnelii</i> Schweinf	Boorissaa	
7	<i>Brassicaceae</i>	<i>Brassica japonica</i>	Senaaficciya	senafich
8	<i>Brassicaceae</i>	<i>Lepidium sativum</i> L.	Sibkaa	
9	<i>Lamiaceae</i>	<i>Ocimum hadiense</i> Forsk.	Kosorootiya	
10	<i>Lamiaceae</i>	<i>Ocimum lamiifolium</i> Hochst. ex Benth	Hirannuwa	
11	<i>Lamiaceae</i>	<i>Ocimum Suave</i> Willd.	Shaashaa	
12	<i>Lamiaceae</i>	<i>Ocimum basilicum</i> L.	Keppuwaa	Besobla
13	<i>Lamiaceae</i>	<i>Plectranthus caninus</i>	Mudhdhaa	
14	<i>Lamiaceae</i>	<i>Thymus schiemperiana</i>	Zimbaanuwa	
15	<i>Myrtaceae</i>	<i>Myrtus communis</i> L.	Aguppiya	
16	<i>Poaceae</i>	<i>Cymbopogon citrates</i> Dc. Stapt	Gucechchaa	Tej sar
17	<i>Rutaceae</i>	<i>Ruta chalepensis</i> L.	Xalotiya	
18	<i>Solanaceae</i>	<i>Capsicum annuum</i> L.	Mixamixuwa	mitmta
19	<i>Solanaceae</i>	<i>Capsicum spp</i>	Bambariya	berbere
20	<i>Solanaceae</i>	<i>Solanum spp.</i>	Bulo santtaa	

Analysis of the data showed that, shrubs constituted the largest number, 9 (45.00%) species of identified plant species followed by herbs 8 (40.00%) species. Climbers accounted 2 (10.00%) species and the rest one group is grass which contributed 1(5.00%) species in the collection (Table 2).

Table 2: Growth forms of aromatic plant species in the study site

S.No	Growth forms	Number of species	%	Rank
1	Herb	8	40.00	2 nd
2	Shrub	9	45.00	1 st
3	Grass	1	5.00	4 th
4	Climber	2	10.00	3 rd

As shown in Table3 all 20 species of eight families were collected from 9 kebeles' of 63 home gardens. None of them were collected from wild habitat. Family *Lamiaceae* contributed 6 species followed by *Asteraceae* with 4 species. *Solanaceae* 3 species, *Apiaceae* and *Brassicaceae* each contribute 2 species and *Myrtaceae*, *Poaceae*, and *Rutaceae* were each 1 species.

Table 3: Plant species distribution by Family in selected Home gardens of Damot Pulassa Woreda

S.No	Family name	Number of species	%	Rank
1	<i>Apiaceae</i>	2	10.00	4 th
2	<i>Asteraceae</i>	4	20.00	2 nd
3	<i>Brassicaceae</i>	2	10.00	4 th
4	<i>Lamiaceae</i>	6	30.00	1 st
5	<i>Myrtaceae</i>	1	5.00	5 th
6	<i>Poaceae</i>	1	5.00	5 th
7	<i>Rutaceae</i>	1	5.00	5 th
8	<i>Solanaceae</i>	3	15.00	3 rd

A total of 20 aromatic plant species with medicinal and spices properties were recorded. Some aromatic species such as *Coriandrum sativum*, *Ocimum hadiense*, *Ocimum lamiifolium*, *Ocimum basilicum*, *Ruta chalepensis* and *Capsicum spp.* were used for spice preparation to make the food taste and smell better. *Artemisia absinthium*, *Artemisia afra*, *Echinops hoechnelii*, *Lepidium sativum*, *Myrtus communis* and *Ruta chalepensis* are used to prepare remedies to treat different human and animal diseases. Some others are used for other purposes. For example *Cymbopogon citratus* used to wash food preparing utensils

(pots, dishes) mostly which made from clay. This species with *Ocimum hadiense* together also used to mix with fresh

Koco and bula that prepared from *Ensete ventricosum* to keep for a long time a year or more.

