



TRADITIONAL HOME GARDENS AND ETHNOMEDICINAL PLANTS: INSIGHTS FROM THE VISNAGAR CITY MEHSANA DISTRICT

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ABSTRACT:

Medicinal plants and the concomitant traditional knowledge systems are increasingly endangered due to habitat alteration, globalization, urban expansion, and modernization. While domestic gardens have been identified as a viable approach for the conservation of medicinal plants, concurrently, there have been minimal initiatives aimed at the documentation of ethnomedicinal species. Empirical research focusing on urban ethnobotany within the confines of Visnagar city is notably scarce, and the study of home gardens remains underexplored to date. Examining the biodiversity within these gardens is imperative for accumulating insights regarding the applications of this specific botanical diversity, particularly in relation to the health of the proprietors. Consequently, this investigation aims to delineate the diversity and knowledge pertaining to medicinal plants among private garden custodians across urban sectors of the Visnagar city. We systematically explored and cataloged the diversity and demographic status of ethnomedicinal plants present in the home gardens of Visnagar city. Methodological approaches included field observations

and semi-structured interviews aimed at documenting the medicinal plant species found within these domestic gardens. A comprehensive inventory of 58 species of medicinal plants was compiled from the Visnagar city locale. Predominantly, the plant species were employed by participants to address respiratory ailments, dermatological issues, and gastrointestinal disorders. Some botanical species were utilized for the treatment of multiple health complaints. The current study contributes novel insights into the diversity of medicinal plants within an urban setting that has been largely overlooked in previous research in Visnagar city.

KEY WORDS: *Urban ethnobotany, Home gardens, Medicinal plants, Traditional knowledge, Visnagar city.*

INTRODUCTION:

India serves as a significant center of biodiversity, housing a vast array of medicinal flora that represents an immense reservoir of plant-derived compounds beneficial to humanity. The nation is home to approximately 45,000 plant species, with notable concentrations in the Eastern Himalayas, Western Ghats, and the Andaman & Nicobar Islands. Official records indicate the presence of 3,000 plant species with medicinal properties; however, traditional practitioners utilize over 6,000 species. India holds the distinction of being the foremost producer of medicinal herbs, earning the title of the botanical garden of the world (Seth, S. D., & Sharma, B., 2004). The conservation of medicinal plants and the traditional knowledge associated with them face threats from habitat alteration, globalization, urban expansion, and modernization. The primary contributors to the erosion of traditional knowledge regarding medicinal flora include the advent of contemporary public healthcare systems, economic advancement, and existing formal educational frameworks (Saynes-Vasquez *et al.*, 2013). Additionally, certain medicinal species are endangered due to overharvesting and habitat degradation, exacerbated by the burgeoning human population and increased demand for plant resources. The current rate of species extinction is estimated to be between 100 and 1,000 times greater than the anticipated natural extinction rate, resulting in the loss of at least one potential major source of pharmaceuticals every two years (Pimm *et al.*, 1995). Consequently, the involvement of local communities in the conservation, management, and utilization of medicinal plants warrants acknowledgment (Agbogidi, O. M. *et al.*, 2013). A viable approach for the preservation of medicinal species is their cultivation within home

gardens. Home gardens function as relatively uncomplicated agroforestry systems, closely resembling natural forest ecosystems, and are integrated into agricultural management practices surrounding residential areas (Mapongmetsem *et al.*, 2012). These gardens have historically served as crucial sites for the domestication of medicinal and fruit-bearing plants, significantly contributing to the conservation of rare, endangered, or over-exploited species. Despite the recognition of home gardens as a promising strategy for conserving medicinal plants, there has been a paucity of efforts directed toward the documentation of ethnomedicinal flora. In this study, we investigated and recorded the diversity of ethnomedicinal plants within the home gardens of Visnagar city. The insights and data derived from this research may provide a foundational basis for the conservation and sustainable utilization of ethnomedicinal plants, while also facilitating the preservation of cultural and genetic diversity.

STUDY AREA:

The current investigation was conducted in the Visnagar city, situated within the Mehsana district of the state of Gujarat, India (Figure 1). The geographical coordinates of the city are 23.697231° N latitude and 72.544571° E longitude. Visnagar city is distinguished by a semi-arid climate, with temperature fluctuations ranging from 12.78°C to 40.56°C, and it seldom experiences temperatures below 10°C or exceeding 46°C throughout the annual cycle; additionally, the months of July and August are characterized by the highest precipitation levels, averaging 8.0 inches of rainfall.

