

## Study of medicinal plants diversity of Sambhal district, Uttar Pradesh, India

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### Abstract

This paper presents the results of a study found in the Sambhal district of Uttar Pradesh in India on the range of different plant species along with their vernacular names, customs and occurrence. This research is the first of its kind carried out to show the current status of plant diversity in the district. A total of 134 species of medicinal plants belonging to 65 families in this area have been described in current research. The study also recognises that because of the very rapid rise in the human population and their increased desire for more use of natural resources, the ecological equilibrium is being disrupted. In planning for the conservation and sustainable use of available resources, proper understanding of plant diversity can also play an important role.

**Keywords:** Sambhal, medicinal plants, diversity, ecological balance, taxonomy

### Introduction

India, a land of physical, cultural, social and linguistic diversity, has enormous natural-endowed biological diversity. "As a result, India is ranked among the 12 mega-biodiversity nations worldwide and consists of 17,000 flowering plant species. With just 2.4% of the world's total land area, it accounts for 8% of the world's biodiversity, <sup>[1,2]</sup>. Uttar Pradesh in India is a huge, prosperous state and has an outstanding role in history."

The Sambhal district is a district in India's state of Uttar Pradesh. As one of three new districts in the province, it was announced on 28 September 2011. Formerly, it was called "Bhimnagar". "Bahjoi Town is the Sambhal Head Quarters. Sambhal is 158.6 kilometres (98.5 mi) from New Delhi and 355 km eastwards from Lucknow, the state capital." With respect to the changes in terms of heavy agriculture, urbanisation, industrialization and other such variables, the Sambhal district ultimately remains to be studied from a taxonomic aspect. From this point of view, an attempt is being made to cover the variety of medicinal plants in order to include information on medicinal plants according to their current status. "Taxonomy is the science of organism description and classification, important in theoretical and applied biology" <sup>[3]</sup>.

One of the essential elements of biodiversity is medicinal plants diversity, so knowledge of medicinal plants species found in different areas of the world is a prerequisite for the conservation of ecological biodiversity. It allows us to consider an ecosystem's overall structure and role <sup>[4]</sup>. It is therefore necessary to provide accurate and precise information on the identified species of medicinal plants in a given area. "Knowledge is important because it allows us to avoid or stop the inevitable loss of biodiversity and to establish potential strategies for the conservation of the environment. The taxonomy of K. Nair <sup>[5]</sup> is an essential part of biodiversity security, remediation and eco-development. The present study aims to highlight the diversity of medicinal plants in the Sambhal district from a taxonomic point of view, which will in turn provide a valuable source

of application in various other fields of biology in general and botany in particular."

### Collection, sampling and Identification

First of all, in order to carry out such work on the diversity of medicinal plants in the Sambhal district of Uttar Pradesh in India (Figure 1), the research area was chosen for convenience and systematic study purposes and divided into regions. A general vegetation survey was conducted and different species of medicinal plants, such as trees, herbs, shrubs or climbers, were identified. "Comprehensive field surveys were conducted in the district during (2018-2019) different seasons through frequent field visits in order to obtain full representation of the different medicinal plant species. During our field visits, medicinal plant samples of specific species from agricultural lands, natural areas, wastelands, roadsides, railway tracks, parks, lawns, reservoirs, river banks and other similar locations were collected and photographed to systematically cover almost the entire district. Identification was performed with the aid of various floras <sup>[6, 7]</sup> and with live specimens in the field itself, but medicinal plants samples were described in the laboratory when it was not necessary."

### Medicinal plants diversity found in Sambhal District, Uttar Pradesh

The current study asserts on the loss of the diversity of medicinal plants, which is not only an ethical disaster, but also a huge social, economic and cultural." In our research, 134 plant species belonging to 65 families have been identified in that particular region, and the results of the study are presented in Table 1." "A total of 44 trees, 65 herbs; 22 shrubs and 3 climbing species (Figure 2) are including in this study. Basellaceae (1 species), Pedaliaceae (1 species), Boraginaceae (1 species), Plumbaginaceae (1 species), Sapotaceae (1 species), Alangiaceae (1 species), Cactaceae (1 species), Caricaceae (1 species), Punicaceae (1 species), Rosaceae (1 species), Crassulaceae (1 species), Rhamnaceae (1 species), Sapindaceae (1 species), Anacardiaceae (1 species), Moringaceae (1

