

ETHNOBOTANICAL DIVERSITY AND TRADITIONAL MEDICINAL USES OF PLANTS FOR THE TREATMENT OF VARIOUS AILMENTS IN MAHOBA DISTRICT, UTTAR PRADESH, INDIA

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ABSTRACT

Medicinal plants play an important role in traditional healthcare systems, particularly in rural communities where indigenous knowledge contributes to the treatment of various ailments. The present study documents the diversity of ethnomedicinal plants and their traditional therapeutic applications in Mahoba district, Uttar Pradesh, India. The study focuses on plant families, medicinally used plant parts, and the range of ailments treated through traditional plant-based remedies. The recorded data comprise 55 plant entries with 55 genera representing 31 families. Fabaceae was the dominant family, with 14 species, followed by Rutaceae and Solanaceae, with three species each. Ten families were represented by two species each, while the remaining 19 families were represented by one species each. Analysis of medicinal plant parts revealed that leaves were the most frequently used, accounting for 25 records, followed by roots (12), seeds (8), bark (4), fruits (4), whole plants (3), stems

(2), and latex (1). The recorded therapeutic applications covered 12 categories of ailments. Fever, including malaria and typhoid fever, was associated with 10 entries, followed by piles (8), wounds (5), and cough and cold (5). Snakebite, ulcer, headache, bronchitis, sores, stomach problems, scorpion sting, and arthritis were also represented in the recorded dataset. The predominance of Fabaceae and the frequent use of leaves and roots highlight important patterns in the documented traditional medicinal knowledge of the region. The findings provide a preliminary record of ethnomedicinal plant diversity and traditional therapeutic

practices in Mahoba district. Further field-based documentation, botanical authentication, and pharmacological investigations are required to validate the reported uses and support the sustainable utilization of medicinal plant resources.

KEYWORDS: Ethnobotany, medicinal plants, traditional knowledge, plant parts, indigenous healthcare, Mahoba district, Uttar Pradesh.

INTRODUCTION

Medicinal plants have long played an important role in traditional healthcare systems, providing remedies for a wide range of human ailments. Knowledge concerning the medicinal properties, preparation, and application of plants has developed through generations of practical experience and cultural transmission. In many rural communities, traditional plant-based remedies remain an important component of local healthcare practices. Ethnobotanical research provides a systematic approach to documenting these practices and examining the relationships between human communities, plant diversity, and traditional knowledge (Jain, 1991; Cotton, 1996; Heinrich et al., 2009). The World Health Organization has also emphasized the importance of documenting traditional medicine and strengthening the evidence base for its safe and effective use (WHO, 2019).

India possesses considerable floristic diversity and a rich heritage of traditional medicinal knowledge. Different communities use various plant species to manage common health conditions, with remedies prepared from leaves, roots, bark, seeds, fruits, and other plant parts. The selection and preparation of medicinal plants may vary according to local ecological conditions, cultural practices, availability of plant resources, and the knowledge of traditional healers. Ethnobotanical investigations are therefore valuable for recording the diversity of medicinal plants, identifying patterns of plant-part utilization, and documenting traditional therapeutic applications (Jain and Rao, 1977; Martin, 1995; Cotton, 1996). Such documentation also provides a foundation for future phytochemical, pharmacological, and conservation-related research.

Traditional medicinal knowledge is particularly important in rural and semi-arid landscapes, where communities maintain close relationships with locally available vegetation. However, this knowledge is frequently transmitted orally and may be vulnerable to gradual loss because of changes in land use, livelihood patterns, and intergenerational knowledge transfer. Systematic documentation of medicinal plants and their reported uses can help preserve this

information and provide a basis for further scientific investigation. At the same time, traditional uses should be documented as community-reported practices rather than interpreted as proof of clinical efficacy without appropriate experimental evidence (WHO, 2013; WHO, 2019).

The Bundelkhand region of Uttar Pradesh represents an ecologically distinctive landscape characterized by rocky terrain, seasonal rainfall, and variable water availability. Mahoba district, situated in the southern part of Uttar Pradesh, forms part of this region and supports vegetation adapted to local climatic and edaphic conditions. The district provides an appropriate setting for investigating traditional medicinal plant knowledge and the use of botanical resources in local healthcare practices. Documentation of medicinal species in this region can contribute to a better understanding of the taxonomic diversity of ethnomedicinal plants and the range of ailments for which they are traditionally employed.