METHODOLOGY:

Ethnobotanical data were systematically gathered from 2021 to 2024 predominantly through guided home garden explorations and market surveys conducted in Visnagar city, employing semi-structured interview methodologies. All interviews were performed in the Gujarati language. During the interactions with the informants, efforts were made to meticulously record information pertaining to traditional knowledge regarding medicinal plants for various applications, including domestic food procurement, therapeutic uses, shading, aesthetic enhancement, fuelwood production, and income generation. Photographic documentation of each medicinal plant was executed to facilitate accurate identification and record-keeping.

RESULT AND DISCUSSIONS:

A total of 58 ethnomedicinal plant species were documented, spanning 53 genera and 35 families. The Lamiaceae family exhibited the highest representation with five species, closely followed by Euphorbiaceae and Solanaceae, each with four species. Malvaceae, Rutaceae,

and Apocynaceae each contributed three species. The remaining families were represented by one or two species. The study identified leaves from 24 species as the predominant medicinal plant part, followed by fruits (15), roots (10), whole plants (5), bark (4), and seeds (2). The analysis revealed that tree (16) was the most represented among 58 species, with herbs (29), shrubs (8), climbers (4), and grasses (1) following.

CONCLUSION:

The present study highlights home gardens as innovative resources that enhance rural healthcare and livelihoods. Home gardens play a crucial role in traditional ethnomedicine. Ethnomedicinal plants cultivated in home gardens are utilized for various ailments. Numerous plants in home gardens possess medicinal properties and can address common health issues affordably. The home gardens in Visnagar city, with their rich collection of medicinal species, are vital reservoirs of plant diversity and traditional knowledge. This study identified 58 ethnomedicinal plant species from home gardens, underscoring their significance in sustaining diversity and supporting the healthcare system within agricultural landscapes. Documenting such ecological and traditional knowledge is essential for formulating conservation and management strategies for home gardens to be integrated into mainstream conservation efforts.

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TABLE 1: LIST OF ETHNOMEDICINAL PLANTS RECORDED IN HOME GARDENS OF VISNAGAR CITY, MEHESANA.

Sr. no	Scientific name	Family	Comman name	Life form	Uses
1	<i>Andrographis paniculata</i> (Burm. f.) Wall	Acanthaceae	kariyatu	Herb	Leaf or entire plant extraction solution can be used to treat liver problems and high fevers.
2	<i>Justicia adhatoda</i> L.	Acathaceae	Ardusi	Herb	Leaf juice serves therapeutic purposes for chronic bronchitis, cough, and cold.
3	<i>Achyranthes aspera</i> Linn.	Amaranthaceae	Andhedi	Herb	The root is useful for treating diarrhea and cough, while the dried leaves are used to cure asthma.
4	<i>Centella asiatica</i> (L.) Urban	Apiaceae	Bramhi	Herb	The leaf extract is utilized orally to treat diarrhea and dysentery.
5	<i>Alstonia scholaris</i> (L.) R. Br.	Apoycanaceae	Saptaparni	Tree	The white part of the bark is soaked for the entire night, and the early morning stomach ache remedy is taken orally. To treat an infection, apply crushed bark paste topically to the affected area of skin.
6	<i>Catharanthus roseus</i> Linn.	Apoycanaceae	Barmasi	Herb	Leaf juice is used to treat bleeding dysentery, menorrhagia, fever, and septic wounds. Root paste is used to treat fever.
7	<i>Rauvolfia serpentina</i> (L.) Benth. Ex Kurz	Apoycanaceae	Sarpagandha	Herb	Leaf extract can be applied to the eyes to treat corneal opacities or taken orally during fever. Cuts, wounds, and furuncles (boils) are treated with crushed root.
8	<i>Cocus nucifera</i> L.	Arecaceae	Nariyel	Tree	Coconut milk is a delightful drink, a health tonic, and can help with gastrointestinal issues. Fruit is utilized in religious rites and is considered sacred.
9	<i>Phoenix dactylifera</i> L.	Arecaceae	Khajoori	Tree	Seeds paste is used to treat ague. Its gum, which emerges from wounds, is used to cure diarrhea.
10	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Shatavari	Climber	Dried fleshy root is powdered and ingested with water to cure diarrhea and diabetes.
11	<i>Carica papaya</i> L.	Caricaceae	papaya	Shrub	Fruit can be ingested raw, cooked, or ripe, particularly during jaundice. Raw fruits are primarily utilized in cooking,

