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Ethnobotanical Study of Traditional Medicinal Plants and Conservation by Indigenous People in Eastern Ethiopia

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Abstract: ***According to research, a medicinal plant has been a key component of the healthcare system and a readily available source of therapy worldwide. Purposive sampling was used to choose 24 critical respondents and 96 informed respondents from a range of age groups. The majority of respondents (58.33%) reported using medicinal plants regularly. Many human and animal ailments have been treated with medicinal plants, particularly in places where access to contemporary public healthcare is limited. Fifty-five plant species from 32 families were examined; of these, 52.74% were used to treat human health, 10.90% were used to treat livestock health, and 36.36% were used to treat both human and livestock health issues. The most dominant families were Solanaceae (6), followed by Fabaceae. Home gardens are the primary method for cultivating medicinal plants, accounting for 49.10%, while roadsides represent the least common cultivation method. Leaf (36.26%) was the most commonly used plant part in the preparation of drugs, followed by root (17.58%). Threatened medicinal plants and related knowledge were most commonly caused by urbanization, agricultural growth, lack of community awareness, firewood production, construction, modern health expansion, drought, and overgrazing. However, there isn't a comprehensive, systematic study on the use of medicinal plants for remedies and other economically significant purposes in the field of current research. We stressed that for the sustainable use and conservation of medicinal plants, both in situ and ex situ conservation and growing methods should be sufficiently considered.***

Keywords: Ethnobotanical, Medicinal Plant, Use, Ailment, Conservation, Threatened

Nomenclature:
TK: Traditional Knowledge
IK: Indigenous Knowledge
KI: Key Informants
MP: Medicinal Plant
WHO: World Health Organisation

I. INTRODUCTION

Medicinal plants are those that have been used in ancient healing methods to cure a variety of illnesses and Have contributed to the global development of contemporary medicine. The World Health Organisation (WHO) reported that 80% of the world's population uses traditional medicine, which uses plants and animal products, to support their well-being. A medicinal plant has its own organs used for therapeutic purposes and for manufacturing medications to address various health issues. These medicinal plants are primarily used in the healthcare system and serve as an easily accessible source of treatment for multiple ailments [14]. Therefore, medicinal plants also play a significant role in the development of both pharmacopoeial and non-pharmacopoeial drugs, thereby providing a vital link between traditional and modern health care systems [8]. However, medicinal plants have various organs that produce and prepare effective drugs used for healing and managing complex diseases. Thus, essential organs were leaves, stems, flowers, seeds, fruits, shoots, latex, barks, and roots. Ethiopians have used traditional medicinal plants [2] for their primary healthcare for a very long time [13]. In fact, medicinal plants have proven highly effective in treating a variety of human and animal illnesses, especially in areas with limited access to modern public healthcare facilities in Ethiopia. Since the beginning of humanity, people have evolved their own local, specific traditional knowledge (TK) on the use of medicinal plants, the treatment of ailments, and the conservation of plants [9].

Medicinal plants in the study areas are used in healthcare systems and livelihood development. Still, these medicinal plants and knowledge are threatened by environmental degradation, cultural and socio-economic changes, the death of elders, urbanisation, the lack of systematic conservation, the expansion of modern healthcare, and the lack of written documentation [21]. However, there isn't a comprehensive, methodical study on the use and preservation of medicinal plants in this field. Identifying and documenting the usage of medicinal plant species for uses other than medicine is another goal of the project. Therefore, by establishing the abundance of indigenous knowledge and understanding the corresponding drivers of this information for the management and conservation of medicinal plants used to treat human and livestock ailments in the study region, the research closes this knowledge gap. Thus, the goal of the study was to evaluate the issue by recording local knowledge, plant use, preparation techniques, administration routes, and medicinal plant conservation in the study areas.

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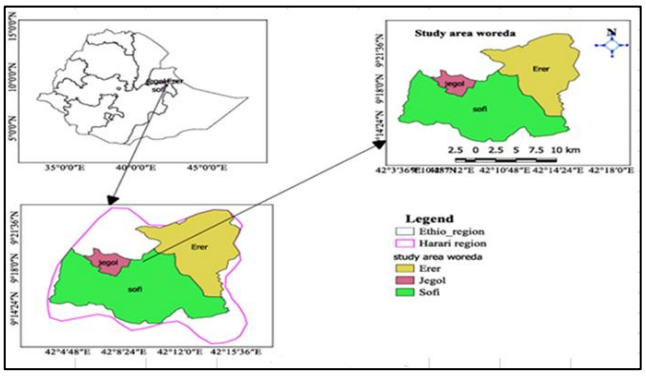
II. METHODS AND DATA COLLECTION

A. Description of Study Area

The study was conducted in Harari Regional State, which is located in the eastern part of Ethiopia (Fig. 1). It is 525km from Addis Ababa, the capital of Ethiopia. This study was conducted from 2024-2025 at three purposively selected woredas in the Regional. The selected Woredas were Erer, Jegol, and Sofi. Purposive sampling approaches were used to select the study woreda based on the availability of traditional medicine practice, recommendations from local elders, authorities, and religious leaders, the presence of conventional healers and knowledgeable individuals, and vegetation cover [24].



[Fig.1: Study Area Map]

B. Sampling Size and Techniques

Purposive sampling procedures were used to select 120 respondents from different age groups, and 24 key informants (16 men and eight women) were selected from community leaders, the elderly, and herbalists [18]. Samples of medicinal plant species were collected and recorded in their local names, with scientific names based on the researcher's own experience, referring to 'Useful Trees and Shrubs of Eritrea, 'Useful Trees and Shrubs for Ethiopia, and the Flora of Ethiopia [7].

C. Data Collection Methods

Ethno-botanical data were collected using semi-structured questionnaires, interviews, and field observations on the use and conservation of medicinal plants and indigenous knowledge (IK) by people from each selected woreda [9]. The key informants (KI) share their expertise on the preparation technique, the plant parts used, the route of administration, the remedy, and the preparation techniques. To gather ethno-botanical information about the plants, including preparation techniques, cures, and routes of administration, conservation efforts, and threats to medicinal plant species, semi-structured questionnaires were administered to respondents. The interviews were also conducted with key informants to validate the data and clarify the uniqueness of plant species through repeated examination. These activities were conducted twice, with the same and different respondents, to confirm the data's validity and reliability.