Previous ethnobotanical literature has demonstrated the value of field surveys, interviews with knowledgeable informants, botanical identification, and herbarium-based verification in documenting medicinal plant resources (Jain, 1964; Jain and Rao, 1977; Martin, 1995).

Broader assessments of traditional medicine have further highlighted the need for reliable documentation, appropriate evaluation, and responsible use of traditional healthcare knowledge (WHO, 2019; WHO Regional Office for South-East Asia, 2021). Nevertheless, district-level inventories remain important because the composition of medicinal flora and patterns of traditional utilization can differ considerably among localities.

In this context, the present study aims to document the ethnobotanical diversity and traditional medicinal uses of plants for the treatment of various ailments in Mahoba district, Uttar Pradesh, India. The study examines the taxonomic composition of the recorded plants, their distribution among botanical families, the plant parts used in traditional remedies, and the range of reported therapeutic applications. By organizing this information systematically, the study contributes to the documentation of regional ethnomedicinal knowledge and provides a baseline for future botanical, pharmacological, and ethnobotanical investigations.

MATERIALS AND METHODS

Study areas

Mahoba district is situated in the Bundelkhand region of south-western Uttar Pradesh, India. The wider Bundelkhand region encompasses the districts of Banda, Hamirpur, Mahoba, Jhansi, Lalitpur, and Jalaun in Uttar Pradesh, together with adjoining areas of Madhya Pradesh. Mahoba district is located approximately at 25°18' N latitude and 79°53' E longitude and covers a geographical area of about 3,071 km². It is bordered by Hamirpur district to the north, Banda district to the east, Madhya Pradesh to the south, and Jhansi district to the west.

The district is characterized by rocky terrain, seasonal variations in rainfall, and predominantly semi-arid climatic conditions. Variations in soil properties, moisture availability, and local habitat characteristics influence the distribution of vegetation and the occurrence of plant species adapted to relatively dry environments. These ecological conditions provide a relevant context for investigating locally available medicinal plants and their traditional applications.

The inhabitants of Mahoba district possess knowledge of plant resources used in traditional healthcare. This knowledge includes the selection of medicinal species, the plant parts utilized, and their reported applications for different ailments. The present investigation focuses on documenting these ethnomedicinal practices and assessing the taxonomic diversity and patterns of plant-part utilization within the district. The geographical location of the study area is shown in Figure 1.

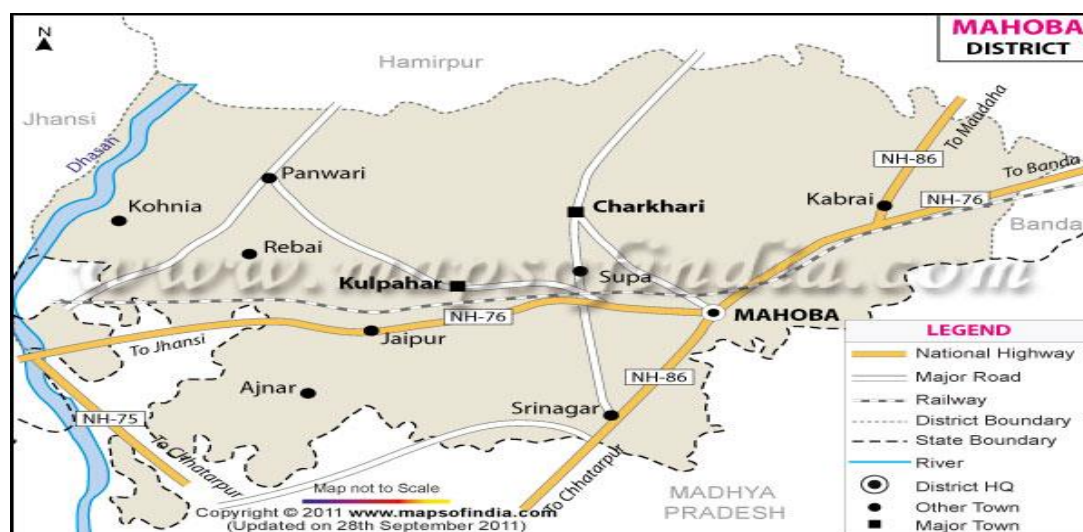


Figure 1. Location of Mahoba district in the Bundelkhand region of Uttar Pradesh, India.

