



Dominant Plant Families and Traditional Medicinal Knowledge under Varying Environmental Conditions in Kadipur, Haryana

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ABSTRACT

Medicinal plants have traditionally played a vital role in conventional medical practices by providing therapeutic effects and contributing to the development of recent drugs. However, increased urbanisation and ecological loss are threatening the integrity of ethnobotanical knowledge. To address this concern, the present study aims to describe native utilisation of medicinal plants along with traditional knowledge systems in Tehsil Kadipur, Haryana, India. A systematic ethnobotanical investigation was conducted from December 2023 to March 2024. Standardised questionnaires and structured interviews with local informants were used to gather data. Quantitative ethnobotanical indicators, including Use Value (UV), Relative Frequency of Citation (RFC), and Informant Consensus Factor (ICF), were used to examine the obtained information. The evaluation identified 32 botanical groups and 62 species of therapeutic plants. The Asteraceae family was the most represented with seven species, followed by Fabaceae (5 species), and Euphorbiaceae and Solanaceae (4 species each). Trees, shrubs, herbs, and climbers were among the various living forms that were reported. Decoction became the most popular preparation technique, while leaves became the most used plant element. *Ocimum tenuiflorum* L. had the strongest cultural and therapeutic relevance, with the highest RFC value (0.79). Plant species utilised for treating immunological illnesses showed the highest ICF score (0.56), showing substantial agreement among informants regarding their usefulness. The study underlines the critical need for conservation techniques and community-based initiatives to maintain both plant biodiversity and traditional medical practices. Such activities are crucial for supporting future pharmacological research, encouraging sustainable healthcare, and protecting cultural heritage.

KEYWORDS: Asteraceae, Biodiversity, Conservation, Ethnobotany, Phytotherapy, Sustainable use

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INTRODUCTION

Plants have been used as vital therapeutic resources throughout cultures to resolve health problems affecting people for a long time (Jamshidi-Kia et al., 2018). Traditionally, these systems have used medicinal plants to diagnose, cure, and prevent illnesses (Gaikwad, 2025). The field of ethnobotany has grown over time to include a variety of academic fields, such as ecology, pharmacology, botany, anthropology, and cultural studies (Das et al., 2025). This discipline not only preserves historical human-plant interactions but also provides insight into the sustainable use of plant biodiversity in contemporary healthcare. Medicinal plants continue to be vital for public health and play a significant role in improving the quality of life. Of these, nearly 90% are harvested from wild habitats,

highlighting the urgency for sustainable harvesting and conservation. The native habitats of medicinal plants are becoming more threatened by dramatic ecological shifts such as habitat fragmentation, urbanization, agricultural intensification, and climate unpredictability. In addition to decreasing plant variety, these pressures interfere with the dissemination of traditional ethnobotanical knowledge that is tightly linked to regional ecosystems. Over 120 pharmacologically active phytochemicals used in the modern pharmaceutical industry are derived from medicinal plants, underscoring the importance of preserving traditional botanical knowledge (Babandi, 2025). India, as one of the world's 12 mega-diverse countries, boasts approximately 17,000–18,000 species of flowering plants, of

which an estimated 6,000–7,000 are used medicinally (Pidigam et al., 2023). Ancient texts such as the Rigveda (4500–1600 BCE) and Ayurveda (2500–600 BCE) provide some of the earliest documented uses of medicinal plants. This system developed guidelines for dosage, pharmacognosy, and disease classification, much like other complex ancient systems like Tibetan and Galenic medicine, particularly through texts such as Sushruta Samhita (Flourou-Paneri et al., 2019). The principal purpose of the present investigation is to document the ethnobotanical knowledge of medicinal plants in Kadipur Tehsil, Gurugram District, Haryana. The primary intent of this research is to gather evidence of the ethnobotanical knowledge of medicinal plants in Gurugram District, Haryana, held by Kadipur Tehsil. Despite being close to Delhi, this semi-rural region possesses a wealth of indigenous plant knowledge that has been passed down verbally and through ancient medical practices. The study's goals are to identify the types of medicinal plants that indigenous people and traditional healers utilize, investigate their therapeutic applications, and assess the ecological and social aspects that affect their use. In the face of rapid industrialization and the breakdown of traditional knowledge systems, this recording is crucial to the preservation of biocultural heritage and the development of pharmacological research. The present investigation stresses their influence of demographic variables on the gathering, use, and maintenance of ethnobotanical expertise. The ecological and cultural influences on the most prevalent families of medicinal plants, their ideal growth environments, and preparation methods are all thoroughly documented. To analyse the sociological relevance and medical consistency of herbal remedies, it also evaluates the relationship between the Use Value (UV), Relative Frequency Citation (RFC) and Informant Consensus Factor (ICF). The research also explores the constraints of knowledge transfer between generations and

reveals how species selection is influenced by environmental availability.

MATERIAL AND METHODS

Description of the study area

The northern Indian state of Haryana is mostly an agricultural region with a vast amount of farmed land and little natural vegetation. Kadipur Tehsil is located at 28.5113° N and 77.0486° E in the Gurugram district (NCR) of southern Haryana. A rich farming tradition is supported by its fertile soils, varied topography, and subtropical climate. The climate of the area is rather seasonal. Most of the 714 mm of annual rainfall, which is necessary for crop development and groundwater recharging, comes from the monsoon season, which runs from late June to September. Most of the soil in Kadipur are alluvial, providing nutrients suitable for crops such as wheat, rice, sugarcane, and vegetables, as well as good fertility and moderate water retention. In villages such as Kherki Majra, Dhankot, Chandu, and Dhanvapour, an ethnobotanical survey was conducted between December 2023 and March 2024 (Fig.1). Ninety respondents offered their knowledge of the cultural, medical, and gastronomic uses of indigenous plants. Interviews, literature reviews, and structured questionnaires were used to gather data. The natural landscape of Kadipur Tehsil has changed in recent years due to increased anthropogenic pressure, which includes road construction, urban expansion, and intensive farming methods. The abundance and distribution of wild medicinal plant species that local communities have historically employed have been directly impacted by these environmental changes. This study offered insights pertinent to biodiversity protection, medicinal research, and sustainable rural development, all while preserving Indigenous plant knowledge (Adeoye, 2024).

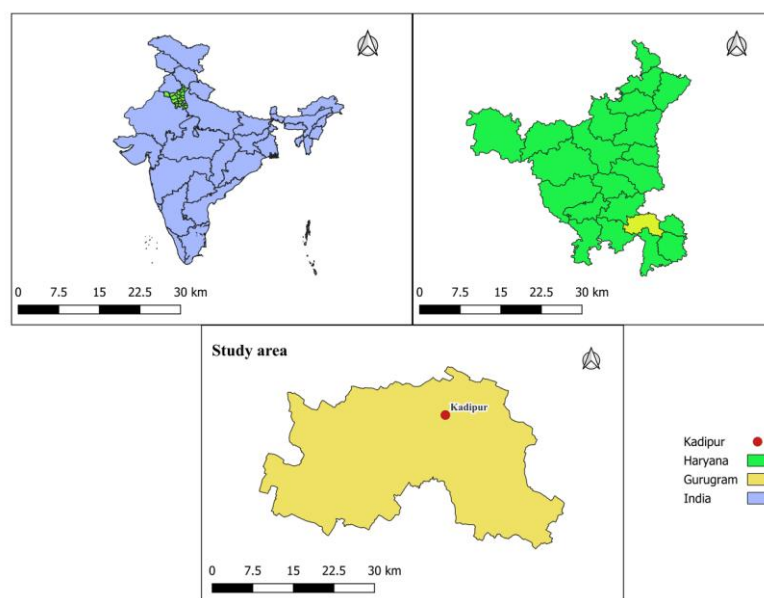


Fig. 1. Map of Study area (Haryana, Kadipur – India)

Data Collection and Medicinal Plant Study

To record the ethnobotanical plant knowledge, a substantial amount of fieldwork was carried out in Kadipur Tehsil, Gurugram district, Haryana, between November and March. Ninety survey participants, ranging from 25 to 90, participated in the study. According to the International Society of Ethnobiology's (2008) ethical criteria, participation in this study was entirely optional and required formal prior informed agreement (Dubost et al., 2023). The snowball sampling technique was used for selecting participants, guaranteeing that people who were actively and highly interested in traditional plant use were included (Thakur et al., 2024). Key players suggested more knowledgeable community members (Pangeni et al., 2020). Information about the common names of plants, their development patterns, the sections they were used for, and the related religious and magical beliefs was made easy by this device. Standard botanical techniques were used to press, dry, and mount plant specimens on herbarium sheets whenever the plants were in the flowering or fruiting stages (Pandey et al., 2006). Plant species were identified with the aid of local floras, particularly the Flora of India and Flora of Haryana, and their scientific names and families were verified using online databases (Plants of the World Online, 2025; World Flora Online, 2025). To illustrate the geographical setting and sampling areas, a map was prepared using QGIS software.