Sr. no	Scientific name	Family	Common name	Life form	Uses
					while ripe fruits are typically served as desserts.
12	<i>Saraca asoca</i> Roxb.	Caesalpiniaceae	Ashok	Tree	The stem bark of the Asoka tree has a highly astringent, uterine sedative, uterine tonic, and styptic.
13	<i>Terminalia arjuna</i> (Roxb. ex Dc.)	Combretaceae	Arjunsadal	Tree	A bark decoction is administered on an empty stomach to alleviate heart issues.
14	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Baheda	Tree	Dried fruit is a cooling agent and a dyspepsia treatment.
15	<i>Bryophyllum pinnatum</i> (Lam.) Oken	Crassulaceae	Panfuti	Herb	Raw consumption of soaked leaves in water can alleviate stomach stones.
16	<i>Phyllanthus fraternus</i> G.L.Webster	Euphrobiaceae	Bhoy ambali	Herb	The whole plant is used to treat genital diseases such as menorrhagia and gonorrhea.
17	<i>Phyllanthus emblica</i> L.	Euphrobiaceae	Ambala	Tree	For stomach comfort, dry paste or fruits are chewed or consumed orally.
18	<i>Jatropha gossypifolia</i> L.	Euphrobiaceae	Ratanjyot	Shrub	Used as biofuel
19	<i>Euphorbia hirta</i> L.	Euphrobiaceae	Dudheli	Herb	The whole plant is used to treat a variety of ailments, including severe diarrhea (dysentery), digestive issues, dengue fever, and respiratory troubles.
20	<i>Cassia fistula</i> L.	Fabaceae	Garmalo	Tree	Cassia fistula L is used to treat gastrointestinal disorders and wounds.
21	<i>Lawsonia inermis</i> L.	Lamiaceae	Henna	Shrub	Henna paste is commonly used to colour hair and palms.
22	<i>Leucas aspera</i> (Willd.) Link	Lamiaceae	Kubo	Herb	Leaf juice alleviates gastric disorders. Inhalation of crushed leaves mitigates cephalalgia. Application of leaf paste ceases hemorrhage.
23	<i>Mentha spicata</i> L.	Lamiaceae	Phudino	Herb	The leaf serves as the culinary source of mint.
24	<i>Ocimum gratissimum</i> L.	Lamiaceae	Wild tulsi	Herb	Plant decoction is used to cure fever, cough, cold, headache, nausea, diarrhea, dysentery, and skin diseases.
25	<i>Ocimum sanctum</i> L.	Lamiaceae	Tulsi	Herb	Leaves are used to cure colds and coughs.
26	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Jasud	Herb	Root extract alleviates cough and fever. The floral buds are utilized in the management of blood dysentery. Leaf paste