Data collection

Ethnobotanical information on medicinal plants used for the treatment of various ailments was documented through field surveys conducted in different villages of Mahoba district. Information was obtained from local healers, elderly residents, and other knowledgeable informants familiar with traditional plant-based remedies. Semi-structured questionnaires and personal interviews were used to record information concerning plant identity, local names, medicinally utilized plant parts, and reported therapeutic applications.

The collected information was organized according to the reported ailment and the corresponding medicinal plant. Plant-part records were categorized into leaves, roots, seeds, bark, fruits, whole plants, stems, and latex, as applicable to the documented entries. Reported ailments were grouped into relevant categories, including fever, wounds, piles, snakebite, cough and cold, ulcers, scorpion stings, headache, bronchitis, sores, arthritis, and stomach problems. Where multiple plant parts or therapeutic applications were recorded for a species, these were retained as separate uses when supported by the original documentation.

The study followed established ethnobotanical approaches for collecting and organizing information about traditional plant uses (Jain, 1964; Cotton, 1996; Martin, 1995). The resulting dataset was used to summarize family-level representation, the frequency of medicinally used plant parts, and the distribution of reported therapeutic applications.

Plant Identification and Herbarium Studies

Plant specimens associated with the recorded ethnomedicinal information were collected during field surveys and processed using conventional botanical collection and herbarium techniques. Specimens were pressed, dried, mounted, and prepared for taxonomic examination following established procedures (Jain and Rao, 1977). Plant identification was undertaken with reference to relevant taxonomic literature and herbarium resources to ensure the accuracy of the recorded botanical names and family assignments.

Voucher specimens supporting the investigation were deposited in the Duthie Herbarium (DUTHIE), Department of Botany, University of Allahabad, Prayagraj, India. Herbarium consultation and taxonomic verification provided a basis for organizing the documented plants according to their accepted botanical identities and families.

The recorded ethnomedicinal information was also examined in relation to available published literature to identify previously documented traditional uses and place the findings

within the broader context of ethnobotanical research (Jain, 1991; Heinrich et al., 2009). The data were arranged systematically according to botanical name, family, local name, plant characteristics, locality, collection number, plant parts used, and reported therapeutic applications, wherever these details were available. The compiled dataset was subsequently used to assess the taxonomic composition of the medicinal plants, the relative representation of botanical families, and patterns of plant-part utilization in traditional healthcare practices in Mahoba district.

RESULT AND DISCUSSION

Diversity and Representation of Medicinal Plant Families

The ethnobotanical investigation in Mahoba district, Bundelkhand region, Uttar Pradesh, documented 55 plant entries with 55 genera belonging to 31 botanical families. Fabaceae was the dominant family, represented by 14 species (25.45% of the 55 entries). Rutaceae and Solanaceae followed, with three species each (5.45% each). Ten families were represented by two species each, whereas the remaining 19 families were represented by one species each.

These findings indicate that the recorded medicinal plants are distributed across a broad range of botanical families, although representation is concentrated in a few families.

The prominence of Fabaceae may reflect the diversity and local availability of its members, as well as their incorporation into traditional healthcare practices. However, family dominance alone does not establish greater medicinal efficacy or cultural importance; these interpretations require additional information on plant availability, use frequency, and informant consensus. The representation of Rutaceae, Solanaceae, Meliaceae, Cleomaceae, Ranunculaceae, Papaveraceae, Malvaceae, Asclepiadaceae, Anacardiaceae, and Asteraceae further illustrates the taxonomic breadth of the recorded medicinal flora.

The distribution of medicinal plants among numerous families is consistent with the general importance of floristic diversity in traditional healthcare systems. Ethnobotanical investigations have emphasized that local medicinal knowledge often encompasses a wide range of taxa selected according to availability, cultural traditions, and perceived therapeutic applications (Jain, 1991; Cotton, 1996; Martin, 1995). Quantitative ethnobotanical research also demonstrates the value of systematic documentation for understanding patterns of plant use and cultural relationships with botanical resources (Phillips and Gentry, 1993a, 1993b).

The findings from Mahoba provide a district-level record of medicinal plant diversity in the Bundelkhand region. Nevertheless, comparison with other regional studies should be based on verified species lists and comparable survey methods. The present family-level data establish a baseline for further investigation but do not, by themselves, demonstrate that the recorded family composition is unique to Mahoba.