Quantitative Data Analysis

After gathering ethnobotanical information from the informants, the information was examined. Use Value (UV), Informant Consensus Factor (ICF), and Relative Frequency of Citations (RFC) are some of the quantitative indices that were used to assess the data and draw significant inferences from the raw data.

Use Value (UV)

The Use-Value (UV) index quantitatively expresses the ethnobotanical prominence of each taxon by integrating the frequency and versatility of its cited applications (Ulysses et al., 2006). The relative importance of the species that the participants are familiar with will be demonstrated with Use Value. This index determines the relative importance of various plants to the local people.

$$UV = N_{ur}/N_i,$$

where N_i = number of informants,

N_{ur} = number of usage reports.

UV stands for use value.

Informant consensus factor (ICF)

The degree of agreement among informants regarding the usage of plant taxa for treating specified types of diseases was assessed using the Informant Consensus Factor (ICF), a quantitative ethnobotanical metric (Ndhlovu et al., 2023).

$$ICF = (N_{ur} - N_t) / (N_{ur} - 1)$$

where N_t is the total number of plant species utilized to treat a given illness category.

N_{ur} is the number of usage reports for each category of disease.

Relative frequency citation (RFC)

Relative Frequency of Citation (RFC) quantitatively expresses a species' ethnobotanical prominence by relating the number of informants who mention that species (FC) to the total number of informants surveyed (N), i.e., $RFC = FC / N$ (Faruque et al., 2018). The relative frequency citation assesses the significance of a plant species used to cure a particular condition. RFC values fall between 0 and 1. While a '0' means that no informant reported using the species, a higher value means that many informants used it to treat a certain ailment. The relevance of a plant species used to treat a specific ailment is indicated by its RFC value. The frequency of citation, or FC, determines the RFC value.

$$RFC = F_c / N$$

N is the total number of informants, and F_c stands for Frequency of Citation, which indicates how many informants mention a species as a cure for a condition (Hoffman and Gallaher, 2007).

RESULTS

The ethnobotanical research study documents clear spatial patterns in family-level diversity across the four surveyed villages. Chandu exhibits a highly specialized flora, with all recorded taxa assigned to Poaceae family. In contrast, Dhankot supports the richest assemblage, encompassing ten families: Cupressaceae, Commelinaceae, Amaryllidaceae, Acanthaceae, Lythraceae, Urticaceae, Phyllanthaceae, Cycadaceae, Tropaeolaceae and Nyctaginaceae. Dhanwapur is characterised by representatives of Myrtaceae, Verbenaceae and Anacardiaceae, while Kherki Majra contributes further heterogeneity with seven additional families (Crassulaceae, Apiaceae, Bignoniaceae, Asphodelaceae, Meliaceae, Primulaceae and Moringaceae). Floristic overlap underscores ecological connectivity among sites: Oleaceae occurrences link Chandu and Dhanwapur, Asteraceae bridge Dhankot and Dhanwapur, and Solanaceae provide an additional shared element between the latter two. Dhankot alone harbours Rutaceae alongside unique records from Apocynaceae, Araceae, Fabaceae and Moraceae, whereas Kherki Majra's distinct complement accentuates the overall mosaic of plant diversity in the study area as shown in Fig. 2.

A total of 62 plant species, belonging to 32 distinct families, were documented in the study mentioned in the supplementary Table 1.

Among these, herbs emerged as the most prevalent life form, comprising 17 species and representing approximately 38.6% of the total. Shrubs accounted for 14 species (31.8%), while climbers were the least represented with 10 species (22.7%). Trees made up around 36.4% of the

The survey documented 32 botanical families in total, with Asteraceae emerging as the most dominant, represented by eight species. The Fabaceae family ranks second with five species—*Clitoria ternatea*, *Dalbergia sissoo*, *Saraca asoca*, *Prosopis cineraria*, and *Bauhinia* spp.—collectively valued for timber, drought resilience, ornamental appeal, and diverse medicinal uses. Euphorbiaceae contributes four species, while Lamiaceae (*Coleus scutellarioides*, *O. basilicum*, *O. tenuiflorum*)

and Apocynaceae (*Nerium oleander*, *Cascabela thevetia*, *Catharanthus roseus*) each comprise three species, highlighting both ornamental and therapeutic versatility. The remaining 22 families are represented by a single species apiece. These taxonomic spread underscores the study area’s rich botanical heritage, reflecting a mosaic of ecological functions and a broad spectrum of cultural, culinary, and pharmacological applications as shown in Fig. 4.

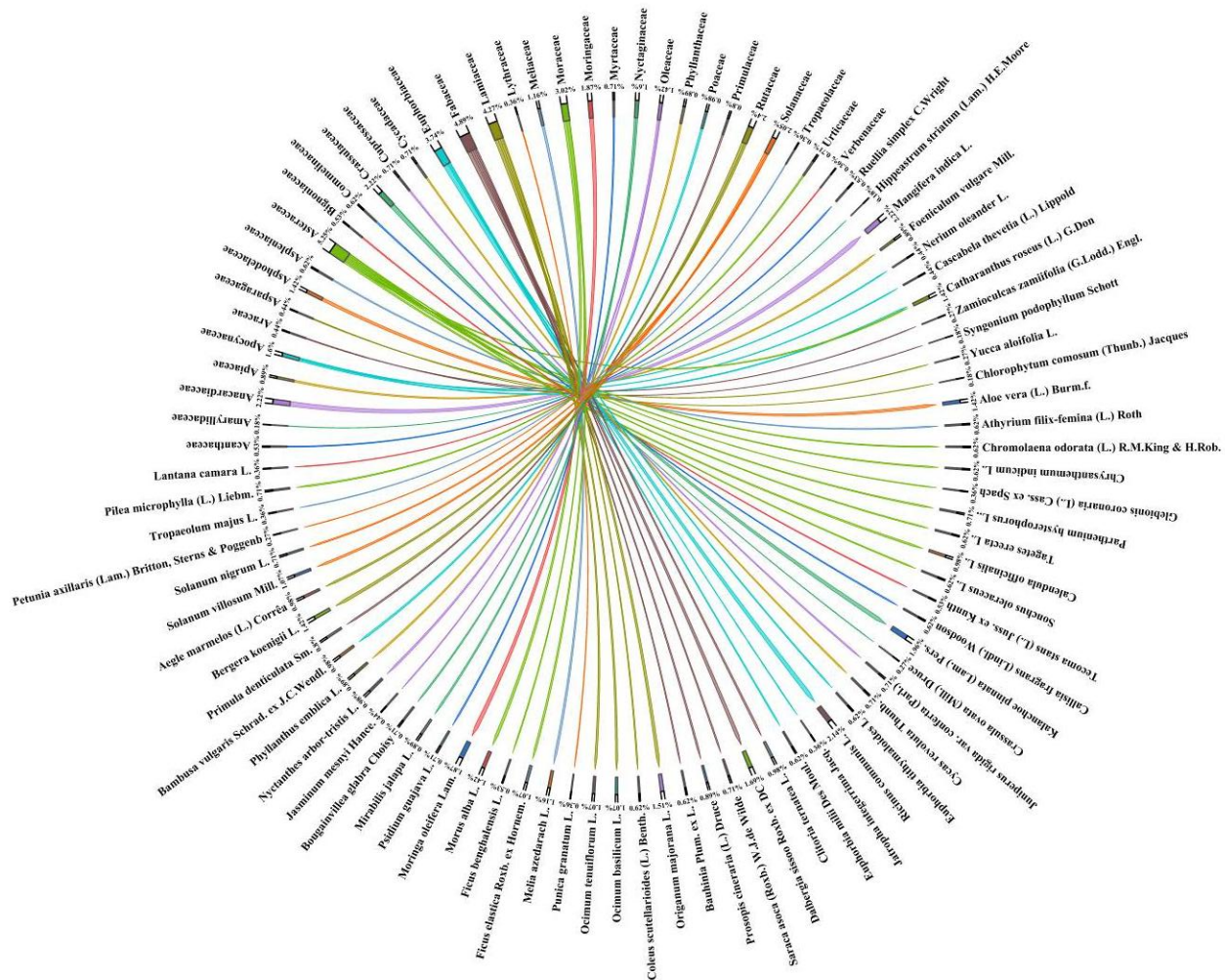


Fig. 4. Chord diagram represents number of medicinal plants belonging to each family

The study reveals that leaves constitute the most frequently utilized plant part, followed by roots, bark, flowers, fruits, seeds, and the whole plant. Species such as *Aloe vera* and *Aegle marmelos* exhibit multiple therapeutic applications, as evidenced by their connections to several plant parts. The predominance of foliar usage indicates a preference for harvesting renewable aerial organs, suggesting ethnobotanical practices that are generally non-destructive and ecologically sustainable. However, the utilization of roots and bark in certain taxa—particularly within Fabaceae and Rutaceae—raises potential conservation concerns due to the destructive nature of harvesting these parts (Fig.5). The graphic emphasizes the depth of ethnobotanical knowledge and identifies usage patterns for plant parts that can guide both conservation tactics. Even while using roots and bark has therapeutic value, there are more hazards to plant survival, especially when there is environmental stress and a

decline in wild populations.