D. Specimen Identification and Collection

Medicinal plants were collected from home gardens, live fences, agroforestry, and cultivated areas. The local names, habits, cultivation methods, preparation methods, and disease threats of medicinal plants were collected and preserved at the Harar Biodiversity Centre. Plant species and specimens were identified using taxonomic keys and the flora of Ethiopia and Eritrea [5].

E. Data Analysis

The collected data on plant species diversity, growth habit, parts, and route of administration, methods of preparation, conservation practices, and factors threatening medicinal plants were analysed using statistical methods following [18].

III. RESULTS AND DISCUSSION

A. Socio-Demographics of the Respondent

As a result (63.33%) male, and (36.67%) female. (55.83%) Respondents were found between the ages of 36 and 65, followed by (26.67%) respondents between the ages of 20 and 35, while the remaining, above 66 years, were (17.5%), which was the least age group. The educational status of (53.33%) respondents was having formal education, followed by Illiterates (29.17%), whereas (13.33 %) of them had religious education. Therefore, most respondents had formal education and were least likely to be illiterate. The majority of respondents (58.33%) have used medicinal plants for regular treatment, and the most common source of knowledge about medicinal plants is family (55.83%), followed by family and exercise (23.33%).

B. Medicinal Plant Diversity

As a result, 55 medicinal plant species from 32 families were identified and documented (Table 1). The principal families were Solanaceae (6) and Fabaceae (4), followed by Alliaceae (3), Lamiaceae (3), and Asteraceae (3). From 55 medicinal plant species (52.74%) of them used to treat human health, (10.90%) of them were used to treat livestock health and (36.36%) of them used to treat both human and livestock health.

C. Cultivation and Growth Habit of Medicinal Plants

According to the study, methods for cultivating medicinal plants can be used in home gardens, live fences, agroforestry, agricultural fields mixed with other crops, and roadside areas. Homegarden (49.10%) is the principal method of cultivation of medicinal plants, followed by agroforestry (25.45%), whereas roadside cultivation is the least used method and results in threatened plant species [15]. Growing habits of medicinal plant species were: trees (21.82%), herbs (43.63%), shrubs (32.73%), and climbers (1.82%). Herbs (43.63%) were the most common growth habit, followed by shrubs (32.73%).

D. Medicinal Plant Parts Used

As the study parts of medicinal plant used to produce remedies to treat various health problems were leaf (36.26%), root (17.58%), shoot (1.1%), bark (5.49%), whole plant (1.1%), fruit (9.9%), latex (2.2%), stem (6.59%), seed (16.48%), flower (1.1%), and rhizome (1.1%), Bulb (2.2%). Leaf (36.267%) is the principal part of the

plant used, followed by the root (17.58%).

E. Method of Preparation and Route of Administration of Plant Remedy

Preparations of plant remedies were made using various methods depending on the type of disease treated. Methods of remedy preparation were pounded (32.67%), boiled (8.91%), crushed (13.86%), squeezed (7.92%), cooked (1.98%), powdered (10.89%), grounded (5.94%), chewed (6.93%), chopped (2.97%), smoking (1.98%), unprocessed (3.96%) and fumigate (2.97%). Pounded (32.67%) is the principal method of remedy preparation, followed by crushing (13.86%) and powdered (10.89%). As a result, various routes of administration of medicinal plant remedies were oral (49.28%), dermal (36.23%), nasal (10.14%), and eye (4.35%). Oral (49.28%) is the principal route of administration, followed by dermal (36.23%) [20].

IV. THREAT AND CONSERVATION OF MEDICINAL PLANTS

A. Factors Threatening Medicinal Plants

Both natural and human factors may pose threats to medicinal plants and related knowledge. According to the study's analysis, urbanisation, agricultural growth, a lack of community awareness, charcoal and firewood production, construction, the proliferation of modern health, drought, and overgrazing were the most frequent threats to medicinal plants [17]. The leading causes endangering medicinal plants in the research area were agricultural expansion (30.83%), followed by urbanisation (21.67%) and charcoal manufacturing (18.33%).

B. Conservation of Medicinal Plants

This study showed that (61%) of the respondents clarified that no attempt was made for the conservation of medicinal plants, whereas (38%) of them made conservation attempts for medicinal plants. In the study district, respondents were conserving medicinal plants in homegardens, farmland, and agroforestry systems, and cultivating them along fences, road sides, mosques, and churches [19]. It is essential to raise awareness among the local community and promote community-based conservation practices for traditional medicinal plants. Home gardening is a strategic approach to conserving medicinal plant diversity and traditional knowledge [4]. Generally, medicinal plants should be conserved extensively through ex situ and in situ conservation methods.