species), Simaroubaceae (1 species), Bombacaceae (1 species), Linaceae (1 species), Zygophyllaceae (1 species), Oxalidaceae (1 species), Dipterocarpaceae (1 species), Tamaricaceae (1 species), Fumariaceae (1 species), Nelumbonaceae (1 species), Ranunculaceae (1 species), Magnoliaceae (1 species), Annonaceae (1 species), Cannabaceae (1 species), Ceratophyllaceae (1 species), Musaceae (1 species), Zingiberaceae (1 species), Asclepiadaceae (1 species), Pontederiaceae (1 species), Pandanaceae (1 species), Cyperaceae (1 species), Lythraceae (1 species), Cuscutaceae (1 species), Nyctaginaceae (2 species), Acanthaceae (2 species), Oleaceae (2 species), Rubiaceae (2 species), Apiaceae (2 species), Myrtaceae (2 species), Liliaceae (2 species), Meliaceae (2 species), Portulacaceae (2 species), Cappariaceae (2 species), Brassicaceae (2 species), Papaveraceae (2

species), Menispermaceae (2 species), Caesalpiniceae (3 species), Combretaceae (3 species), Moraceae (3 species), Amaranthaceae (3 species), Rutaceae (3 species), Malvaceae (3 species), Lamiaceae (3 species), Convolvulaceae (4 species), Euphorbiaceae (5 species), Verbenaceae (5 species), Fabaceae (6 species), Asteraceae (6 species), Solanaceae (7 species), Apocynaceae (7 species), Mimosaceae (8 species).” Also, the most commonly used measure of loss of diversity is the amount of plant species lost. The general causes of the lack of diversity are equivalent to those responsible for land use and land surface change. This study also shows that the rapid growth of the human population, with its increased demand for greater use of natural resources, is disrupting the ecological balance. Our breathing habitat has been protected by existing natural forests.



Fig 1: Map of Study area

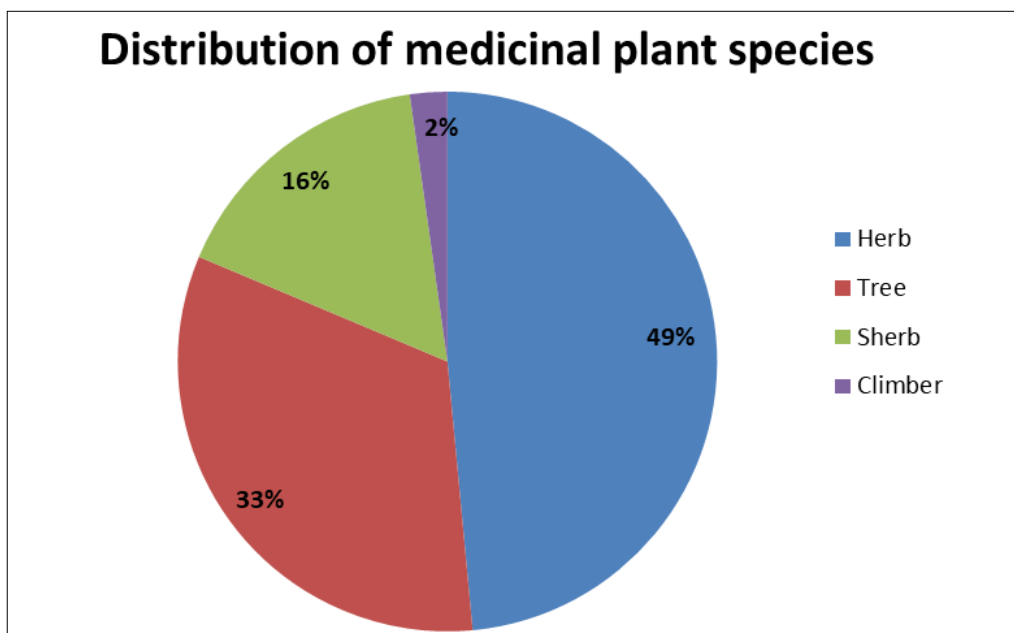


Fig 2: Distribution of medicinal plants plant species.