Quantitative indices of ethnobotanical plants: For converting vernacular knowledge into measurements that can be quantitatively examined and compared between studies, quantitative ethnobotanical indices provide a rigorous, repeatable methodology (Table 2).

Informant Consensus Factor (ICF)

For a given therapeutic category, an increased ICF values suggest a strong consensus among respondents and a well-established and culturally validated use of a certain species, while a lower ICF reveals ethnomedicinal knowledge that is less consistent or uneven. This study methodically categorized medicinal plant applications into fourteen different ailment categories, such as respiratory, dental, otorhinolaryngological (ENT), reproductive, urinary,

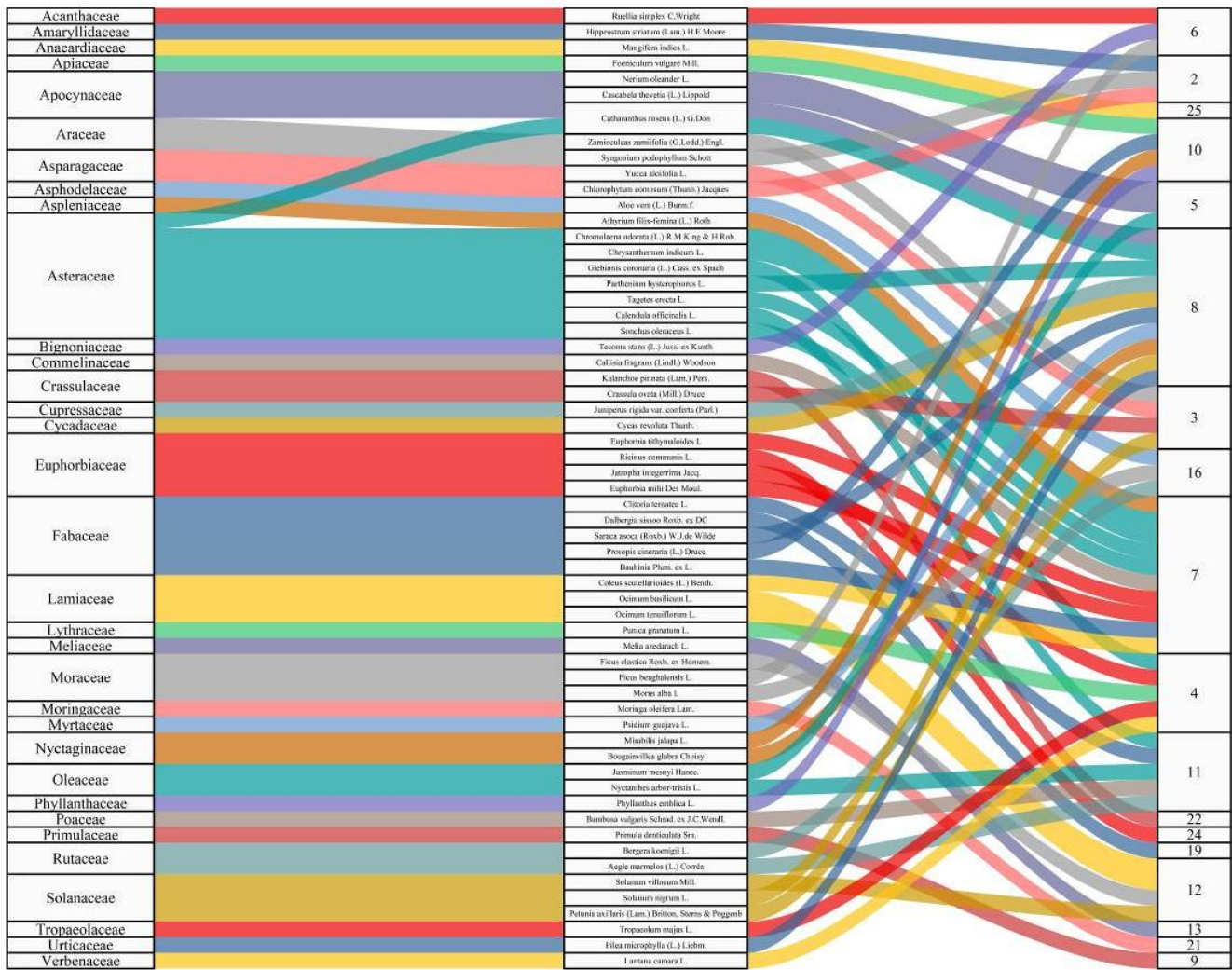


Fig. 6. Illustrates an alluvial representation linking plant families, individual medicinal species, and their corresponding number of reported ethnomedicinal uses

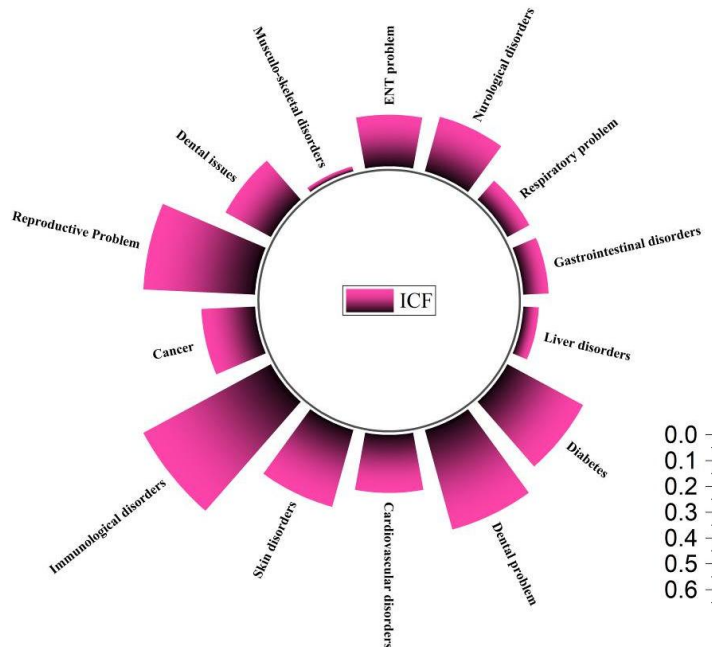


Fig. 7. Radial plot showing ICF index of 14 diseases categories which are cured by the reported plant species

Table 1. Scientific name of the plants, Family, Common name, Plant part used, mode of preparation, pharmacological role of the plants