V. DISCUSSION

In the present study, a total of 55 medicinal plant (MP) species from 32 families were documented as used by local people. This indicates the depth of the local indigenous knowledge on medicinal plants and their applications. Out of the collected medicinal plants, (52.74%) species were used to treat human diseases, 10.90% of the species (10.90%) were used to treat livestock ailments, whereas (36.36%) species were used to treat both human and livestock ailments. Mainly, medicinal plants are used to treat human diseases rather than livestock ailments. This finding is similar to reports that most medicinal plants in the Sheka zone are used to treat human ailments (77%), and that 19% of medicinal plants are used to treat both human and livestock ailments (25). Among the families of medicinal plants, Solanaceae (6) and Fabaceae (4) had the highest number of species. This was followed by Alliaceae (3), Lamiaceae (3), and Asteraceae (3). This finding shows that the families Solanaceae and Fabaceae contributed the most medicinal plant species. This finding is consistent with reports that Fabaceae is a dominant family, with 5–26 medicinal plant species [22]. Similar to this result, another study in Ethiopia also noted that Solanaceae (28.57%) species were the most frequently used species in Fadis District, Eastern Ethiopia [6]. From a total of 55 ethnomedicinal studies of medicinal plant species that are used to treat human and livestock ailments recorded in the study area, (49.10%) are collected from the Homegarden, followed by agroforestry (25.45%). This result conflicts with reports from Ethiopia and other countries, which indicate 42.6%–81.6% of medicinal plant species collected from natural vegetation [16]. The results indicated that the growing habits of medicinal plant species were: trees (21.82%), herbs (43.63%), shrubs (32.73%), and climbers (1.82%). Herbs (43.63%) were the most common growth habit, followed by shrubs (32.73%). This is similar to reports from previous studies in Ethiopia and other countries, which indicated that 39.9%-56.6% of medicinal plants were herbs [1]. In the study area different parts of medicinal plant used to produce remedies were leaf (36.26%), root (17.58%), shoot (1.1%), bark (5.49%), whole plant (1.1%), fruit (9.9%), latex (2.2%), stem (6.59%), seed (16.48%), flower (1.1%), and rhizome (1.1%), Bulb (2.2%). Leaves (36.267%) are the principal parts of plants, followed by roots (17.58%). This finding is consistent with studies conducted in Ethiopia, which report leaves (32.6%-56% medicinal plants) as the most widely used plant parts [25]. Preparations of plant remedies were made using various methods depending on the type of disease treated. Methods of remedy preparation were pounded (32.67%), boiled (8.91%), crushed (13.86%), squeezed (7.92%), cooked (1.98%), powdered (10.89%), grounded (5.94%), chewed (6.93%), chopped (2.97%), smoking (1.98%), unprocessed (3.96%) and fumigate (2.97%). Pounded (32.67%) is the principal method of remedy preparation, followed by crushing (13.86%) and powdered (10.89%). This finding is consistent with a report that pounding is the most common method of preparing plant remedies, followed by crushing, in the Fadis District, Eastern Ethiopia [6].

The various routes of administration of medicinal plant remedies were oral (49.28%), dermal (36.23%), nasal (10.14%), and ocular (4.35%). In the study area, Oral (49.28%) is the principal route of administration, followed by dermal

(36.23%). This result is consistent with various reports indicating that the primary mode of medicinal plant administration in Ethiopia and other countries is oral [12], [3]. In the study, the most common factors threatening medicinal plants were urbanisation, agricultural expansion, lack of community awareness, Charcoal production, firewood collection, construction, modern healthcare expansion, drought, and overgrazing. This is consistent with reports that medicinal plants have been threatened by agricultural expansion, deforestation, fire, overgrazing, and charcoal production [11]. In the study area, agrarian expansion (30.83%) was the primary factor threatening medicinal plants, followed by urbanisation (21.67%) and charcoal production (18.33%). This finding is consistent with the report that agricultural expansion (34%–55%) is the main factor in the disappearance of medicinal plants across different parts of the country [10], [23]. Moreover, informants have reported that the younger generation is refusing to learn traditional medicine, that practitioners who die without sharing their knowledge with others are other critical factors in the loss of medicinal plants and associated knowledge.

VI. CONCLUSION

In conclusion, a medicinal plant is a plant used to treat human and animal illnesses. These medicinal plants are crucial for the creation of both pharmacopoeial and non-pharmacopoeial medicinal drugs. Local communities have indigenous knowledge and practice traditional medicine in health care systems that use medicinal plants. Most of the respondents had formal education, and (58.33%) of them have used medicinal plants for regular treatment. Fifty-five medicinal plant species with 32 families were identified and catalogued. Solanaceae (6) and Fabaceae (4) are the principal families. (52.74%) plant species were used to treat human health, (10.90%) plant species used to treat livestock health and (36.36%) of them used to treat both human and livestock health. Homegarden (49.10%) is the principal method of cultivation of medicinal plants. The study indicated that herbs (45.24%) were the most common growth habit of medicinal plants, followed by shrubs (30.95%). Leaf (36.26%) was the most commonly used plant part in the preparation of remedies, followed by root (17.58%). Pounding (32.65%) is the principal method of preparation, followed by crushing (13.86%). Oral administration (49.28%) is the dominant route for plant remedies, followed by dermal (36.23%). Both natural and human factors caused the threats to medicinal plants and associated knowledge. Agricultural expansion (30.83%) was the primary factor threatening medicinal plants, followed by urbanisation (21.67%) and charcoal production (18.33%). (61%) of the respondents clarified that no attempt was made to conserve medicinal plants, whereas (38%) of them have made conservation attempts. The study aims to find and document the uses of different medicinal plant species and conservation methods. Furthermore, there have been few attempts to identify the elements associated with the communities' use of the plants and the dangers they pose. Thus, by cataloguing the wealth of indigenous knowledge and understanding the corresponding drivers of this information related to the management and conservation of medicinal plants used to treat human and livestock illnesses in the study region, the research fills this knowledge gap. Based on the study result, the following recommendations were forwarded;

- Promote the local communities to cultivate medicinal plants in their home gardens, farm land and in the form of live fences.
- We should encourage local communities through awareness, education, and understanding of the sustainable utilisation and conservation of medicinal plant species with their indigenous knowledge.
- Encourage traditional medicine practitioners through licensing and incentive approaches.

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DECLARATION STATEMENT

As the article's author, I must verify the accuracy of the following information after aggregating input from all authors.

Some of the references cited are outdated, noted explicitly as [12]. However, these works remain significant for the current study, as they are pioneering in their fields.

- **Conflicts of Interest/ Competing Interests:** Based on my understanding, this article has no conflicts of interest.
- **Funding Support:** This article has not been funded by any organizations or agencies. This independence ensures that the research is conducted objectively and without external influence.
- **Ethical Approval and Consent to Participate:** The content of this article does not necessitate ethical approval or consent to participate with supporting documentation.
- **Data Access Statement and Material Availability:** The collected and recorded data are available in the manuscript and in the authors' hands.
- **Author's Contributions:** Bekele Kindie: involved in data collection, writing the original draft, and editing the manuscript; and approved the final manuscript for publication. Girum Faris: Revised, data analysis and enriched the final published version of the manuscript.