Sr. no	Scientific name	Family	Common name	Life form	Uses
					mitigates burning sensation, fatigue, and dermal ailments.
27	<i>Sida acuta</i> Burm. F	Malvaceae	Bala	Herb	Crushed root facilitates pus expulsion from boils. Additionally, it is utilized for nervous, urinary, and gastrointestinal ailments.
28	<i>Azadirachta indica</i> A.Juss	Meliaceae	Limado	Tree	Leaf sap can treat fever and acidity, while boiling leaf water can treat skin rashes.
29	<i>Tinospora sinensis</i> (Lour.) Merr	Menispermaceae	Galo	Climber	Bark, Soak in water overnight and take in the morning to treat rheumatism and jaundice.
30	<i>Mimosa pudica</i> L.	Mimosaceae	Lajamani	Herb	Bark and leaf decoction is used as a depurative and as a means of controlling orchitis.
31	<i>Ficus carica</i> L.	Moraceae	Anjir	Tree	Fruit is a natural remedy for a variety of illnesses, including inflammatory, respiratory, and gastrointestinal.
32	<i>Morus alba</i> L.	Moraceae	Shetur	Shrub	Leaf foliage is often utilized as food fodder for domestic animals.
33	<i>Moringa oleifera</i> Lam.	Moringaceae	Saragavo	Tree	Blood pressure is regulated by consuming cooked fruits and tender leaf juice.
34	<i>Eucalyptus citriodora</i> Hook.	Myrtaceae	Nilgiri	Tree	The foliage and essential oil function as an insect deterrent.
35	<i>Psidium guajava</i> L.	Myrtaceae	Jamphal	Tree	The leaves and fruits have been utilized for various ailments, such as gastroenteritis, hypertension, diabetes, dental issues, and analgesia.
36	<i>Nyctanthes arbortristis</i> .	Oleaceae	Parijat	Tree	The leaf and stem are beneficial for managing dry cough, fungal infections, and bronchitis.
37	<i>Cajanus cajan</i> (L.) Millsp.	Papilionaceae	Tuver	Herb	Food
38	<i>Passiflora foetida</i> L.	Passifloraceae	Krushnakamal	Climber	Extracts from leaves and roots are used to cure headaches and hysteria.
39	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Dharo	Grass	Young crush leaf paste is utilized for the topical application on lacerations.
40	<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	Bor	Shrub	Consume fruits and seeds with salt to prevent vomiting.
41	<i>Aegle marmelos</i> (L.) Correa	Rutaceae	Bili	Shrub	Fruits and seeds are used to alleviate digestive issues.
42	<i>Citrus limon</i> L.	Rutaceae	Limboo	Shrub	The juice is utilized for various

Sr. no	Scientific name	Family	Common name	Life form	Uses
					ailments, including scurvy and fevers.
43	<i>Murraya koenigii</i> (L.) Spreng	Rutaceae	Curry patta	Shrub	Leaf juice is ingested to treat diarrhea and black fever.
44	<i>Bacopa monnieri</i> (L.) Wettst	Scrophulariaceae	Bramhi	Herb	Indigestion can be treated with boiled tender leaf.
45	<i>Datura metel</i> L.	Solanaceae	Dhaturo	Herb	Seeds may serve as analgesics.
46	<i>Lantana camara</i> Linn.	Verbenaceae	Indradhanush	Herb	The roots address dental pain, flowers alleviate pediatric respiratory issues, and leaf oil serves as a wound antiseptic.
47	<i>Vitex negundo</i> L.	Verbenaceae	Nagod	Tree	Leaves prevent whitening of hair.
48	<i>Cissus quadrangularis</i> L.	Vitaceae	Handsakal	Climber	The entire plant exhibits antioxidant, analgesic, and anti-inflammatory properties.
49	<i>Aloe vera</i> (L.) Burm. f	Xanthorrhoeaceae	Aloe vera	Herb	Leaf pulp is used to burns and other issues on the skin.
50	<i>Curcuma longa</i> L.	Zingiberaceae	Haldi	Herb	Rhizome paste serves as an antiseptic agent.
51	<i>Zingiber officinale</i> Roscoe.	Zingiberaceae	Aadu	Herb	Rhizome is a stimulant for the digestive system.
52	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Jambu	Tree	Fruits have been used for a broad range of diseases, including cough, diabetes, diarrhea, inflammation and ringworm.
53	<i>Solanum melongena</i> L.	Solanaceae	Ringan	Herb	Food
54	<i>Withania somnifera</i> (L.) Dunal	Solanaceae	Ashwagandha	Herb	Traditionally, the leaves and roots of the plant have been used to treat a variety of ailments, including fever, respiratory infections, wounds, ulcers, sex-related illnesses, discomfort, liver issues, and heart difficulties.
55	<i>Lycopersicon esculentum</i> Mill.	Solanaceae	Tamato	Herb	Food
56	<i>Capsicum annuum</i> L.	Solanaceae	Marchu	Herb	Food
57	<i>Allium cepa</i> L.	Liliaceae	Dungali	Herb	Bulb has been used for generations as a dietary cure for colds, coughs, bronchitis, and influenza.
58	<i>Allium sativum</i> L.	Liliaceae	Lasan	Herb	Cloves are used to regulate blood pressure.