Table 4: Common Aromatic medicinal plants used in the preparation and the affliction treated

Family	Scientific Name	The plant parts used in the preparation and the affliction treated
Asteraceae	<i>Artemisia afra</i>	Fresh leaf is boiled, left overnight to settle and the juice is given to the woman who has given birth to drink it in the third day of birth. It is also true to the baby in the same way. It is believed that the juice remove if the clot blood in the womb and if the baby has drunk any fluid at the time of delivery. Fresh shoots leaves and seeds of <i>Artemisia afra</i> , <i>Myrtus communis</i> , <i>Coriandrum sativum</i> , <i>Artemisia absinthium</i> , and <i>Ocimum basilicum</i> grind together mixed with other ingredients and boiled and eaten with koco to treat stomachache /disorder, cold, chest ache, influenzas.
Asteraceae	<i>Artemisia absinthium</i>	Aqueous extracts of leaf applied externally as eye drop. The leaf used to clean eye, when trachoma caused.
Rutaceae	<i>Ruta chalepensis</i>	Fresh leaves chewed or boiled with coffee (made from leaves) for abdominal pain. The crushed leaf smell treats evil spirit. Common cold, stomachache,diarrhea,influenza.
Lamiaceae	<i>Ocimum lamiifolium</i>	Infusion of leaf or stem is drunk for abdominal pain or head ache.
Brassicaceae	<i>Lepidium sativum</i>	The seed is crushed and mixed with lemon to treat toothache and abdominal pain.
Asteraceae	<i>Echinops hoechnelii</i>	Dried pieces of the rhizome are burnt and its smock is used to treat evil spirit.
Lamiaceae	<i>Ocimum basilicum</i>	Crushed smell, headache,insect repellent,malaria
Brassicaceae	<i>Brassica japonica</i>	Amoebic dysentery,aborifaciet,for wound dressing
Apiaceae	<i>Coriandrum sativum</i>	Stomachache,coil
Apiaceae	<i>Cuminum cyminum</i>	Hypoglycemic agent, anticoagulant

Family	Aromatic Plant Species	Local name	Respondents response in terms of market price		
			high	moderate	low
Asteraceae	<i>Artemisia afra</i>	Natiraa	59	4	-
Apiaceae	<i>Coriandrum sativum</i>	Deebuwa	50	13	-
Solanaceae	<i>Capsicum annum</i>	Mixaamixuwa	63	-	-
Solanaceae	<i>Capsicum spp</i>	Barbariya	63	-	-
Lamiaceae	<i>Ocimum basilicum</i>	Keppuwa	45	18	-
Rutaceae	<i>Ruta chalepensis</i>	Xalotiya	31	21	11
Myrtaceae	<i>Myrtus communis</i>	Aguppiya	24	9	30
Lamiaceae	<i>Ocimum hadiense</i>	Kosorootiya	13	19	31
Lamiaceae	<i>Ocimum lamiifolium</i>	Hiranuwa	9	15	39
Lamiaceae	<i>Thymus schiemperiana</i>	Zimbaanuwa	18	15	30
Poaceae	<i>Cymbopogon citrates</i>	Gucechchaa	11	23	29
Asteraceae	<i>Artemisia absinthium</i>	cucqunniya	7	13	33
Brassicaceae	<i>Brassica japonica</i>	Senaaficciya	5	12	46
Brassicaceae	<i>Lepidium sativum</i>	Sibkaa	27	19	17
Asteraceae	<i>Echinops hoechnelii</i>	Boorissaa	9	16	38
Apiaceae	<i>Cuminum cyminum</i>	Katikalaa	55	8	-
Lamiaceae	<i>Ocimum Suave</i>	Shaashaa	7	13	43
Lamiaceae	<i>Plectranthus caninus</i>	Mudhdhaa	24	11	28
Solanaceae	<i>Solanum spp</i>	Bulo santa	-	-	-
Asteraceae	<i>Acmella caulirhiza</i>	Aydaamiya	-	-	-

The plant parts used for medicine preparation revealed that in terms of number, leaves are the most widely used part followed by flowers, seeds, rhizome and fruits in this study. Leaves of 10 species, seeds of 3 species, rhizome of 1 species, flowers of 5 species, and fruits of 1 species were used to prepare remedies that used to treat different human ailments.