REFERENCES

1. Ali M, Hussain D., and Hussain W. (2020). Quantitative ethnobotanical study of Indigenous Knowledge on medicinal plants used by the tribal communities of Gokand Valley, District Buner, Khyber Pakhtunkhwa, Pakistan. Plants, 9(**8**), 1001. DOI: https://doi.org/10.3390/plants9081001
2. Alemu, M., Asfaw, Z., Lulekal, E., *et al*. (2024). Ethnobotanical study of traditional medicinal plants used by the local people in Habru District, North Wollo

Zone, Ethiopia. *J Ethnobiology Ethnomedicine:* 20(4). DOI: https://doi.org/10.1186/s13002-023-00644-x.
3. Assefa, B., Megersa, M., and Jima, T.T. (2021). Ethnobotanical study of medicinal plants used to treat human diseases in Gura Damole District, Bale Zone, Southeast Ethiopia—Asian *Journal of Ethnobiology*. DOI: https://doi.org/10.13057/ASIANJETHNOBIOL/Y040105
4. Banchiamlak Nigussie Tefera, Kim Y D. (2019). Ethnobotanical study of medicinal plants in the Hawassa Zuria District, Sidama zone, Southern Ethiopia. *Journal of Ethnobiology and Ethnomedicine*, 15(**1**), 25. DOI: https://doi.org/10.1186/s13002-019-0302-7
5. Bekele Kindie. (2023). Analysis of Medicinal Plants and Traditional Knowledge Development in Ethiopia. *International Journal of Advanced Pharmaceutical Sciences and Research*. 4[1]: 26-31. DOI: https://doi.org/10.54105/ijapsr.A4033.124123
6. Bekele Kindie, Chala Tamiru, Tahir Abdala. (2021). EthnoBotanical Study of Medicinal Plants and Conservation Status Used to Treat Human and Livestock Ailments in Fadis District, Eastern Ethiopia. *International Journal of Homoeopathy & Natural Medicines*.7 (1); pp. 7-17. DOI: https://doi.org/10.11648/j.ijhnm.20210701.12
7. Bekele M, Woldeyes F, Lulekal E, et al. (2022). Ethnobotanical investigation of medicinal plants in the Buska Mountain range, Hamar district. Southwest Ethiop J Ethnobiol Ethnomed. 2022;18(1):1–26. DOI: https://doi.org/10.1186/s13002-022-00558-0
8. Birhanu Adibaru Abebe, Samuel Chane Teferi. (2021). Ethnobotanical Study of Medicinal Plants Used to Treat Human and Livestock Ailments in Hulet Eju Enese Woreda, East Gojjam Zone of Amhara Region, Ethiopia. *Evidence-based complementary and alternative medicine (eCAM)*, *2021*, 6668541. DOI: https://doi.org/10.1155/2021/6668541.
9. Dida G. (2017). Floristic Composition of Wetland Plants and Ethnomedicinal Plants of Wonchi District, South Western Shewa, Oromia Regional State, Ethiopia. M.Sc. Thesis, Addis Ababa University, Addis Ababa. https://etd.aau.edu.et/items/5a78f01d-56a1-4640-8b4b-81716afbe310.
10. Derebe Alemneh. (2021). Ethnobotanical Study of Plants Used for Human Ailments in Yilmana Densa and Quarit Districts of West Gojjam Zone, Amhara Region, Ethiopia. *BioMed Research International, vol.* 2021, 6615666. DOI: https://doi.org/10.1155/2021/6615666.
11. Getnet Chekole. (2017). Ethnobotanical study of medicinal plants used against human ailments in Gubalafto District, Northern Ethiopia. *J Ethnobiology Ethnomedicine* **13(1)**. DOI: https://doi.org/10.1186/s13002-017-0182-7.
12. Getnet Chekole, Zemede Asfaw, and Ensermu Kelbessa. (2015). Ethnobotanical study of medicinal plants in the environs of Tara-gedam and Amba remnant forests of Libo Kemkem District, northwest Ethiopia. *Journal of Ethnobiology and Ethnomedicine*, 11(**1**), 4. DOI: https://doi.org/10.1186/1746-4269-11-4 works remain significant, see the declaration
13. Gonfa, N., Tulu, D., Hundera, K., and Raga, D. (2020). Ethnobotanical study of medicinal plants, their utilisation, and conservation by the indigenous people of the Gera district, Ethiopia. Cogent Food & Agriculture, 6(1). DOI: https://doi.org/10.1080/23311932.2020.1852716
14. Hu R, Lin C, Xu W, Liu Y and Long C. (2020). Ethnobotanical study of medicinal plants used by the Mulam people in Guangxi, China. J Ethnobiol Ethnomed;16(1): 1–50. DOI: https://doi.org/10.1186/s13002-020-00387-z
15. Zhou, H., Zhang, J., Kirbis, B. S., Mula, Z., Zhang, W., Kuang, Y., Huang, Q., and Yin, L. (2023). Ethnobotanical study on medicinal plants used by Bulang people in Yunnan, China. *Journal of ethnobiology and ethnomedicine*, *19*(1):38. DOI: https://doi.org/10.1186/s13002-023-00609-0.
16. Leul Kidane, Gebrecherkos Gebremedhin und Tadesse Beyene. (2018). Ethnobotanical study of medicinal plants in Ganta Afeshum District, Eastern Zone of Tigray, Northern Ethiopia. *Journal of Ethnobiology and Ethnomedicine*, 14(**1**): 64. DOI: https://doi.org/10.1186/s13002-018-0266-z
17. Kassa Z., Asfaw Z., Demissew S. (2020). An ethnobotanical study of medicinal plants in the Sheka Zone of the Southern Nations, Nationalities and Peoples' Regional State, Ethiopia. *J Ethnobiol Ethnomed*. 16(1):7. DOI: https://doi.org/10.1186/s13002-020-0358-4
18. Yimam, M., Yimer, S. M., & Beressa, T. B. (2022). Ethnobotanical study of medicinal plants used in Artuma Fursi district, Amhara Regional State, Ethiopia. *Tropical medicine and health*, *50*(1), 85. DOI: https://doi.org/10.1186/s41182-022-00438-z.
19. Mersha Ashagre, Ensermu K., Gemedo Dalle. (2016). Ethnobotanical study of medicinal plants in Guji Agro-pastoralists, Bule Hora District of Borana Zone, Oromia Region, Ethiopia. *Journal of Medicinal Plants Studies*, 4(2), 170–184. DOI: https://doi.org/10.22271/plants.
20. Melkamu, G. (2020). Ethnobotanical Study on Assessment of Practice on Traditional Plant Medicine Use among People of Wonchi District, Central Ethiopia. *International Journal of Applied Sciences: Current and Future Research Trends*, *5*(01), 15-68. https://ijascfrtjournal.isrra.org/Applied_Sciences_Journal/article/view/1136
21. Mathewos Agize, Zemede Asfaw, Sileshi Nemomissa, Tizazu Gebre. (2022). Ethnobotany of traditional medicinal plants and associated indigenous knowledge in the Dawuro Zone of Southwestern Ethiopia. *Journal of ethnobiology and ethnomedicine*, *18*(1): 48. DOI: https://doi.org/10.1186/s13002-022-00546-4.
22. Nigussie Amsalu, Yilka Bezie, Mulugeta Fentahun, Addisu Alemayehu, Gashaw Amsalu (2018). Use and conservation of medicinal plants by the Indigenous People of Gozamin Wereda, East Gojjam Zone, Amhara Region, Ethiopia: Evidence-Based Complementary and Alternative Medicine. DOI: https://doi.org/10.1155/2018/2973513
23. Sintayehu Tamene, Dagne Addisu,Etana Debela. (2020). Ethnomedicinal study of plants in Boricha district: Use, preparation and application by traditional healers, Southern Ethiopia. Journal of Medicinal Plants Research, 14(**7**), 343–353. DOI: https://doi.org/10.5897/JMPR2020.6906
24. Tibebu, Tefera & Yihune, Mesele. (2019). Ethnobotanical study on medicinal plants used by indigenous people in Tenta District, South Wollo, Ethiopia. Journal of Medicinal Plants Research. 13(2), Pp. 47-54. DOI: https://doi.org/10.5897/JMPR2018.6599
25. Zewdie Kassa, Zemede Asfaw, Sebsebe Demissew (2020). An ethnobotanical study of medicinal plants in the Sheka Zone of the Southern Nations Nationalities and Peoples' Regional State, Ethiopia. Journal of Ethnobiology and Ethnomedicine, 16(1), 7. DOI: https://doi.org/10.1186/s13002-020-0358-4