Patterns of Medicinal Plant-Part Utilization

Analysis of the plant-part records revealed that leaves were the most frequently represented category, with 25 records, followed by roots (12), seeds (8), bark (4), fruits (4), whole plants (3), stems (2), and latex (1). Leaves therefore accounted for approximately 42.37% of the 59 recorded plant-part mentions, followed by roots (20.34%) and seeds (13.56%). Bark and fruits each contributed 6.78%, whole plants 5.08%, stems 3.39%, and latex 1.69%.

Table 1. Distribution of plant parts used in traditional medicinal practices in Mahoba district, Uttar Pradesh, India.

S. No.	Plant part used	Number of records	Percentage (%)
1	Leaves	25	42.37
2	Roots	12	20.34
3	Seeds	8	13.56
4	Bark	4	6.78
5	Fruits	4	6.78
6	Whole plant	3	5.08
7	Stem	2	3.39
8	Latex	1	1.69
Total		55	100.00

The predominance of leaves suggests that foliar material is an important component of the documented traditional remedies. Leaves are often accessible and can be collected without necessarily removing the entire plant. However, the ecological implications depend on harvesting intensity, species biology, and local collection practices. The substantial representation of roots is also noteworthy because root harvesting may damage or kill individual plants, particularly when the entire root system is removed. Consequently, the sustainability of harvesting practices deserves attention in future studies.

Seeds, bark, fruits, whole plants, stems, and latex were also recorded, demonstrating that traditional remedies involve different plant organs. Such variation may reflect differences in plant morphology, local preparation practices, and the reported applications of individual species. Previous ethnobotanical research has highlighted the importance of recording the

specific plant parts used because the selection of plant material is an essential component of traditional medicinal knowledge (Jain and Rao, 1977; Alexiades, 1996; Cotton, 1996).

The plant-part frequencies should be interpreted as records of use rather than as evidence of therapeutic effectiveness. Moreover, the eight categories sum to 59 plant-part mentions, whereas the family dataset contains 55 plant entries. This difference may occur because some plants contribute more than one plant-part record. The original species-wise dataset should be checked to ensure that each plant and each plant-part use has been counted consistently.

Diversity of Reported Therapeutic Applications

The recorded medicinal plants were associated with 12 categories of ailments. Fever, including malaria and typhoid fever, was the most frequently represented category, with 10 entries (18.18% of the 55 ailment records). Piles accounted for eight entries (14.55%), while wounds and cough and cold were represented by five entries each (9.09% each). Snakebite, ulcers, headache, and stomach problems were represented by four entries each (7.27% each). Scorpion sting, bronchitis, and sores accounted for three entries each (5.45% each), while arthritis was represented by two entries (3.64%).

Table 2. Distribution of medicinal plants according to the ailments treated in Mahoba district, Uttar Pradesh, India.

S. No.	Ailment	Number of records	Percentage (%)
1	Fever-related conditions	10	18.18
2	Piles	8	14.55
3	Wounds	5	9.09
4	Cough and cold	5	9.09
5	Snakebite	4	7.27
6	Ulcer	4	7.27
7	Headache	4	7.27
8	Stomach problems	4	7.27
9	Scorpion sting	3	5.45
10	Bronchitis	3	5.45
11	Sores	3	5.45
12	Arthritis	2	3.64
Total		55	100.00

The relatively high representation of fever-related remedies indicates that plants associated with fever management form an important component of the documented ethnomedicinal inventory. The inclusion of remedies for wounds, piles, respiratory complaints, digestive problems, and other conditions further illustrates the range of traditional healthcare applications represented in the dataset. These findings suggest that the documented medicinal

knowledge extends beyond a single disease category and encompasses multiple aspects of community healthcare.

The diversity of reported applications is consistent with the broad scope of traditional medicine, in which different plant species and plant parts are used for a range of health complaints. Ethnobotanical methods provide a framework for documenting such uses and examining their cultural and regional contexts (Martin, 1995; Heinrich et al., 1998; Albuquerque et al., 2006). Nevertheless, the number of entries for an ailment should not be interpreted as a measure of disease prevalence in Mahoba district or as proof that a remedy is effective.

Particular care is required when interpreting records associated with snakebite and scorpion sting. Traditional use should not replace urgent medical assessment and evidence-based treatment for venomous bites or stings. Similarly, malaria and typhoid fever require appropriate medical diagnosis and treatment. The documented plant uses should therefore be understood as traditional ethnobotanical records that may warrant further scientific investigation, not as established clinical recommendations.