The aromatic plant species are income source for persons who cultivated them in their home gardens. 63 home garden owners rated the market value of 20 aromatic plant species in terms of market price as high, moderate and low. Large number of respondents rated 'high' value in market (price) for species with high demand by the community of their medicinal and spices value. Species like *Artemisia afra*, *Coriandrum sativum*, *Capsicum annum*, *Capsicum spp*, *Ocimum basilicum*, *Ruta chalepensis* and *Brassica japonica* were rated with high market value as indicated in Table 5. Some others were rated with 'low' market value or no

market value, but cultivated in home gardens for some other purposes like as ornamental plant.

Table5. Market value of aromatic plant species.

The traditional healers in the study area were predominantly use shrubs followed by herbs. People who are using shrubs focus on leaf parts while those who use herbs do focus on leaves, seeds and flower parts of that plant.

Table 6: Parts of medicinal plants used for medicine preparation

S.No	Parts used	Number of species	%	Rank
1	Leaves	10	50.00	1 st
2	Seeds	3	15.00	3 rd
3	Rhizome	1	5.00	4 th
4	Flowers	5	25.00	2 nd
5	Fruits	1	5.00	4 th

The total plant species identified in the study area were used to treat more than 15 different types of diseases of human

ailments. As shown in table 7 below, the major six top diseases in the study area were treated using four or more than four plant species. The rest disease types are treated using 1-3 different plant species mixing up together to prepare remedies.

Table 7: Major diseases and number of plant species used to treat each disease

No	Common diseases in the study area	Number of species used	%
1	Stomach problems/ache/disorder/	6	30.00
2	Common cold/ pneumonia/ chill	4	20.00
3	Tonsillitis	3	15.00
4	Evil eye	2	10.00
5	Eye disease	3	15.00
6	Evil spirit	2	10.00

The most common diseases identified in the study area were stomach disorder, common cold, evil spirit, tonsillitis, evil eye, eye disease and pneumonia. As shown in Table 7, six

aromatic plant species were used to prepare remedy to treat stomach disorder. *Artemisia afra*, *Artemisia absinthium*, *Ocimum basilicum*, *Coriandrum sativum*, and *Lepidium sativum* were crashed together in different ratio to prepare traditional medicines for different types of diseases.

By using preference ranking method the most useful plant species were identified. All informants have given equal chance to indicate their need to the given species. It was made following Martin (1995), for five aromatic medicinal plants in treating stomachache. Accordingly, eight informants were identified to rank the five selected aromatic medicinal plants according to their efficacy in treating stomachache. Each rank is stated by integer values 1, 2, 3, 4, and 5. The most effective plant is stated by highest value 5 while the least important is stated by a value of 1. An overall rank for the species was given by adding up these values for all respondents.

Table 8: Informants rate preference ranking for five medicinal plant species, which used in treating stomachache

Plant Species	Respondents									Rank
	Xaltore	Lamma	Balotee	Kumaa	Temaa	Molanne	Bazte	Ashaa	Total	
<i>Coriandrum sativum</i>	4	3	5	3	4	5	2	3	29	3 rd
<i>Cuminum cyminum</i>	5	5	4	5	4	3	4	5	35	2 nd
<i>Artemisia absinthium</i>	2	4	2	3	1	1	3	1	17	5 th
<i>Artemisia afra</i>	5	5	5	4	5	4	4	5	37	1 st
<i>Myrtus communis</i>	3	2	2	1	3	4	2	3	20	4 th

According to informants preference *Artemisia afra* stands first as remedy for stomachache followed by *Cuminum cyminum* and *Coriandrum sativum* ranked third as the preference of the informants. *Myrtus communis* and *Artemisia absinthium* were rated in fourth and fifth rank by the informants' preferences.