**Table 1:** Medicinal plants diversity of the study area.

S. No.	Species	Family	Habit	Local Medicinal use
1	<i>Ranunculus sceleratus</i>	Ranunculaceae	H	Skin diseases, rheumatic diseases, arthritis, ulcers, rhinitis
2	<i>Magnolia champaca</i>	Magnoliaceae	T	Diarrhea, cough, bronchitis, hypertension, dyspepsia, fever, rheumatism, abscesses
3	<i>Annona squamosa</i>	Annonaceae	T	Diabetes, diarrhea
4	<i>Cissampelos pereira</i>	Menispermaceae	C	Skin diseases, poisonous bites
5	<i>Tinospora cordifolia</i>	Menispermaceae	S	Allergic rhinitis (hay fever), upset stomach, gout, lymphoma
6	<i>Nelumbo nucifera</i>	Nelumbonaceae	H	Diarrhea, high fever, haemorrhoids, leprosy
7	<i>Argemone mexicana</i>	Papaveraceae	H	Painkiller, diuretic, cholagogue and anti-inflammatory
8	<i>Papaver somniferum</i>	Papaveraceae	H	Pain relief, to control cough, diarrhea
9	<i>Fumaria indica</i>	Fumariaceae	H	Pains, diarrhea, fever, influenza, liver complaints, vomiting, constipation, dyspepsia, blood purification
10	<i>Iberis amara</i>	Brassicaceae	S	Digestion, rheumatism, arthritis
11	<i>Raphanus sativus</i>	Brassicaceae	H	Indigestion, abdominal bloating, wind, acid regurgitation, diarrhea
12	<i>Cleome gynandra</i>	Capparaceae	H	Chest pain, diarrhea
13	<i>Cleome viscosa</i>	Capparaceae	H	Rheumatic arthritis, hypertension, malaria, neurasthenia
14	<i>Portulaca quadrifida</i>	Portulacaceae	H	Sedative, analgesic and cardiotoxic, to treat fever, disorders of the urinary tract
15	<i>Portulaca oleracea</i>	Portulacaceae	H	Wound-healing
16	<i>Tamarix dioica</i>	Tamaricaceae	S	Treatment of inflammation of the liver, spleen
17	<i>Shorea robusta</i>	Dipterocarpaceae	T	Piles, leucorrhoea, gonorrhoea, skin disorders, ulcers, wounds, diarrhea, dysentery, burning sensation, seminal weakness
18	<i>Hibiscus cannabinus</i>	Malvaceae	H	Pains, bruises
19	<i>Abutilon Indicum</i>	Malvaceae	S	Aphrodisiac, demulcent, diuretic, laxative, pulmonary and sedative
20	<i>Sida spinosa</i>	Malvaceae	H	Dysentery, skin diseases, asthma
21	<i>Bombax ceiba</i>	Bombacaceae	T	Cholera, tubercular fistula, coughs, urinary complaints, nocturnal pollution, abdominal pain
22	<i>Linum usitatissimum</i>	Linaceae	H	Diarrhea, gastrointestinal infections
23	<i>Tribulus Terrestris</i>	Zygophyllaceae	H	Skin disorders, including eczema (atopic dermatitis), psoriasis, and scabies; for male sexual problems, including erectile dysfunction
24	<i>Oxalis corniculata</i>	Oxalidaceae	H	Influenza, fever, urinary tract infections, enteritis, diarrhea, traumatic injuries, sprains, poisonous snake bites
25	<i>Aegle marmelos</i>	Rutaceae	H	Ulcer healing, antigenotoxic, diuretic, antifertility