Plant name	Family	Common Name	Habit	Plant Part Used	Mode of Preparation	Pharmacological Role
<i>Aegle marmelos</i> (L.) Corrêa*	Rutaceae	Bael	Tree	Fruits, Stem, Bark and Leaves	Decoction, Powder	Anti-diabetic, Anti-cardio-vascular and gastrointestinal disorders, Anti-cancer, Anti-spermatogenic effects
<i>Aloe vera</i> (L.) Burm.f	Asphodelaceae	Chinese aloe, Cape aloe, Barbados aloe, True aloe, Burn aloe, Ghrit kumari	Herb	Leaves, Fruit and Flower	Gel, latex dried powder, Tincture	Immunomodulatory effects, Anti-diabetic effects, Anti-mutagenic effects, Anti-bacterial, Anti-fungal Anti-viral actions, also help in treatment of arthritis
<i>Athyrium filix-femina</i> (L.) Roth*	Aspleniaceae	Lady fern	Herb	Rhizome and Leaf	Decoction, Infusion	Anti-tumor, Anti-viral, Anti-inflammatory, Antioxidant
<i>Bambusa vulgaris</i> Schrad. Ex J.C.Wendl.*	Poaceae	ordinary bamboo, or golden bamboo	Tree	Leaves and Shoots	Decoction, Juice	Analgesic, Anti-pyretic, Anti-diabetic, Anti-inflammatory, Anti-microbial, Antioxidant, Anti-viral, Anti-kidney stone, hepatoprotective activity, diuretic, abortifacients, Anti-anxiety, And renal disorder activities.
<i>Bauhinia Plum.</i> ex L.*	Fabaceae	Bidi leaf tree	Tree	Stem, Bark and Flower	Decoction; pastes	Anti-diabetic, Anti-Rheumatic, Anti-dysenteric, Anti-amoebic
<i>Bergera koenigii</i> L.	Rutaceae	Kaddi patta, Curry Leaf, Bansago	Shrub	Leaves, Stem and Bark.	Infusion; oil extraction	Anti-oxidant, Anti-microbial, anthelmintic, Stomachic, Purgative, Febrifuge, Anti-diarrheal, Anti-tumor and Hepatoprotective.
<i>Bougainvillea glabra</i> Choisy	Nyctaginaceae	Paper flower	Shrub/Climber	Leave and Stem	Decoction; poultice	Anti-diabetic and Anti-lipidemic, Anti-diarrhoeal and Anti-ulcer, Anti-pyretic
<i>Calendula officinalis</i> L.	Asteraceae	Pot marigold, Genda,	Herb	Flower, Stem, Leaf and Seed	Infusion; oil maceration; tincture; ointments	Anti-inflammatory, Anti-oxidant, Cardioprotective, Neuroprotective, wound healing, Immunostimulant, Anti-bacterial, Anti-viral, Hypoglycemic, Anti-fungal, Anti-parasitic activities
<i>Callisia fragrans</i> (Lindl.) Woodson*	Commelinaceae	Basket plant, Chain plant or Inch plant.	Herb	Leaves and Runner	Maceration; poultice	Treats burn, arthritis, Asthma and tuberculosis, Anti-bacterial
<i>Cascabela thevetia</i> (L.) Lippold	Apocynaceae	Pila kaneer, Yellow oleander	Shrub	Leaves and Bark	Decoction; extracts (caution: toxic)	Anti-bacterial property, Anti-microbial and Cytotoxic activity, Anti-oxidant and Anti-microbial activity
<i>Catharanthus roseus</i> (L.) G.Don	Apocynaceae	Nayantara or Sadabahar	Herb	Whole plant	Infusion; decoction; alcoholic extracts	Anti-cancer activity Anti-diabetic effect, Anti-microbial activity, Anti-oxidant property, Memory improvement activity, Wound recovering property, Hypolipidimic effect, Anti-helminthic activity
<i>Chlorophytum comosum</i> (Thunb.) Jacques*	Asparagaceae	Spider plant, spider ivy, Ribbon plant	Herb	Leaves, Roots and Flower	Decoction	Anti-tumor, Anti-bronchitis
<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.*	Asteraceae	Siam weed, devil weed, paraffinweed	Shrub	Leaf	Decoction; leaf paste	analgesic, Anti-microbial, cytoprotective, treat skin infection, wound healing and treatment of stomach related problems
<i>Chrysanthemum indicum</i> L.	Asteraceae	Indian chrysanthemum	Herb	Aerial part and Flower	Infusion	Anti-inflammatory Anti-oxidation, Anti-pathogenic microorganism, Anti-cancer, immune regulation, and

						hepatoprotective effects.
<i>Coleus scutellarioides</i> (L.) Benth.*	Lamiaceae	Painted nettle	Herb	Roots	Infusion	Anti-inflammatory, Anti-cancer, Anti-proliferative activity, Immunoprotection
<i>Clitoria ternatea</i> L.	Fabaceae	blue-pea, butterfly-pea, Aparajita,	Herb	Leaves, Seeds, Bark, Fruits, Sprouts and stems	Infusion, Decoction	Anti-cancer, Anti-diabetic, Anti-pyretic, Anti-oxidant, Anti-parasitic, treats gastro-intestinal problems
<i>Crassula ovata</i> (Mill.) Druce*	Crassulaceae	Jade plant and money plant	Shrub	Leaves	Poultice	Anti-oxidant, Anti-microbial & Anti-diabetic Activity
<i>Cycas revoluta</i> Thunb.*	Cycadaceae	Tieshu and sago palm	Tree	roots, leaves, flowers, and seeds	Soaked, leached, then eaten (very careful)	Anti-microbial, Anti-oxidant, Anti-diabetic, cytotoxic, anthelmintic, analgesic, Anti-arthritic, Anti-inflammatory and thrombolytic activities
<i>Dalbergia sissoo</i> Roxb. Ex DC*	Fabaceae	Shisam, Indian rose wood	Tree	Bark, seed, leaves, heart wood, flower and trunk	Decoction	Anti-diabetic effect, Analgesic and Anti-pyretic effects, Anti-termite, Anti-spermatogenic, Anti-inflammatory, Anthelmintic, Anti-diarrhoeal, Molluscicidal, Anti-nociceptive, Neuroprotective, Anti-oxidant, Osteogenic, Anti-ulcer, Anti-bacterial, Immunomodulatory activities
<i>Euphorbia milii</i> Des Moul.	Euphorbiaceae	Crown of thorns	Shrub	Stem	Poultice	Anti-microbial, Anti-oxidant, Anti-cancerous, Anti-bacterial activity, analgesic, Anti-spasmodic and bactericidal properties
<i>Euphorbia tithymaloides</i> L.*	Euphorbiaceae	devil's-backbone, buck thorn, Jacob's ladder, slipper flower, naagfani & naagdon	Shrub	Latex, Branches, Stem, Wood and Root	Poultice	Anti-protozoal, mitogenic, Anti-inflammatory, Anti-plasmodial, Anti-mycobacterial, anthelmintic and Anti-microbial activities.
<i>Ficus benghalensis</i> L.*	Moraceae	Banyan tree, Nyagrodha, Indian fig	Tree	Leaf, Bark, Aerial roots and Fruits	Poultice, Decoction	Anti-tumor, Anti-mitotic, and Anti-proliferative, Anti-diabetic, Anti-oxidant, Anti-mutagenic
<i>Ficus elastica</i> Roxb. ex Hornem*	Moraceae	Indian rubber fig	Tree	Leaves, Bark, Aerial roots, wood and Latex	Poultice, Decoction	Anti-cancer activity, Anti-bacterial activity, Anti-fungal activity, Anti-oxidant activity, Anti-preeclampsia, Anti-coagulant, Anti-malarial, Anti-inflammatory, Anti-trypanosomal, Anti-proliferative, Anthelmintic, Anti-schistosomiasis activity
<i>Foeniculum vulgare</i> Mill.	Apiaceae	Souf, Fennel	Herb	Leaves, Root, Fruit and Seed	Infusion	treat gastrointestinal disorder, Anti-ulcer and Anti-oxidant properties, Anti-septic, treat neurological disorders
<i>Glebionis coronaria</i> (L.) Cass. ex Spach	Asteraceae	Chrysanthemum, Pyrethrum or Tango	Herb	Leaves and Flowers	Infusion, Decoction	Anti-diabetic, Anti-microbial, Anti-inflammatory, immunosuppressive activity
<i>Hippeastrum striatum</i> (Lam.) H.E.Moore	Amaryllidaceae	Striped Barbados Lily	Herb	Leaves and bulb	Poultice	Wound Healing, Anti-inflammatory
<i>Jasminum mesnyi</i> Hance.	Oleaceae	Japanese jasmine, Primrose Jasmine, Peeli Chameli & peeli malti	Shrub	Leaves, Flower and Roots	Infusion	Anti-oxidant and Anti-diabetic activity, Anti-helminthic activity, Anti-ulcer activity, Wound healing activity.