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SUPPLEMENTAL DATA

A. Appendix

Table 1: List of medicinal plants used for treating human ailments in the study area with scientific name, family, local name, shrub (S), growth habit(GH), cultivation(CT), tree (T), herb (H), Disease treated(DT)), seed (Se), fruit (Fr), flower (Fl), shoot (Sh), parts used (PU), root (R), leaf (L), latex (La), stem (St), bulb (Bu), bark (Ba), rhizome (Rh), methods of preparation(MP), home gardens(HG), route of administration(RA), oral (O), dermal(D), nasal (N), eye(E), road side(RS), live fence (LF), agricultural field (AGF) and agroforestry(AF).

Scientific Name (Family)	Local Name	CT	GH	Pu	MP	DT	RA
Beta vulgaris L. (Chenopodiaceae)	Kosta	HG	H	R	Fresh root is collected and pounded, then eaten.	Abdominal pain*	O
Ziziphus spina-christi L. (Rhamnaceae)	Kurkura	AF	T	L	The fresh leaf is pounded and then squeezed	Devil's illness*	O
Allium sativum L. (Alliaceae)	Nech shinkurt	HG	H	Bu	Bulb mixed with the fruit of Capsicum annum and boiled with butter, then drunk.	Stomach complaints*	O
				Bu	Blub is crushed together with the rhizome of *Zingiber officinale* and Lepidium sativum, then honey is added, and two teaspoons are taken. Fresh bulb is eaten within jera	Evil eye*	O
				Bu	The fresh bulb is crushed, mixed with honey, and soaked for 7 days; then, one spoonful of the mixture is eaten in the morning for 5 days.	Malaria*	D
				Bu	A fresh bulb is boiled with tea, and one cup is drunk before a meal is eaten.	Common cold*	D
Carica papaya L. (Carricaceae)	Papaya	HG	T	Se	Dried seeds are pounded and drunk in two cups of coffee every morning for three days.	Jaundice*	O
Croton macrostachyus author (Euphorbiaceae)	Bisana	AGF	T	R	Dry root is pounded, powdered, mixed with water, and one glass is drunk.	Stomachache*	O
				L	Fresh shoot tips are cut, cooked, and two spoonfuls of the solution are drunk per day for five consecutive days.	Gonorrhea*	O
				L	Fresh leaf cooked, pasted with honey and then eaten.	Jaundice*	O
				Ba	The fresh bark is ground, mixed with water, and given to the animal as drinking material.	Bloat**	O
				La	Sap juice is produced and applied to the skin	Ringworm*	D
				L	Boil fresh leaves in water, filter and drink with milk or tea.	Malaria*	O
				Ba	Dry bark is powdered, mixed with water, and prepared as teff injera (concoction), then simply eaten.	Rabies*	O
Datura stramonium L. (Solanaceae)	Astenagir	RS	H	Fl	Flower is pounded, and the dried powder is given to women with honey after 10 days of menstruation.	Infertility in women *	O
				L	Seeds are boiled in water, and the vapour is inhaled.	toothache*	O
				L	The fresh leaf is squeezed, and the juice is applied to the eye	Eye disease*	E
				L	Crushed and homogenized leaves are drunk with water	Rabies*	O
				L	Fresh leaves of Withania somnifera and Laggera tomentosa are pounded, half a spoon is added to a cup of coffee, and then the drink is consumed every morning until recovery.	Cough*	O
Aloe macrocarpa Tod. (Alliaceae)	Ret	HG	H	La	The latex of the species is squeezed and then taken once.	Stomachache*	O
				L	Fresh leaves are crushed and tied on.	Nose bleeding*	N
				L	Fresh leaf is pounded with Ruta chalepensis, Allium sativum, and Foeniculum vulgare, mixed with water, and given to cattle.	Bloat**	O
				L	Fresh leaves are pounded and mixed with butter, then applied to the skin.	Leprosy*	D
				L	Fresh leaves are chewed and swallowed to extract the juice	Intestinal parasite***	O
Calpurnia aurea. (Fabaceae)	Digita	HG	S	L/ Se	Fresh leaf or seed is pounded together with the leaf of Nicotiana tobaccos and taken through the nostrils.	Leech**	N
				L	Fresh leaves are chewed and swallowed by humans, and the leaves are pounded, mixed with water and given to animals until the diarrhoea stops.	Diarrhea***	O
				Se	Seeds are crushed and mixed with honey, and one teaspoon is eaten for five consecutive days.	Syphilis*	O