26	<i>Feronia limonia</i>	Rutaceae	T	Muscle relaxant, anti-histaminic, wound healing, larvicidal
27	<i>Murraya koenigii</i>	Rutaceae	T	Piles, inflammation, itching, fresh cuts, dysentery, bruises
28	<i>Ailanthus excelsa</i>	Simaroubaceae	T	Asthma, bronchitis, dysentery
29	<i>Azadirachta indica</i>	Meliaceae	T	Fever, diabetes, gum disease (gingivitis), eye disorders, bloody nose, intestinal worms, stomach upset, loss of appetite, skin ulcers
30	<i>Melia azedarach</i>	Meliaceae	T	Anthelmintic, antimalarial, cathartic, emetic
31	<i>Ziziphus mauritiana</i>	Rhamnaceae	T	Improving muscular strength and weight, for preventing liver and bladder diseases
32	<i>Dodonaea viscosa</i>	Sapindaceae	S	Rheumatism, skin infections, diarrheas, stomachaches, pains of hepatic or splenic origin, uterine colic
33	<i>Mangifera indica</i>	Anacardiaceae	T	Diarrhea, dysentery, anaemia, asthma, bronchitis, cough, hypertension, insomnia, rheumatism, toothache, leucorrhoea, haemorrhage
34	<i>Moringa oleifera</i>	Moringaceae	T	Pain, fever, asthma, cough, arthritis, epilepsy, wound, skin infection, malaria
35	<i>Trigonella foenum-graecum</i>	Fabaceae	H	Cure late-onset diabetes, digestive problems and inadequate lactation
36	<i>Butea monosperma</i>	Fabaceae	T	Promotes diuresis and menstrual flow
37	<i>Dalbergia sissoo</i>	Fabaceae	T	Boils, leprosy and nausea
38	<i>Abrus precatorius</i>	Fabaceae	S	Fever, cough and cold, rabies
39	<i>Clitoria ternatea</i>	Fabaceae	C	Memory enhancer, nootropic, antistress, anxiolytic, antidepressant, anticonvulsant, tranquilizing
40	<i>Bauhinia variegata</i>	Fabaceae	T	Pain reducing, swelling reducing, cytotoxic, fever reducing
41	<i>Cassia tora</i>	Caesalpiniceae	H	Leprosy, ringworm, itching, psoriasis and also for snakebites
42	<i>Tamarindus indica</i>	Caesalpiniceae	T	Wound healing, snake bite, abdominal pain, colds, inflammations, diarrhea, helminth infections
43	<i>Cassia fistula</i>	Caesalpiniceae	T	Astringent, cooling, purgative, febrifuge, tonic, laxative, anthelmintic, emetic, antiperiodic, febrifuge, diuretic
44	<i>Acacia catechu</i>	Mimosaceae	T	Skin diseases, hemorrhoids, and traumatic injuries
45	<i>Acacia nilotica</i>	Mimosaceae	T	Venereal diseases, nausea, burns and wounds, stomachache
46	<i>Albizia lebbek</i>	Mimosaceae	T	Eye, flu, gingivitis, lung problems, pectoral problems
47	<i>Acacia auriculiformis</i>	Mimosaceae	T	Aches- pains, sore eyes
48	<i>Leucaena leucocephala</i>	Mimosaceae	T	Stomach diseases, facilitate abortion
49	<i>Mimosa pudica</i>	Mimosaceae	S	Urogenital disorders, piles, dysentery, sinus, wounds
50	<i>Dichrostachys cinerea</i>	Mimosaceae	S	Headache, toothache, dysentery, elephantiasis, syphilis, coughs, as an