Ethnobotanical Significance and Future Research

The findings provide a preliminary account of medicinal plant diversity and traditional therapeutic applications in Mahoba district. The representation of 31 families indicates a broad taxonomic base, while the prominence of Fabaceae highlights the contribution of particular families to the recorded inventory. The predominance of leaves, followed by roots and seeds, provides useful information on patterns of plant-part utilization. The distribution of reported uses across 12 ailment categories further demonstrates the breadth of traditional medicinal knowledge represented in the collected records. These findings may support future studies involving botanical authentication, detailed documentation of preparation methods, informant-level quantitative analyses, and investigations of the phytochemical and pharmacological properties of selected species. The conservation implications of harvesting practices also merit further attention, particularly for plants whose roots or bark are collected. Sustainable use should be assessed at the species level rather than inferred from plant-part frequency alone.

The present study is limited to the recorded plant entries and use categories supplied for analysis. Further research incorporating detailed voucher information, collection localities,

informant demographics, preparation methods, and independently verified botanical names would strengthen the interpretation of the results. Such work could provide a more comprehensive understanding of traditional medicinal plant knowledge in Mahoba and contribute to its systematic documentation.

Table-3 Traditional Medicinal Uses of Plants for the Treatment of Various Ailments in Mahoba District, Uttar Pradesh, India.

S. No.	Botanical Name	Family	Local Name	Used part	Uses	Field No.
1.	<i>Cleome gynandra</i> Linn	Cleomaceae	Sada hurhuria	Root	Fever	342
2.	<i>Aegle marmelos</i> (Linn.) Corr. ex. Schultz	Rutaceae	Bel, Belpatra	Leaves	Fever	163
3.	<i>Azadirachta Indica</i> A. Juss.	Meliaceae	Neem	Leaves	Fever	33
4.	<i>Melia azadirach</i> Linn	Meliaceae	Bakain	Leaves	Fever	256
5.	<i>Desmodium laxiflorum</i> D. C.	Fabaceae	Tipatia	Roots	Typhoid fever	70
6.	<i>Pongamia pinnata</i> (Linn.) Merr	Fabaceae	Karanj	Leaves	Fever	01
7.	<i>Caesalpinia bonduc</i> (Linn.) Roxb. emend	Fabaceae	Kata-karanj, Karanjwa	Seed	Malaria fever	79
8.	<i>Caesalpinia pulcherrima</i> (Linn.) Sw.	Fabaceae	Gulmohar	Leaves	Fever	367
9.	<i>Tamarindus indica</i> Linn.	Fabaceae	Imli	Fruits	Fever	06
10.	<i>Coccinia grandis</i> (L.) Voigt.	Cucurbitaceae	Kunduru	Fruit	Fever	147
11.	<i>Annona squamosa</i> L.	Annonaceae	Sharifa	Leaf	wounds	151
12.	<i>Ranunculus sceleratus</i> L.	Ranunculaceae	Jal dhaniya	Leaf	wound	282
13.	<i>Argemone mexicana</i> Linn.	Papaveraceae	Pili Kateli		wound	81
14.	<i>Flacourtia indica</i> (Brum. f.) Merr.	Flacourtiaceae	Katai	Leaves	wound	50
15.	<i>Malvastrum coromandelianum</i> (L.) Garcke	Malvaceae	Hariyari	Leaf	wound	55
16.	<i>Capparis decidua</i> (forsk) Edgew	Capparaceae	Karil	whole plant	Arthritis	86
17.	<i>Abelmoschus esculentus</i> (L.) Moench.	Malvaceae	Bhindi	Root	Arthritis	319
18.	<i>Limonia acidissima</i> L.	Rutaceae	Kaitha	Leaf	Bronchitis	91
19.	<i>Dalbergia sissoo</i> Roxb.	Fabaceae	Sheesham	Bark	Bronchitis	31
20.	<i>Anogeissus pendula</i> Edgew	Combretaceae	Kardhai	Root	Bronchitis	184