<i>Jasminum officinale</i> L.	Oleaceae	summer jasmine, white jasmine, true jasmine	Shrub	Flower and leaves	Infusion	Anti-microbial, Anti-ulcer, Anti-inflammatory, Wound healing, Anti-acne, Anti-oxidant & Anti-aging Activities, Vasodilation Effects Aromatherapy Gastroprotective Effect Cytoprotective Effect Hepatoprotective Effect
<i>Jatropha integerrima</i> Jacq.	Euphorbiaceae	Red jatropha, spicy jatropha	Shrub	Leaves and latex	Paste, Poultrice	Anti-inflammatory activity, Anti-microbial activity also treat eczema, pruritus and skin warts
<i>Juniperus rigida</i> var. <i>conferta</i> (Parl.)*	Cupressaceae	Needle juniper	Shrub	Branches and leaves	Decoction	Anti-oxidants, Anti-bacterial, treat brucellosis, rheumatic arthritis, nephritis, dropsy, and skin disease,
<i>Kalanchoe pinnata</i> (Lam.) Pers.*	Crassulaceae	Tree of life, Air plant, asthi-bhaksha	Herb	Leaves and roots	Juice, Poultrice	Anti-cancer activity, Anti-convulsant activity, Anti-diabetic activities, Anti-fungal activity, Anti-leishmanial activity, Anti-microbial activity, Anti-nociceptive, Anti-proliferative activity, Anti-ulcer activity, Diuretic and Anti-urolithic activity, Hepatoprotective, Immunomodulatory, Nephro-protective, Neuro-sedative and muscle relaxant activity, Uterine relaxant, Wound healing activity,
<i>Lantana.camara</i> L	Verbenaceae	Raimuniya Spanish flag, Wild sage	Shrub	Leaves, Flower and Roots	Decoction, Poultrice	Anti-inflammatory, Anti-pyretic, Anti-spasmodic, and Anti-biotic agent
<i>Mangifera indica</i> L.*	Anacardiaceae	Mango, Mabaz, Am, Mi wang, Ambi, Amia, Aamra, Ambrah	Tree	Roots, Bark, Flower, Seed, Leaves and Fruit	Decoction, Infusion	Anti-cancer, Anti-diabetic, Anti-inflammatory, Hepatoprotective, Anti-hemorrhagic, Anti-tetanus, Analgesic and Anti-pyretic, Kidney damage, Anti-ulcer, Anti-bone resorption, Anti-diarrheal, Anti-bacterial, Anti-fungal, Anti-viral, Anti-amoebic, Anthelmintic, Antimalarial, Radio protective, Immunoregulation, Cardio protective, Osteoporosis prevention, Recognition of memory, Bronchodilatory, Laxative.
<i>Melia azedarach</i> L.	Meliaceae	Bakain, Kalo neem, Bakan, Bakana Nimb,	Tree	Bark, stem, root, Fruit, flower and seed	Decoction	Anti-bacterial, Anti-fungal activity, Hepatoprotective action, Anti-complementary, Analgesic, Anti-lithiatic, Anti-ulcer, Antioxidant activit, Immunomodulatory, Cytotoxic and Anti-proliferative, Phytotoxic activity
<i>Mirabilis jalapa</i> L.	Nyctaginaceae	Beauty of the night, false jalap, four o'clock plant	Herb	Leaves, stems and roots	Decoction, Infusion	Anti-microbial effects Anti-parasitic effect Antioxidant effect Dermatological effect Anti-cancer effect Anti-inflammatory effect Analgesic effect Anti-histaminic and immunemodulatory effects Anti-spasmodic effect
<i>Moringa oleifera</i> Lam.	Moringaceae	Sehjan	Tree	Leaves, flower, roots, bark, seed and flower	Infusion, Decoction, Powder	Anti-pyretic, Anti-asthmatic, Anti-inflammatory, Anti-arthritic and analgesic, Hypocholesterolemic, Wound healing, Anti-thyroid, Anti-microbial, Anaphylactic, Hepatoprotective, Anti-tumor, Antiplasmodial, Anti-fertility and abortifacient, Anti-oxidant and Antiperoxidative, Radioprotective, Anti-ulcer, Diuretic and Anti-urolithiatic, Anti-hyperglycemic, Anti-hypertensive & cardio protective, CNS activities,,

<i>Morus alba</i> . L*	Moraceae	Sahtoot plant, Mulberry plant,	Tree	Leaves, Wood and Fruits	Infusion, Decoction, Juice	Anti-atherosclerotic, Anti-bacterial and Anti-viral activities, Anti-cancer and Anti-tyrosinase inhibition activity, Controls blood sugar, Rich in Anti- oxidants, Reduce cancer risk, Promotes Eye Health, Help with weight loss, Improves brain health:
<i>Nerium oleander</i> L.	Apocynaceae	Oleander	Shrub	Leaves, Bark and Root	Decoction, Powder	Anti-bacterial Anti-microbial, Anti- inflammatory, Anti-nociceptive and Anti-tumor activity.
<i>Nyctanthes arbor-tristis</i> L.	Oleaceae	Harsinger, Night jasmine	Tree	Leaves, Flower, Seed and Bark	Infusion, Decoction	Hepatoprotective, Anti-allergic, Anti-tryptaminergic, Anti-bacterial, Anti-viral, Anti-filarial, Anti-oxidant, Anti-inflammatory, Anti-pyretic activity Anti-cholinesterase Immunopotentiator
<i>Ocimum basilicum</i> L.	Lamiaceae	Sweet basil, Bawari bawai,	Herb	Leaves, flowering tops ans essential oil	Infusion, Juice, Oil	Treatment of Gonorrhea, dysentery, numbness, migraine, nausea, abdominal cramp, headache, Anti- inflammatory
<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Tulsi, tulasi	Herb	Leaves and stem	Infusion, Juice, Oil	Anti- activities, Chemoprotective activity, Hypoglycemic, Hepatoprotective, Anti-fungal, Anti- fungal
<i>Parthenium hysterophorus</i> L.	Asteraceae	Santa-Maria, Santa Maria feverfew, or ragweed parthenium	Herb	Mostly roots	Decoction	Anti-cancer, Anti-inflammatory, cardiotonic, Anti-spasmodic, Thrombolytic activity, Anti-microbial activity, Hypo-glycemic, Wound healing activity
<i>Petunia axillaris</i> (Lam.) Britton, Sterns & Poggenb	Solanaceae	Large white petunia, white moon petunia	Herb	Leaves	Infusion, Poultice	Anti-microbial properties, Anti- bacterial property
<i>Phyllanthus emblica</i> L.*	Phyllanthaceae	Indian gooseberry, Vayasyaa,, Adiphala,, Amrita, Dhatrphala, Kayastha, Shriphala, Vayastha,	Tree	Seed and fruit	Juice, Decoction, Powder, Syrup	Hepatoprotective, Anti-tumor, Cardioprotective, Anti-tussive, Immunomodulatory, Anti-proliferative, and Anti-ulcerogenic activities
<i>Pilea microphylla</i> (L.) Liebm.*	Urticaceae	artillery weed, rockweed or gunpowder plant	Herb	Entire plant, stems and leaves.	Infusion, Poultice	Anti-oxidant, Anti-diabetic, radioprotective, Anti-microbial, cytoprotective, Anti-genotoxic, Anti-depressant properties.
<i>Primula denticulata</i> Sm.	Primulaceae	Drumstick primrose	Herb	Leaves, Roots and Flower	Infusion	Treats headache, bronchitis, gout, diuretic
<i>Prosopis cineraria</i> (L.) Druce*	Fabaceae	khejri, shumi	Tree	Bark, Leaves and ashes	Decoction, Pod flour	analgesic, Anti-pyretic, Anti- hyperglycemic, Anti-oxidant, Anti- hypercholesterolemic, Anti-tumor, nootropic, treat Respiratory, Gastrointestinal and Vascular Disorders
<i>Psidium guajava</i> L.	Myrtaceae	Guava, Amrud	Tree	Leaves, seed, pulp and Bark	Infusion, Decoction	Anti-oxidant, Anti-inflammatory, Anti-cancer, Anti-microbial, Anti- hyperglycemic, analgesic, Anti- spasmodic, Anti-neoplastic, Hepatoprotection
<i>Punica granatum</i> L.*	Lythraceae	Pomegranate (Anar)	Tree	Bark, leaves, immature fruits, and fruit	Decoction, Juice	Anti-microbial activity, Anti-cancer, Anti-diabetic

<i>Ricinus communis</i> L.	Euphorbiaceae	castor plant, Arand	Shrub	Seed, leaves and Roots	Poultice	Anti-fertility activity, Anti-implantation, Anti-cancer activity, Anti-oxidant activity, Immunomodulatory activity, Hepatoprotective activity, Anti-diabetic activity, Anti-ulcer activity, larvicidal activity, Bone regeneration, Central analgesic, Anti-histaminic, Anti-asthmatic, Cytotoxic, Lipolytic, Anti-inflammatory, Wound healing activity,
<i>Ruellia simplex</i> C.Wright.	Acanthaceae	wild petunias	Herb	Leaves, Roots and Tuber	Decoction, Poultice	Anti-diabetic, Anti-pyretic, analgesic, Anti-hypertensive, Anti-cancer, and Anti-dotal toxic agents
<i>Saraca asoca</i> (Roxb.) W.J.de Wilde *	Fabaceae	Ashok plant, kankeli plant,	Tree	Whole plant	Decoction, Infusion	Anti-parkinsonian, Anti-oxidant, Anti-inflammatory, Anti-diabetic, sexual enhancing, Anti-microbial, Anti-viral, Anti-cholesterolemic and against nerve disorders
<i>Solanum nigrum</i> L.	Solanaceae	Makoi or black nightshade	Herb	Leaf, Fruit, Sap and Roots	Decoction, Infusion	Anti-proliferative, Phytoremediation, Anti-seizure, Anti-poison, Anti-inflammatory, Anti-pyretic, Wound healer, Hepatoprotective
<i>Solanum villosum</i> Mill.*	Solanaceae	Hairy nightshade	Herb	Leaf and Fruits	Decoction, Infusion	Anti-dysentric, Anti-narcotic, laxative, Anti-cancer, Anti-ulcer and treatment for disorders of neuro-vegetative System
<i>Sonchus oleraceus</i> L.	Asteraceae	Sowthistle	Herb	Leaves, Stem and Root	Infusion, Salad herb	Anti-tumor, Anti-bacterial, Anti-oxidant, Anti-inflammatory, Anti-depressant, emollient, blood purifying and liver tonic activities.
<i>Syngonium podophyllum</i> Schott*	Araceae	Arrowhead plant	Herb	Root and Bark	Poultice	Anti-microbial, Anti-inflammatory activity
<i>Tagetes erecta</i> L.	Asteraceae	Aztec marigold, Mexican marigold, big marigold, Genda phool	Herb	Flower and Leaves	Infusion, Poultice, Oil Maceration	Anti-bacterial activity, Wound healing activity, Anti-Hyperlipedemic activity, Anti-Diabetic activity, Hepatoprotective activity, Ovicidal and Repellent activity
<i>Tecoma stans</i> (L.) Juss. ex Kunth	Bignoniaceae	Piliya, Yellow bells, Yellow elder plant	Shrub	leaves, barks and roots	Decoction, Infusion	Anti-oxidant Activity, Anti-Inflammatory Activity, Anti-diabetic Activity, Anti-microbial Activity, Anti-spasmodic Activity, Wound healing activity
<i>Tropaeolum majus</i> L.	Tropaeolaceae	Nasturtium	Herb	Flower	Infusion	Anti-hypertensive action, Anti-microbial activity, Anti-oxidant activity, Diuretic effect
<i>Withania somnifera</i> (L.) Dunal	Solanaceae	Ashwagandha	Shrub	leaves, roots, flower, bark, and stem	Decoction, Powder, Tincture	Neuroprotective effect Anti-depressant effect Cardiovascular effects Anti-proliferative and Anti-cancer effect Acceleration of wound healing Gastroprotective properties, Anti-inflammatory activity, Anti-tumour, Antioxidant activity, Immunomodulatory activity and hematopoiesis, Neuritic regeneration activity, Anxiety and depression, Anti-genotoxic effect, Nootropic effect, Anti-Parkinson's activity, Anti-microbial
<i>Yucca aloifolia</i> L.	Asparagaceae	Aloe yucca, dagger plant, and Spanish bayonet	Tree	Fruit, Flower and Root	Decoction, Poultice	Anti-bacterial, Anti-fungal, Anti-pests effect