				L	Fresh leaves are pounded, mixed with water, and used to wash the boy and the animal every morning until the parasites are eradicated.	Lice**	D
				L, Se& Fr	Fresh leaves, fruit and seeds are crushed, mixed with food and given to dogs.	Rabies**	O
Carissa spinarum L. (Apocynaceae)	Agamsa	AF	S	R	Fresh root is crushed and boiled, then added to cow milk and drunk.	Gonorrhea*	O
				R	Fresh root is pounded and added to water, then kept and left to stand for a day, and then drunk.	Malaria*	O
				R	Fresh root is pounded, then mixed with tella and drunk.	Sexual impotency*	O
Citrullus lanatus (Cucurbitaceae)	Habhab	HG	H	Fr	Squeezing and eating	Hypertension*	O
Cordia africana Lam. (Boraginaceae)	Wanza	LF	T	L	Leaf is pounded, mixed with butter, and applied to the affected part	Wound*	D
				Ba	Fresh bark is pounded, then mixed with water and drunk with one coffee cup for three to four consecutive days.	Continuous flow of menstruation*	O
				L	Fresh leaves are boiled in water after being mixed with Sorghum bicolour, then chewed.	Jaundice*	O
Coriandrum sativum (Apiaceae)	Dimbeal	HG	H	L	Fresh leaf is pounded with the leaf of Croton macrostachyus and creamed on the painful area for 2-3 days.	Diffuse cutaneous leishmaniasis*	D
Cucurbita pepo L. (Cucurbitaceae)	Duba	HG	CI	Fr	Fresh fruit is cooked and cooled, then eaten before breakfast.	Gastritis	O
				Se	Fresh seeds are chewed and soaked in water, then left to soak overnight.	Hookworm*	O
				R	Fresh root is pounded with *Vernonia amygdalina* and mixed with local areke or katukala, then given orally.	Bloat*	O
Ehretiacymosa Thonn. (Boraginaceae)	Ulaagaa	AF	T	L /R	Fresh leaf/root is pounded with the roots of Zehneria scabra and Zaleya pentandra, then added with katicala and given to cattle.	Stomach ache***	O
				L	Fresh leaves are crushed with the leaves of the Cissus species and drunk.	Mich*	O
				Se	Fresh, dried seeds are ground and mixed with water, then drunk.	Taeniasis *	O
Eucalyptus globulus Labill. (Myrtaceae)	Nech bahir zaf	AGF	T	L	Fresh young leaves are boiled in water, then fumigated with the vapour under sealed clothes in the morning.	Asthma*	D
				Sh	Washing the soil with young shoots or putting it under the sock.	Athlete's foot*	D
				L	Fresh young leaves are boiled in water, and the vapour is fumigated under sealed clothes at bedtime.	Cough*	D
Hordeum vulgare L. (Poaceae)	Gebis	AGF	H	Se	The roasted seed powder is boiled in water and drunk until relief is achieved.	Gastritis*	O
				Se	Fresh, dried seed with dry leaves of Melia azedarach is crushed and sprinkled on the feed.	Bloat**	O
Justicia schimperiana (Acanthaceae)	Smiza	LF	S	L	Dried leaf is decocted, mixed with Calpurina aurea, and washed over the body.	Lice***	D
				L	Dried leaf powder from Croton macrostachyus is pasted with butter and applied once a day for 5 days.	Eczema*	D
				L	Newly growing fresh leaves milled on palms, and the squeezed liquid added to a coffee cup 4. Drink the liquid every night for a week.	Jaundice***	O
				R&L	Roots and leaves are pounded together, then mixed with water and given orally to humans and animals in the morning before food.	Rabies***	O
Lagenaria siceraria (Cucurbitaceae)	Buqqee	HG	S	Se	Fresh seeds are ground and added to fire, then smoked, or drunk with honey.	Evil eye*	O
				L	Fresh leaves are pounded and drunk with a small amount of water.	Snake bite*	O
Linum usitatissimum L. (Linaceae)	Telba	AGF	H	Se	Powdered seeds are immersed in water and drunk in one glass continuously.	Gastritis*	O
				Se	The dried seeds are soaked in water, and the water solution is drunk.	Constipation***	O
				R	Dried seed is boiled, salt is added, and the mixture is given to the animal for a day.	Retention of placenta***	O
				Se	Powdered seed is added to water and drunk on an empty stomach.	Amoebiasis*	O
Lepidium sativum L. (Brassicaceae)	Feto	HG	H	Se	Seeds are ground into a paste-like food, mixed with butter and water, and then drunk.	Diarrhea*	O