TABLE 2: NUMBER OF SPECIES RECORDED IN DIFFERENT GROWTH-FORM WITH THEIR PERCENTAGE

Life form	Tree	Herb	Shrub	Climber	Grass
Number of plants	16	29	8	4	1
% of species	27.58	50	13.79	6.9	1.73

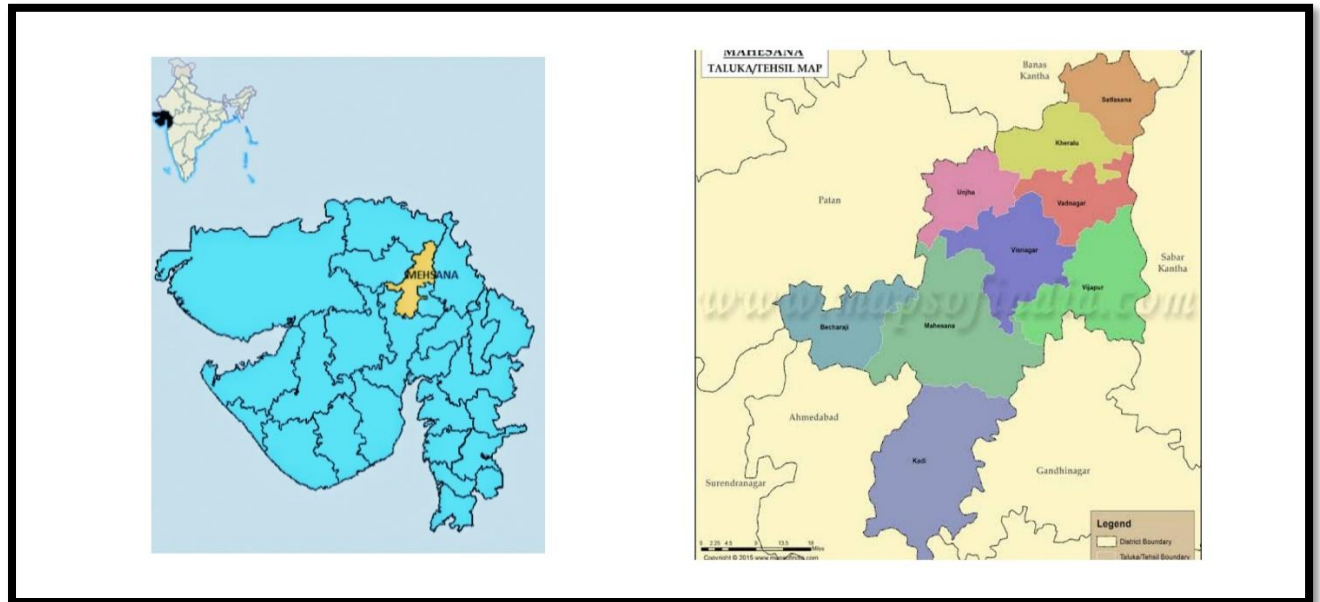


Figure 1: Showing the map of Mehsana district and its position in Gujarat state