Zamioculcas zamiifolia (G.Lodd.) Engl.*	Araceae	Zanzibar gem, Zizi plant	Shrub	Rhizome	Poultice	Cyto-toxicity, Antioxidant activity, Anti-inflammatory activities.
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Table 2. Showing Plant species name, Common name, recommended uses, Use Reports, UV, FC and RFC

Species name	Common name	Recommended uses	UR	UV	FC	RFC
<i>Ruellia simplex</i> C.Wright	wild petunias	anti-diabetic (15), anti-hypertensive (12), anti-cancer (13)	40	0.44	31	0.34
<i>Hippeastrum striatum</i> (Lam.) H.E.Moore	Striped Barbados Lily	anti-inflammatory Activity (12), Wound Healing Activity (5)	17	0.19	40	0.44
<i>Mangifera indica</i> L.	Mango, Mabaz, Am,	anti-cancer (12), anti-diabetic (6), anti-diarrheal (4), anti-bacterial (14), Stomachache (12)	36	0.40	35	0.39
<i>Foeniculum vulgare</i> Mill.	Souf, Fennel	treat gastrointestinal disorder (12), anti-septic (11)	23	0.26	21	0.23
<i>Nerium oleander</i> L.	Oleander	anti-bacterial (13), anti-microbial (6), anti-inflammatory (11)	30	0.33	40	0.44
<i>Cascabela thevetia</i> (L.) Lippold	Pila kaneer, Yellow oleander	anti-bacterial property (8), anti-microbial (16) and Cytotoxic activity (4)	28	0.31	63	0.70
<i>Catharanthus roseus</i> (L.) G.Don	Nayantara or Sadabahar	anti-cancer activity (9), anti-diabetic effect (17), anti-microbial activity (13)	37	0.41	30	0.33
<i>Zamioculcas zamiifolia</i> (G.Lodd.) Engl.	ZZ plant, Zuzu plant	Cyto-toxicity (5), anti-oxidant activity (3), anti-inflammatory activities (16)	24	0.27	30	0.33
<i>Syngonium podophyllum</i> Schott	Arrowhead plant	anti-microbial (13), anti-inflammatory activity (14)	27	0.30	30	0.33
<i>Yucca aloifolia</i> L.	aloe yucca, dagger plant	anti-bacterial (12), anti-fungal (11), anti-pest (3)	26	0.29	31	0.34
<i>Chlorophytum comosum</i> (Thunb.) Jacques	Spider plant, spider ivy	anti-tumor (22), anti-bronchitis (12)	34	0.38	30	0.33
<i>Aloe vera</i> (L.) Burm.f.	Chinese aloe	Moisturizing and anti-aging effect (6), Immune System Restoration (5)	11	0.12	60	0.67
<i>Athyrium filix-femina</i> (L.) Roth	Lady fern	anti-tumor (13) and anti-HIV properties (4)	17	0.19	20	0.22
<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.	Siam weed, devil weed	treat skin infection (12), wound healing and treatment of stomach related problems (23)	35	0.39	35	0.39
<i>Chrysanthemum indicum</i> L.	Indian chrysanthemum	anti-cancer (12), immune regulation, and hepatoprotective effects (17)	29	0.32	34	0.38
<i>Glebionis coronaria</i> (L.) Cass. ex Spach	Chrysanthemum	anti-diabetic (13), anti-microbial (2), immunosuppressive activity (2)	17	0.19	18	0.20
<i>Catharanthus roseus</i> (L.) G.Don	Nayantara or Sadabahar	anti-cancer (12), anti-inflammatory (4), cardiotoxic (16), Wound healing activity (13)	35	0.39	60	0.67
<i>Parthenium hysterophorus</i> L.	Santa-Maria, Santa Maria	anti-cancer (12), anti-inflammatory (4), cardiotoxic (15), Wound healing activity (13)	44	0.49	40	0.44
<i>Tagetes erecta</i> L.	big marigold, Genda phool	anti-bacterial activity (13), Wound healing activity (6), Hepatoprotective activity (16)	35	0.39	35	0.39
<i>Calendula officinalis</i> L.	Pot marigold, Holli-gold	Cardioprotective (9), Neuroprotective (15), wound healing (12), Immunostimulant (15)	51	0.57	40	0.44
<i>Sonchus oleraceus</i> L.	Sow-thistle	anti-tumor (3), anti-bacterial (5), blood purifying and liver tonic activities (12)	20	0.22	30	0.33
<i>Tecoma stans</i> (L.) Juss. ex Kunth	Yellow bells, Yellow elder plant	anti-spasmodic Activity (13), Wound healing activity (4) anti-diabetic (4)	21	0.23	31	0.34
<i>Callisia fragrans</i> (Lindl.) Woodson	Basket plant, Chain plant or Inch plant.	treat burns (12), arthritis (8), skin and oncological diseases (13), tuberculosis (4), and asthma (9)	46	0.51	50	0.56
<i>Kalanchoe pinnata</i> (Lam.) Pers.	Leaf of life, Tree of life, Air plant	anti-ulcer activity (4), Diuretic and anti-urolithic activity (5), Hepatoprotective activity (5)	14	0.16	22	0.24
<i>Crassula ovata</i> (Mill.) Druce	Jade plant	anti-oxidant (3), anti-microbial (3) and anti-diabetic activity (12)	18	0.20	23	0.26
<i>Juniperus rigida</i> var. <i>conferta</i> (Parl.)	Needle juniper	treat brucellosis (2), rheumatic arthritis (4), nephritis (3), dropsy (6), and skin disease (15)	30	0.33	60	0.67
<i>Cycas revoluta</i> Thunb.	sago palm	anti-diabetic (12), cytotoxic (3), anti-helminthic (12), analgesic (3), anti-arthritis (12)	42	0.47	40	0.44