				Se	The seeds are inserted into the fire and smoked for the patient.	Mich*	D
				Se	Fresh seed is pounded and mixed with water, then drunk.	Stomach complaints*	O
Lycopersicon esculentum L. (Solanaceae)	Timat ime	AGF	H	Fr	Fresh fruit is placed in the fire and eaten to relieve a common cold.	Common cold*	o
Maytenus senegalensis Lam. (Celastraceae)	Komb olcha	AF	S	L	Dried leaf is pounded with the stem of Olea europaea and mixed with butter, then the paste is applied to it.	Haemorrhoids*	D
				Ba	Fresh bark is pounded with the flower of Hagenia abyssinica, mixed with water and local beer, then given to the animal.	Diarrhea**	O
				L	The fresh leaf is collected and pounded, then added to water and applied to animal skin.	Lice**	D
Millettia ferruginea (Fabaceae)	Birbira	AF	T	Fr	Dry fruit is powdered, mixed with butter and salt, and then applied to the infected skin.	Skin infection*	D
				Fr	Crushed fruits are spread on the water's surface.	Fish poison**	O
				Fr	Fruits are pounded and mixed with butter, then applied to the affected area.	Scabies*	D
				Fr	Fresh fruit is chewed.	Goiter*	O
Nigella sativa L. (Ranunculaceae)	Tiqur-azmud	HG	H	Se	Fresh seed is ground into powder and inhaled three to four times per day.	Common cold*	N
				Se	The fresh seeds are boiled in the water, and then the steam is inhaled.	Asthma*	N
				Se	Seed is pounding and mixing with *A. sativum*, *Ruta chalepensis*, and *A. cepa*, then drinking, adding lemon juice.	Stomach complaints *	O
Ocimum lamiifolium (Lamiaceae)	Damakese	RS	H	L	Fresh leaves are cut from three places, then crushed and squeezed to extract the body.	Sun-strike*	O
				L	Fresh leaf, together with the leaf of Eucalyptus globulus Labill., Silene macroselen is pounded, mixed with water, and drunk.	Mich*	O
Olea europaea L. (Oleaceae)	Woira	HG	T	L	Fresh leaf is boiled in water, and the vapour is steamed.	Itchy* skin*	D
				St	The dried stem is inserted into the fire, and the oil produced is applied to the wound.	Wound***	D
				St	Dried steam is pounded and produces an oily liquid, then drunk after the meal for four consecutive days.	Gastritis*	O
Phytolacca dodecandra L'Herit. (Phytolaccaceae)	Endod	LF	S	L	Fresh leaves are crushed and mixed with water, then filtered and drunk.	Abortion*	O
				R	Fresh root is pounded with *Artemisia abyssinica* and *Justicia schimperiana*, then mixed with water; a glass of the solution is given to humans for 7-10 days and to animals for 15-20 days.	Rabies***	O
				R	Fresh root is ground and mixed with water, then drunk in the morning for five consecutive days.	Malaria*	O
Rhamnus prinoides L.(Rhamnaceae)	Geeshoo	HG	S	L	Fresh leaf is pounded with *Nicotiana tabacum*, mixed with water and goat's butter, then applied through the nose.	Leech**	N
				L	A fresh leaf is chewed and swallowed twice a day for 4 days.	Tonsillitis*	O
Ricinus communis L.(Euphorbiaceae)	Qobbo o	HG	S	L	The fresh leaf is warmed and rubbed on the swelling.	Tuberculosis sis***	D
				Se	The dried seeds are pounded and mixed with latex from Aloe spp., and two cups of coffee are drunk before bedtime for two days.	Impotency*	O
Ruta chalepensis L. (Rutaceae)	Tila-adam	HG	H	St/L	Fresh leaves and stems are inhaled through the nose	Common cold*	O
				R	Fresh root is chewed and swallowed, and the juice is swallowed.	Abdominal pain*	O
				L	Fresh leaf pounded with garlic, mixed with a glass of milk, and drunk.	Stomachache***	O
				L +St	Fresh leaves and stems are boiled with tea, and one cup is given to the patients.	Evil eye*	D
				L	Fresh leaf is pounded with *Zingiber officinale* and added to coffee, which is then drunk.	Headache*	O
				L	Fresh leaf is pounded with *Zingiber officinale* and added to coffee, then a cup of coffee is drunk every morning for three consecutive days.	Fever*	O
Verbena officinalis L.(Verbenaceae)	Darguu	AF	H	R	The dried root of Carissa spinarum was fumigated for the patient.	Mich*	O
				R	Fresh root is fumigated for the patient.	Tonsillitis*	O