Most medicinal plants prescription was orally administered and followed by dermal and nasal. *Artemisia afra*, *Artemisia absinthium*, *Lepidium sativum* and *Ruta chalepensis* were applied oral, dermal and nasal. Since they were the top aromatic medicinal plants used to treat many diseases in different methods of preparation.

Assessment of the remedies preparation showed that, crushing, pounding, powdering, grinding, boiling, extracting juice and chewing are the modes of preparation for the majorities of remedies.

Most traditional healers practice the same plant species used to treating different diseases. *Artemisia afra* used to treat evil spirit, stomach disorder, blood clotting for a woman after she has given birth and to remove fluid from uterus; the boiled and cooled juice of *Artemisia afra* and *Plectranthus caninus* (Mudhdha in Wolayta language) juice is taken in the third day of delivery.

In other round traditional healers are also treat the same disease using different plants; to treat the stomach disorder healers are using *Ruta chalepensis*, *Myrtus communis*, *Artemisia abyssinica*, *Artemisia afra*, *Ocimum lamiifolium*, and to treat tonsillitis the healers are also using, *Acmella caulirhiza*, *Artemisia afra* and *Artemisia abyssinica*.

The use of plants in religious ceremonies as well as for magic and medicinal purposes is common in the study area. Species such as *Artemisia afra* (Mariam Naatiraa, used to make Mary pleasant at the time of woman delivery), *Echinops kebericho* (smoke, used to frightened devil), *Ruta chalepensis* (Goromoote Xaliya, indicate the effect of evil eye), *Acmella caulirhiza* (used to make pleasant the spirit that cause small pox) are used for religious ceremonies as well as for magic and medicinal purposes. In addition to this, these species are also used to treat other diseases similar to that of other medicinal plant species.

Most medicinal plants are prepared alone and some are used to prepare in combination with others. *Artemisia afra*, *Artemisia abyssinica*, and *Myrtus communis* are chopped together and mixed with water, boiled to treat chill, common cold and stomach problem.

5. Conclusion

Eighteen aromatic medicinal plant species were collected and recorded from nine kebeles of Damot Pullassa woreda. The selected kebeles were relatively rich in aromatic medicinal plant diversity. The identified medicinal plants were distributed in 8 families and species. All species were reported from home gardens study area. Herbs constituted the largest number, 8 (40.00%) species from the total identified plant species followed by shrubs 9 (45.00) species, Grass 1(5.00%) species and the rest one group is climber which contributes 2 (10.00%) species in the collection. These all species were noted to treat human ailments. In the study area, 15 different human ailments were reported by informants as human health problems.

The most common diseases identified in the study area were stomach disorder, common cold, evil spirit, tonsillitis, evil eye, eye diseases, and pneumonia. Seven plant species were used to prepare remedy to treat stomach disorder.

Analysis of the plant parts used for medicine preparation revealed that in terms of number, leaves are the most widely used part followed by flowers seeds, rhizome and fruits. In this study, leaves from 10 species, seeds of 3 species, rhizome of 1 species, flowers of 5 species and fruits of 1 species were used to prepare remedies that used to treat different human ailments.

Most medicinal plants are prepared alone and some are used to prepare in combination with others. *Artemisia afra*, *Artemisia abyssinica*, *Coriandrum sativum*, and *Myrtus communis* are chopped together and mixed with water, boiled to treat chill, common cold and stomach problem.

The routes of administration are mainly internal in which oral administration is the common that followed by dermal, and nasal. Assessment of the remedies preparation showed that, crushing, pounding, powdering, grinding and chewing are the modes of preparation for the majorities of remedies. Most traditional healers practice the same plant species treat different diseases and in other round traditional healers were also used to treat the same disease using different plant species.

Like in other parts of Ethiopia, in 9 kebeles of Damot pullassa woreda, medicinal plants were threatened by different factors. Human driving factors were recorded as the main threats to plant species in general, and the way of harvesting medicinal plants in particular. The main factors to loss of plant species in the study area are agricultural expansion in relation to population growth and drought. Other problems threatening medicinal plants are lack of awareness, secrecy, and oral based knowledge transfer, unwillingness of young generation and influence of modern educations.

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