<i>Euphorbia tithymaloides</i> L.	redbird flower, devil's-backbone	anti-plasmodial (12), anti-mycobacterial (4), anthelmintic (6) and anti-microbial activities (9)	31	0.34	55	0.61
<i>Ricinus communis</i> L.	Arand, Erand, Andi,	anti-fertility activity (19), anti-implantation activity (8), anti-nociceptive activity (3), anti-cancer activity (16)	46	0.51	65	0.72
<i>Jatropha integerrima</i> Jacq.	Red jatropha	anti-microbial activity (13), also treat eczema, pruritus and skin warts (28)	41	0.46	70	0.78
<i>Euphorbia milii</i> Des Moul.	Crown of thorns	anti-cancer agents (4), anti-bacterial activity (12), analgesic (2), anti-spasmodic & bactericidal properties (11)	29	0.32	45	0.50
<i>Clitoria ternatea</i> L.	butterfly-pea	anti-diabetic (5), anti-microbial (3), gastro-intestinal, (6) anti-parasitic (12)	26	0.29	61	0.68
<i>Dalbergia sissoo</i> Roxb. ex DC	Shisam, Indian rose wood	Neuroprotective effect (11), anti-oxidant activity (7), Osteogenic activity (9), anti-ulcer activity (12)	39	0.43	65	0.72
<i>Saraca asoca</i> (Roxb.) W.J.de Wilde	Ashok plant,	anti-oxidant (3), anti-inflammatory (6), anti-diabetic (6), anti-cholesterolemic (12)	27	0.30	63	0.70
<i>Prosopis cineraria</i> (L.) Druce	jambi, jambu	anti-tumor (6), nootropic (7), treat Respiratory (8), Gastrointestinal and Vascular disorder (12)	33	0.37	69	0.77
<i>Bauhinia Plum.</i> ex L.	Bidi leaf tree	anti-amoebic (6), anti-diabetic (9), anti-dysenteric (6), anti-inflammatory (8)	29	0.32	62	0.69
<i>Coleus scutellarioides</i> (L.) Benth.	Painted nettle	anti-cancer (4), anti-bacterial (5), anti-viral properties (12), anti-fungal properties (8), Insecticide properties (4)	33	0.37	36	0.40
<i>Ocimum basilicum</i> L.	Sweet basil, Bawari	treat abdominal cramps (12), gonorrhoea (8), dysentery (12), headache (8), dizziness (8), piles (2), cough (8)	58	0.64	55	0.61
<i>Ocimum tenuiflorum</i> L.	Tulsi	Radioprotective activity (9), Immunomodulatory activity (9), anti-toxic effect (7), anti-fertility activity (24)	49	0.54	71	0.79
<i>Punica granatum</i> L.	Pomegranate (Anar)	anti-inflammatory Activity (12), anti-cancer Activity (16), anti-diabetic Activity (18)	46	0.51	58	0.64
<i>Melia azedarach</i> L.	Bakain, Ramyaka, Drek	anti-bacterial (12), anti-fungal activity (10), Hepatoprotective action (6), anti-Inflammatory activity (12)	40	0.44	45	0.50
<i>Ficus elastica</i> Roxb. ex Hornem.	Indian rubber fig	anti-cancer activity (11), anti-bacterial activity (8), anti-fungal activity (4), anti-oxidant activity (6)	29	0.32	66	0.73
<i>Ficus benghalensis</i> L.	Banyan tree	anti-tumor (8), anti-proliferative (12), anti-diabetic (9), anti-mutagenic (12)	41	0.46	30	0.33
<i>Morus alba</i> L.	Sahtoot plant	anti-atherosclerotic (12), anti-bacterial (12) and anti-viral activities (9), anti-microbial (14)	47	0.52	63	0.70
<i>Moringa oleifera</i> Lam.	Sehjan, Sajina, sajna	anti-pyretic (4), anti-asthmatic (12), anti-inflammatory (9), anti-arthritis (12) and analgesic (9)	46	0.51	59	0.66
<i>Psidium guajava</i> L.	Guava, Amrud	Hepatoprotection (7), anti-oxidant (9), anti-inflammatory (12), anti-spasmodic (8), anti-cancer (13)	49	0.54	50	0.56
<i>Mirabilis jalapa</i> L.	four o'clock plant	Dermatological effect (12), anti-cancer effect (8), anti-inflammatory effect (12), Analgesic effect (9)	41	0.46	52	0.58
<i>Bougainvillea glabra</i> Choisy	white paper flower	anti-ulcer (12), anthelmintic (8), analgesic (12), anti-pyretic (8) and anti-inflammatory actions (12)	52	0.58	40	0.44
<i>Jasminum mesnyi</i> Hance.	Japanese jasmine, Primrose Jasmine	anti-oxidant & anti-diabetic activity (8), anti-helminthic activity (4), anti-ulcer activity (9), Wound healing activity (8)	29	0.32	30	0.33
<i>Nyctanthes arbor-tristis</i> L.	Harshringer, Night jasmine	hepatoprotective (8), anti-allergic (8), anti-tryptaminergic (2), anti-bacterial (8), anti-viral (7)	33	0.37	62	0.69
<i>Phyllanthus emblica</i> L.	Adiphala,, Amrita, Dhatriphala,	anti-microbial (7), anti-oxidant (13), anti-inflammatory (16)	36	0.40	60	0.67
<i>Bambusa vulgaris</i> Schrad. ex J.C.Wendl.	ordinary bamboo, golden bamboo	anti-kidney stone (8), hepatoprotective activity (11), diuretic (9)	28	0.31	59	0.66
<i>Primula denticulata</i> Sm.	Drumstick primrose	treats cough (8), bronchitis (11), nervousness (13), headache (4), diaphoretic (9), rheumatism (8)	53	0.59	48	0.53
<i>Bergera koenigii</i> L.	Kaddi patta, Curry Leaf Tree	anti-Inflammation (8), cooling & itching (7), analgesic (6), anti-inflammatory, anti-diarrheal (12), hepatoprotective (17)	50	0.56	68	0.76
<i>Aegle marmelos</i> (L.) Corrêa	Bael	anti-cancer (15) and anti-cardio-vascular (17) and gastrointestinal disorders (12)	44	0.49	71	0.79

<i>Solanum villosum</i> Mill.	Hairy nightshade	anti-narcotic (8), emollient (4), diuretic (6), tonic (9), soporific (8), laxative (4), anti-cancer (12)	51	0.57	55	0.61
<i>Solanum nigrum</i> L.	Makoi or black nightshade	anti-seizure (6), anti-poison (12), anti-inflammatory (6), anti-pyretic (7), Wound healer (16)	47	0.52	60	0.67
<i>Petunia axillaris</i> (Lam.) Britton, Sterns & Poggenb.	Large white petunia	anti-microbial properties (17), anti-bacterial property (19)	36	0.40	25	0.28
<i>Tropaeolum majus</i> L.	Nasturtium	anti-hypertensive action (12), anti-microbial activity (8), anti-oxidant activity (9), Diuretic effect (12)	41	0.46	19	0.21
<i>Pilea microphylla</i> (L.) Liebm.	artillery weed, rockweed	anti-oxidant (8), anti-diabetic, (12), radioprotective (17), anti-microbial (6), cytoprotective (15)	58	0.64	51	0.57
<i>Lantana</i> L.	Spanish flag, Wild sage	anti-inflammatory (12), anti-pyretic (9), anti-spasmodic (12)	33	0.37	29	0.32

Table 3. Showing Disease category, number of plant species, Use reports, ICF values

Disease category	No. of plant species	Use reports	ICF
Gastrointestinal disorders	47	52	0.10
Respiratory problem	38	42	0.10
Neurological disorders	26	33	0.22
ENT problem	13	16	0.20
Musculo-skeletal disorders	51	52	0.02
Dental issues	21	26	0.20
Reproductive Problem	18	31	0.43
Cancer	39	49	0.21
Immunological disorders	26	58	0.56
Skin disorders	39	56	0.31
Cardiovascular disorders	32	41	0.23
Dental problem	16	26	0.40
Diabetes	23	34	0.33
Liver disorders	32	34	0.06

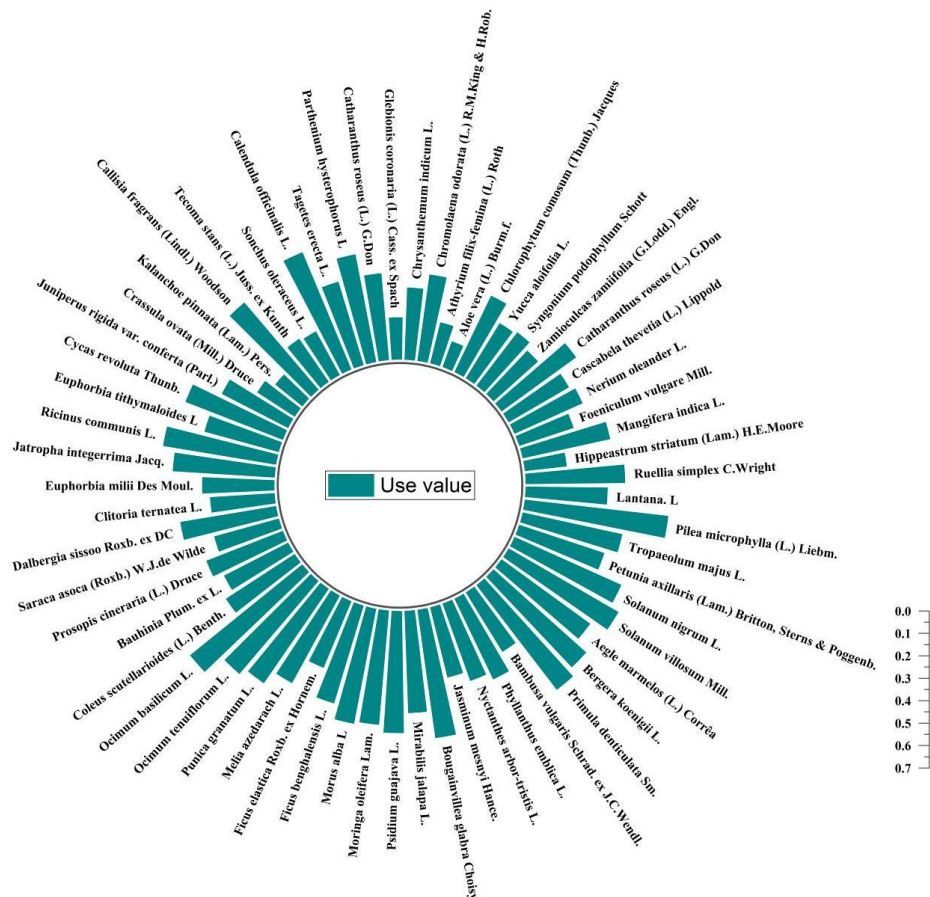


Fig. 8. Radial plot represents the Use Value of plants reported in the ethnobotanical survey