21.	<i>Jasminum arborescence</i> Roxb.	Oleaceae	Chameli	Leaves	Ulcer	38
22.	<i>Caltropis procera</i> (Ait) R. Br.	Asclepiadaceae	Akauwa	Leaves	Ulcer	02
23.	<i>Heliotropism indicum</i> Linn.	Boraginaceae	Hatisura	Stem	Ulcer	348
24.	<i>Ipomoea carnea</i> ssp. <i>fistulosa</i> (Mart. ex. choisy) Austin.	Convolvulaceae	Behya	Leaves	Ulcer	334
25.	<i>Ranunculus sceleratus</i> L.	Ranunculaceae	Jal dhaniya	leaves	sores	282
26.	<i>Acacia nilotica</i> (L.) Del. ex. Willd. ssp. <i>indica</i> (Benth.) Brenan	Fabaceae	Babul	Bark	sores	27
27.	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Fabaceae	Jangal-jaleb	Bark	sores	99
28.	<i>Madhuca ZongifoZia</i> (Koen.) Mac. Br.	Sapotaceae	Mahua	Bark	Snake bite	157
29.	<i>Rauvolfia serpentina</i> (L.) Benth. ex kurz.	Apocynaceae	Sarpagandha	Root	Snake bite	220
30.	<i>Gymnema sylvestre</i> R. Br.	Asclepiadaceae	Gurmar	Root	Snake bite	44
31.	<i>Nicotiana tabacum</i> L.	Solanaceae	Tamakhu	Leaf	Snake bite	301
32.	<i>Argemone mexicana</i> Linn.	Papaveraceae	Pili Kateli	Root	Scorpion sting	81
33.	<i>Cleome gynandra</i> Linn.	Cleomaceae	Sada hurhuria	leaves	Scorpion sting	342
34.	<i>Semecarpus anacardium</i> Lf.	Anacardiaceae	Bhelwa	Seed	Scorpion sting	372
35.	<i>Tamarix ericoids</i> Rott	Tamricaceae	Jhau	Leave	Cough and cold	375
36.	<i>Foeniculum vulgare</i> Mill	Apiaceae	Saunf	Leave	Cough and cold	35
37.	<i>Solanum surattense</i> Burmf.	Solanaceae	Bhat Kataya	Roots	Cough and cold	19
38.	<i>Adhatoda vasica</i> Nees.	Acanthaceae	Aroosa	Leaves	Cough and cold	4
39.	<i>Ocimum sanctum</i> L.	Lamiaceae	Tulsi	Leaves	Cough and cold	30
40.	<i>Parkinsonia aculeata</i> L.	Fabaceae	Parkinsonia	Leaves	Headache	153
41.	<i>Prosopis cineraria</i> (L.) Druce	Fabaceae	Chonkar	Leaves	Headache	293
42.	<i>Kalanchoe pinnata</i> (Lam.) Pers.	Crassulaceae	Ajuba	Leaves	Headache	371
43.	<i>Eucalyptus citriodora</i> H.K.	Myrtaceae	Safeda	Leaves	Headache	21
44.	<i>Corchorus olitorius</i> L.	Fabaceae	Sanai	Leaves	Piles	233
45.	<i>Semecarpus anacardium</i> Lf.	Anacardiaceae	Nhelwa	Seed	Piles	372
46.	<i>Trigonella foenum-</i>	Fabaceae	Methi	Seed	Piles	137

	<i>gracceum</i> L.			Whole plant		
47.	<i>Carica papaya</i> L.	Caricaceae	Papita	Seed Latex	Piles	298
48.	<i>Ageratum conyzoides</i> L.	Areraceae	Gandhaua	Leaves Whole plant	Piles	250
49.	<i>Vernonia cinerea</i> (linn) lessa	Asteraceae	Sahadevi	Stem Seed	Piles	145
50.	<i>Xanthium strumarium</i> L.	Asteraceae	Kat katauni	Seed Leaves	Piles	62
51.	<i>Solanum melongena</i> L.	Solanaceae	Baigun	Fruit Root	Piles	262
52.	<i>Fumaria indica</i> (Hausk.) Pugsley	Fumariaceae	Pitapapra,	Leaves	Stomach problem	155
53.	<i>Helicteres isora</i> Linn.	Sterculiaceae	Marorphali,	Leaves	Stomach problem	57
54.	<i>Citrus aurantifolia</i> (Chr.) Sw.	Rutaceae	Nimbu	Leaves	Stomach Problem	32
55.	<i>Cassia occidentalis</i> Linn.	Fabaceae	Kasaundhi	Seeds Root	Stomach problem	12

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