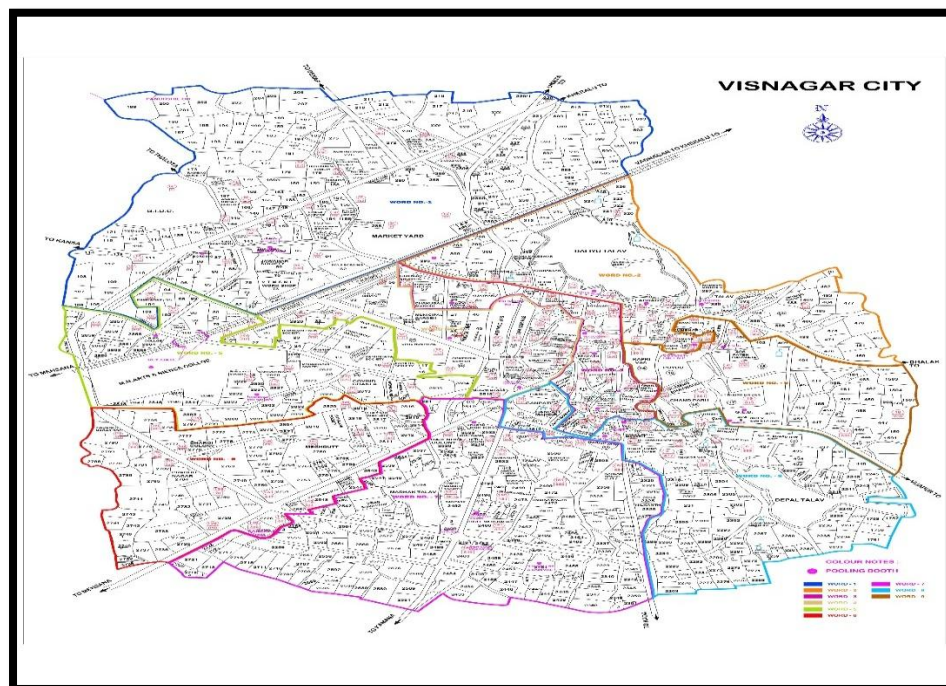


Figure 2: Showing the map of Visnagar city

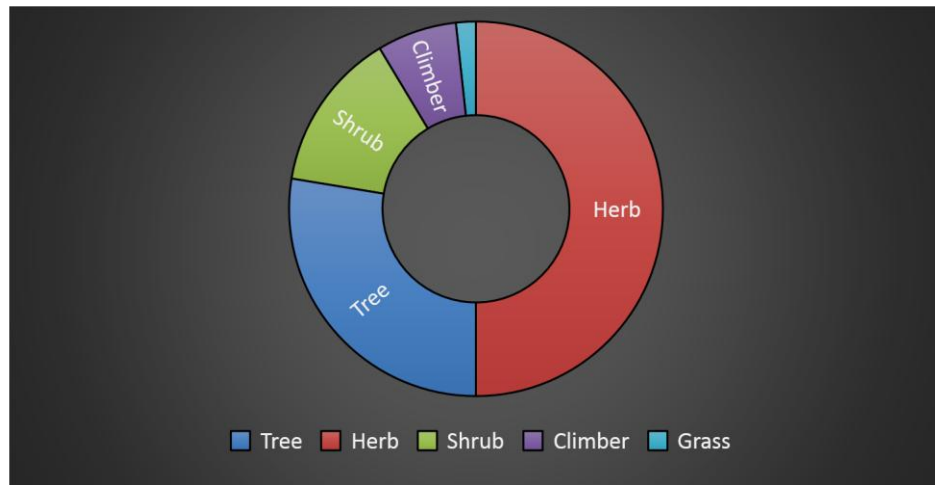


Figure 3: Showing the number of species documented in different growth-forms

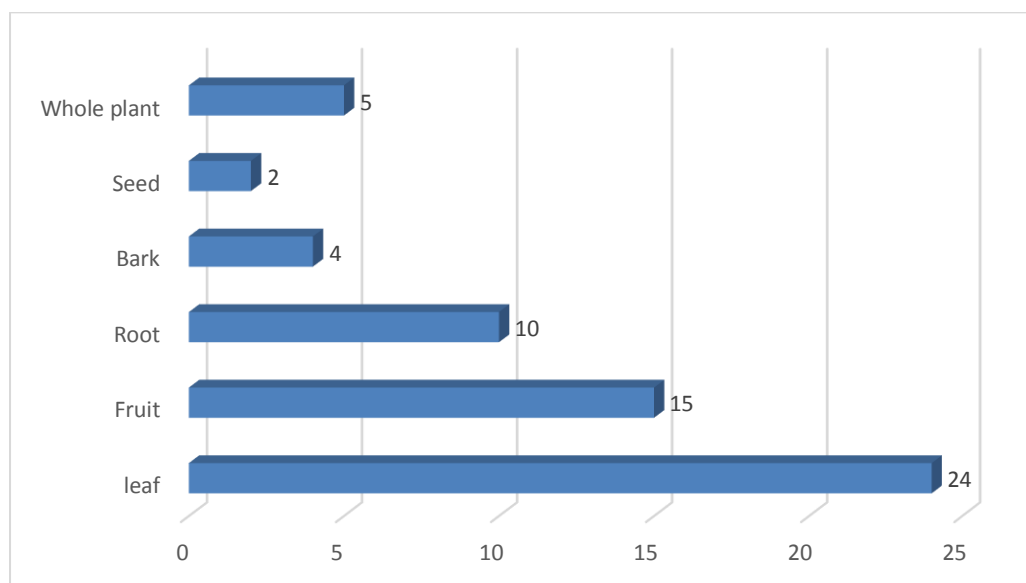


Figure 4: Showing the dominance of plant parts used in traditional therapy