Vernonia amygdalina (Asteraceae)	Girawa	HG	S	L	Fresh leaf is mixed with water, crushed, and squeezed, then drunk.	Stomachache*	O
				L	Fresh leaves were chopped and made into juice, then mixed with locally brewed beer and salt, and given to the animal.	Intestinal parasite**	O
				L	Fresh leaves are pounded and mixed with water, then filtered and drunk.	Jaundice*	O
				L	Leaf is pounded and mixed with coffee seeds, mixed with butter, and eaten.	Diarrhea*	O
				L	Fresh leaves are pounded and mixed with water and given orally	Bloat**	O
Withaniasomnifera L. Dunal (Solanaceae)	Gizewa	HG	S	L	Fresh leaf is crushed and mixed with Allium sativum, then rubbed over the whole body.	Fibril illness*	D
				R	Root is pounded with *Phytolacca dodecandra* and the bark of Croton macrostachyus, then mixed with water and given to the animal.	Anthrax**	O
				L	Fresh leaf is chewed and swallowed.	Mich*	O
Zingiber officinale (Zingiberaceae)	Zingible	HG	H	Rh	Fresh Rh is chewing and eating.	Stomachache***	O
				Rh	Fresh Rh is chopped and pounded, then added to boiling water with honey or sugar, and drunk.	Cold*	O
Catha edulis author (Celastraceae)	Catii	AGF	S	L	The leaf is chopped and mixed with water, then drunk.	Cough, chest disease *	O
				L	Fresh leaf is pounded and mixed with *Ruta chalepensis* and *Foeniculum vulgare*, then added to water and local katkala, and then drunk.	Urine retention**	O
Moringa stenopetala auth (Moringaceae)	Sheferaw	AF	T	L	Freshly dried leaf is pounded and mixed with water, then filtered and drunk.	Hypertension*	O
Echinops kebericho (Asteraceae)	Kebericho	AF	H	R	The root is powdered and applied to the affected area at bedtime.	Scabies*	D
				R	Dried root is added with Silene macroselen root, then smoked for the patient.	Evil eye*	D
Ocimum basilicum (Lamiaceae)	Besobila	HG	H	L	Pound fresh leaves of Aloe macrocarpa with water, then drink the resulting juice.	Flu*	O
Mentha spicata (Lamiaceae)	Nana	HG	H	L/St	Leaf/stem is pounded and mixed with Nigella sativa and A. sativum, then drunk.	Diarrhea*	O
Lantana camara L. (Verbenaceae)	Bekerkitie	LF	S	L	Fresh leaves are pounded with Ocimum lamiifolium leaves, and the squeezed-out liquid is mixed into tea.	Fungi /Mich*	O
Phoenix reclinata (Arecaceae)	Meexx	AF	T	L /St	Fresh leaves and stems of Phoenix reclinata are chewed together, then spat on cattle's eyes.	Eye disease**	D
Solanum incanum L. (Solanaceae)	Hiddii	HG	S	R	Fresh root is powdered and drunk with coffee.	Snake bite*	O
				R	Fresh root is chewed and held between the teeth.	Toothache*	O
Solanum marginatum L.f. (Solanaceae)	Embuay	AF	S	Fr	The root is pounded, mixed with water, and drunk.	Placenta retention**	O
				Fr	Fruit is pounded and tied on the bleeding part.	Bleeding*	D
				St	The fresh stem is warmed over the fire and then repeatedly applied to the wound.	Wound*	D
				R	Fresh root is fumigated	Evil eye*	D
				L	The leaf is chopped, and the juice is placed in the nostrils.	Nose bleeding*	O
				Fr	Fruit is squeezed, and the juice is mixed with milk and applied through the nostrils.	Leech*	N
				R	Fresh root is crushed, then boiled, and then the steam is inhaled or smoked.	Rabies	O
Psidium guajava L. (Myrtaceae)	Roqaa	AF	S	Ba	Fresh bark is pounded and mixed with butter paint to apply to the wound.	Wound**	D
Trigonella foenum graecumL. (Fabaceae)	Abish	AGF	H	L	Fresh leaves are crushed and added to the fire, then fumigated.	Evil eye*	N
				Se	Fresh seed is pounding and boiling with water applied to the broken bone	Broken leg*	D
				L	Leaves are pounded with the toasted seeds of Coffea arabica, mixed with butter, then rubbed into the external eye.	Eye disease**	E
Brucea antidysenterica autho (Simaroubaceae)	Avalo	AF	T	R /L	The dry root is crushed and dissolved in water, and half of the coffee cup is drunk.	Bloody diarrhoea*	O
				Fr	Dried fruit is crushed and applied to wounds.	Wound***	D
				L	A fresh leaf is placed in the nostrils.	Evileyes*	N
				Se	Dried seed was crushed and added to wheat flour, then applied to wounds	Leishmaniasis*	D
				Fr, R&L	Squeezed with teff flour, *Croton macrostachyus* and *Rumex nervosus,* then given for 3 days.	Rabies* *	O

Capsicum annuum L. (Solanaceae)	Barberee	HG	H	Fr	Fresh fruits are powdered with Allium sativum, *Zingiber officinale*, and Nigella sativa, then immersed in water and drunk continuously for 2-3 days.	Dysentery & vomiting*	O
				Fr	Dried fruit is pounded and mixed with water, then given orally	Bloat**	O
Coffea arabica L. (Rubiaceae)	Bunna	HG	S	Se	Fresh seeds are roasted and powdered, then applied to the wound.	Wound*	D
Acacia abyssinica Hochst(Fabaceae)	Grar	AF	T	L	Fresh leaves are pounded and then squeezed	Allergy*	D
				L	Fresh leaves are pounded and squeezed, and then the juice is added to the eye.	Eye disease**	E
				R /Ba	Fresh root and bark, ground together with water, then wash the animal.	Horse scabies**	D
Allium cepa L. (Alliaceae)	Key shinkur	HG	H	Bu	Fresh bulb is pounded with *A. sativum* and *Ruta chalepensis,* then honey is added and drunk.	Stomach Complaints*	O
				R	Dried root is powdered with the leaf concoction of Vernonia amygdalina and Premna schimperi, then tied up.	Poisoning*	D
Artemisia absinthium L. (Asteraceae)	Natra	HG	H	Wh	Squeezing and producing juice, then drinking	Uvula infection*	O
				L	Smoking	Evil eye*	N
Brassica nigra L. (Brassicaceae)	Senafich	HG	H	Se	Dying, then grinding after mixing it with *A. sativum* and *Vicia faba*	Stomach complaints*	O
				Se	Seeds were processed into a paste and used as a poultice to treat swelling of lymph nodes	swelling of lymph nodes*	D
				Se	Mustard seeds were dried and decocted in water, then applied as a poultice to the affected part.	cracked skin and acne*	D
Citrus limon L. (Rutaceae)	Lomi	HG	S	Fr	Fresh fruit and the bulb of Allium sativum are pounded together, mixed with honey, and eaten with wheat bread.	Stomach ache*	O
				Fr	Fruit juice mixed with fine powder from the root of Acokanthera schimperi is applied to the affected part and left in the sun for about half an hour.	Scabies*	D
Rumexnervosus Vahl (Polygonaceae)	Embacho	AF	S	L	Ground the fresh leaf and drink one cup of the solution.	Retained placenta**	O
				St	The stem powder is mixed with butter and applied to the skin.	Burn	D
				R	The root is pounded and mixed with Phytolacca *dodecandra*, *Brucea antidysenterica*, and *Croton macrostachyus,* then one teaspoon is drunk with coffee.	Rabies*	O
				R	Crushed root, together with butter, is placed on the wound	Wound***	D
Plantago lanceolata L. (Plantaginaceae)	Gorteb	AGF	H	L	Crush and apply it to the cut part.	Cut*	D
				L	Fresh leaves are squeezed and rubbed on the body.	Mitch*	D

Key: -Animal disease** Human disease* Animal and human disease***