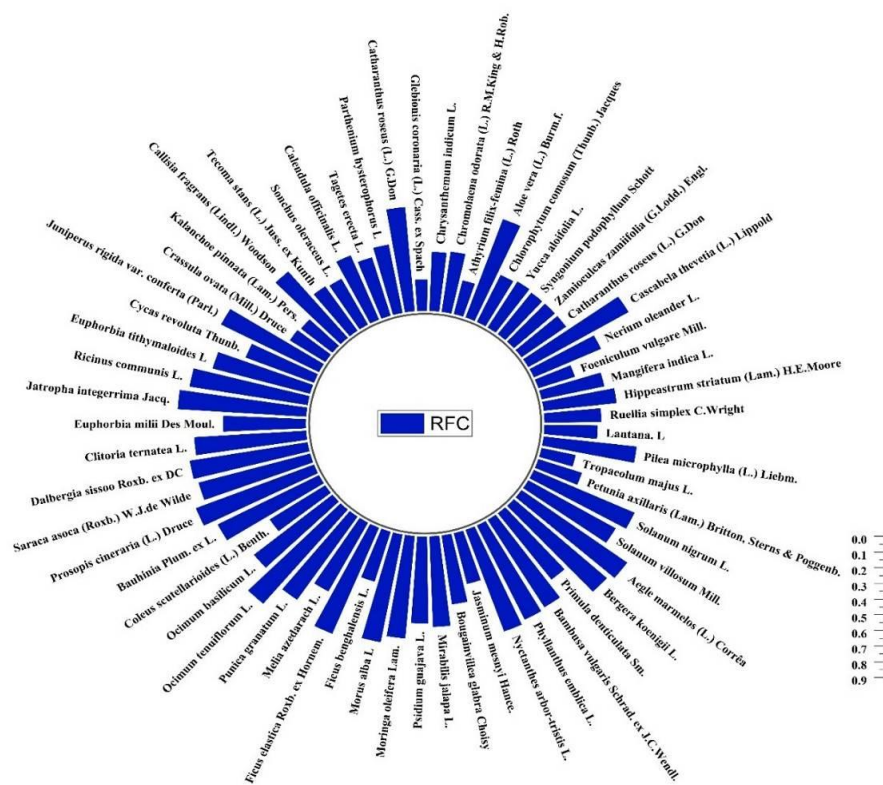


Fig. 9. Radial plot showing the RFC values of the ethnobotanical survey of different plants

Relative Frequency of Citation (RFC)

Higher RFC values denote broader cultural recognition and more frequent therapeutic use, thereby flagging species of prime importance for local healthcare, conservation, and phytochemical investigation. Because RFCs are inherently shaped by sample size, study design, and regional traditions, they must be interpreted within the socio-ecological context of each community (supplementary Table 3). In the present survey, *Ocimum tenuiflorum* L. exhibited the greatest RFC (0.79), underscoring its pervasive medicinal role, whereas *Glebionis coronaria* (L.) Cass. ex Spach recorded the lowest value (0.20), reflecting comparatively limited use and cultural familiarity (Fig.9).

DISCUSSION AND CONCLUSION

The quantitative medicinal indices of the current ethnobotanical research show that the inhabitants of Kadipur Tehsil, Haryana, have a strong collection of traditional medical knowledge. *Ocimum tenuiflorum* L., *Aegle marmelos* (L.) Corrêa, *Prosopis cineraria* (L.) Druce, *Bergera koenigii* L., *Ricinus communis* L., *Jatropha integerrima* Jacq., *Dalbergia sissoo* Roxb. ex DC, *Punica granatum* L., and *Ficus elastica* Roxb. ex Hornem. are among the species with the highest Use Value (UV) and Relative Frequency of Citation (RFC) in the local pharmacopoeia. In ethnobotanical research, elevated UV and RFC values signify strong informant consensus, multipurpose use, and frequent citation—all of which are well-known markers of medicinal significance (Albuquerque et al.,2006 ; Hoffman & Gallaher, 2007). The most well-known medicinal species was *Ocimum tenuiflorum*

L., which had the highest UV (0.54) and RFC (0.79). It is frequently used for detoxification, reproductive health difficulties, immunological problems, and overall well-being in the studied area. Similar medicinal uses of *O. tenuiflorum*, highlighting its antibacterial, immunomodulatory, adaptogenic and antioxidant qualities, have been reported in several parts of India (Jamshidi-Kia et al., 2018; Bilal et al., 2012). One of the most frequently mentioned species was *Aegle marmelos* (L.) Corrêa, especially for cardiovascular, gastrointestinal and metabolic diseases. The species also have antidiabetic, anti-diarrheal, hepatoprotective and anti-inflammatory qualities that have been documented in several ethnobotanical and pharmacological research (Gaikwad, 2025; Jamshidi-Kia et al., 2018). Both its therapeutic efficacy and the endurance of intergenerational information transfer are demonstrated by the high RFC found in this study.

In a similar way, *Bergera koenigii* L. demonstrated high UV and RFC values, suggesting that it is frequently used for digestive problems, liver-related illnesses and inflammatory issues. Its antibacterial, hepatoprotective and antioxidant properties have been shown in earlier research, providing pharmacological evidence for its conventional uses (Faruque et al., 2018). Its extensive use in home gardens increases its accessibility and therapeutic value. Among the most often mentioned species were *Ricinus communis* L. and *Jatropha integerrima* Jacq., which are mainly utilized for inflammatory, dermatological, and reproductive conditions. Strong informant agreement about the therapeutic usefulness of these species is indicated by high RFC scores. However, prior research has highlighted the necessity for cautious use because of their known toxicity, underscoring the depth of indigenous knowledge necessary for safe application (Ekor,

2014; Ndhlovu et al., 2023). *Dalbergia sissoo* Roxb. ex DC exhibited significant ethnomedical importance, especially for ulcers, neurological diseases and musculoskeletal ailments. Previous research has reported similar uses, attributing the species' analgesic, anti-inflammatory, antioxidant, and neuroprotective qualities (Albuquerque et al., 2006; Thakur et al., 2024). *Punica granatum* L. was often mentioned for gastrointestinal, diabetic, and inflammatory conditions, supporting earlier research that emphasizes its antibacterial, antioxidant, and antidiabetic properties (Faruque et al., 2018). Despite being mostly grown as an ornamental plant, *Ficus elastica* Roxb. ex Hornem. had a high RFC, indicating its incorporation into regional medical traditions. The integration of naturalized and cultivated species into conventional healthcare systems illustrates how ethnobotanical knowledge may adapt to shifting plant abundance and environmental composition (Dean, 2024; Panda et al., 2018). The significant ethnobotanical diversity of Kadipur Tehsil is demonstrated by the record of 62 species of medicinal plants from 32 different families. However, informant responses

show a slow decrease in the availability of medicinal plants, which is linked to habitat fragmentation, overharvesting, agricultural intensification, and a lack of knowledge about sustainable gathering methods (Ekor, 2014; Udoudom, 2021). Since selecting renewable aerial portions reduces long-term harm to plant populations, the discovered choice for leaflet harvest over root systems and bark demonstrates an intrinsically sustainable traditional practice. However, there are conservation dangers associated with the ongoing exploitation of roots and bark for some high-demand species, especially considering growing anthropogenic pressure. According to Pidigam et al. (2023), these results support the necessity of conservation initiatives that incorporate community involvement, ex situ cultivation, and educational campaigns. Future medication research and sustainable healthcare development can benefit from scientific validation of highly referenced species in conjunction with conservation-focused management. Therefore, maintaining ethnobotanical knowledge is crucial for pharmaceutical innovation, biodiversity conservation, and cultural continuity.

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Author Contributions

All the authors conceived the concept, wrote and approved the manuscript.

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