				anthelmintic, purgative, strong diuretic
51	<i>Pithecellobium dulce</i>	Mimosaceae	T	Gum ailments, toothache, bleeding
52	<i>Terminalia bellirica</i>	Combretaceae	T	Respiratory conditions, including respiratory tract infections, cough, sore throat
53	<i>Terminalia chebula</i>	Combretaceae	T	Respiratory tract infections, cough, sore throat
54	<i>Terminalia arjuna</i>	Combretaceae	T	Asthma, bile duct disorders, scorpion stings
55	<i>Potentilla supina</i>	Rosaceae	H	Diarrhea
56	<i>Kalanchoe pinnata</i>	Crassulaceae	S	Kidney stones, gastric ulcer, pulmonary infection, rheumatoid arthritis
57	<i>Psidium guajava</i>	Myrtaceae	T	Diarrhea, dysentery, gastroenteritis, hypertension, diabetes, caries, pain relief, cough, oral ulcers
58	<i>Syzygium cumini</i>	Myrtaceae	T	Sore throat, bronchitis, asthma, thirst, biliousness, dysentery
59	<i>Lawsonia inermis</i>	Lythraceae	T	Renal lithiases, jaundice, wound healing; prevent skin inflammation
60	<i>Ammannia baccifera</i>	Lythraceae	H	Scabies, ringworm, parasitic skin infections, common cold, typhoid, strangury, spinal disease
61	<i>Punica granatum</i>	Punicaceae	S	Sore throats, coughs, urinary infections, digestive disorders, skin disorders, arthritis
62	<i>Opuntia elatior</i>	Cactaceae	S	Urinary tract infection, skin wounds, digestive problem
63	<i>Carica papaya</i>	Caricaceae	T	Warts, corns, sinuses, eczema, cutaneous tubercles, glandular tumors, blood pressure
64	<i>Foeniculum vulgare</i>	Apiaceae	H	Respiratory, gastrointestinal disorders
65	<i>Centella asiatica</i>	Apiaceae	H	Spinal injury, neuromuscular disorders, and to increase general brain function
66	<i>Alangium solvifolium</i>	Alangiceae	S	Rheumatism, leprosy, gastric ulcers, Wound healing, epilepsy, scabies, gonorrhea, jaundice, hepatitis, diabetes
67	<i>Oldenlandia corymbosa</i>	Rubiaceae	H	Hepatitis, pneumonia, cholecystitis, urinary infection, cellulites and snake bite
68	<i>Anthocephalus chinensis</i>	Rubiaceae	T	Fever, anaemia, uterine complaints, blood diseases, skin diseases, leprosy, dysentery
69	<i>Ageratum conyzoides</i>	Asteraceae	H	Dysentery and diarrhea
70	<i>Emilia sonchifolia</i>	Asteraceae	S	Inflammatory diseases, pains, cancer, diabetes, cataract, asthma
71	<i>Grangea maderaspatana</i>	Asteraceae	H	Liver troubles, emmenagogus, paralysis, piles, spleen diseases, in hysteria, carache, wounds
72	<i>Eclipta prostrata</i>	Asteraceae	H	Liver cirrhosis, infective hepatitis
73	<i>Xanthium strumarium</i>	Asteraceae	H	Urticaria, headache, sinusitis, arthritis
74	<i>Echinops echinatus</i>	Asteraceae	H	Dysurea, diabetes, cardiac diseases
75	<i>Plumbago zeylanica</i>	Plumbaginaceae	S	Chronic menstrual disorders, viral warts
76	<i>Madhuca Indica</i>	Sapotaceae	H	Swelling, inflammation, piles, emetic, dermatological, laxative, tonic, anti-burn
77	<i>Nyctanthes arbor-tristis</i>	Oleaceae	T	Fever, enlargement of the spleen, malaria, blood dysentery, cough
78	<i>Jasminum sambac</i>	Oleaceae	S	Intestinal worms, jaundice, venereal diseases
79	<i>Rauvolfia serpentina</i>	Apocynaceae	S	High blood pressure, mental illnesses
80	<i>Alstonia scholaris</i>	Apocynaceae	T	Skin disorders, malarial fever, urticaria, chronic dysentery, diarrhea, in snake bite
81	<i>Thevetia peruviana</i>	Apocynaceae	T	Amenorrhoea, external wounds, infected area, ring worms, tumours
82	<i>Carissa carandas</i>	Apocynaceae	S	Diarrhea, constipation, malaria, epilepsy, neurological disorder, pain, myopathic spasms, leprosy
83	<i>Plumeria rubra</i>	Apocynaceae	T	Cardiotonic, diuretic, hypotensive
84	<i>Nerium indicum</i>	Apocynaceae	T	Stimulate cardiac muscles, relieve pain, eliminate blood stasis
85	<i>Calotropis procera</i>	Asclepiadaceae	S	Toothache, cramps, joint pain
86	<i>Cordia dichotoma</i>	Boraginaceae	T	Cold, cough, coryza, fever, skin diseases
87	<i>Cuscuta reflexa</i>	Cuscutaceae	C	Urination disorders, muscle pain and cough, also used as blood purifier
88	<i>Evolvulus alsinoides</i>	Convolvulaceae	H	Fevers nervous debility, loss of memory, syphilis, scrofula
89	<i>Argyrea nervosa</i>	Convolvulaceae	H	Gleet, gonorrhea, strangury, chronic ulcers, rheumatism
90	<i>Operculina turpethum</i>	Convolvulaceae	H	Dropsy, melancholia, gout, leprosy, rheumatism, paralysis
91	<i>Ipomoea aquatica</i>	Convolvulaceae	H	Ringworm, diabetes, fever
92	<i>Withania somnifera</i>	Solanaceae	H	Asthma, diabetes, hypertension, stress, arthritic diseases
93	<i>Physalis peruviana</i>	Solanaceae	H	Cancer, malaria, asthma, hepatitis, dermatitis and rheumatism
94	<i>Nicotiana tabacum</i>	Solanaceae	H	Rheumatic swelling, skin diseases, scorpion stings
95	<i>Datura stramonium</i>	Solanaceae	H	Asthma, antiasthmatic, antispasmodic, hypnotic
96	<i>Datura mental</i>	Solanaceae	H	Skin diseases, wounds, cough, burning micturition, mental illness
97	<i>Solanum surattense</i>	Solanaceae	H	Gonorrhoea, bronchitis, cough, constipation
98	<i>Solanum nigrum</i>	Solanaceae	H	Pneumonia, aching teeth, stomach ache, tonsillitis, wing worms, pain, inflammation and fever, tumor, inflammation
99	<i>Sesamum indicum</i>	Pedaliaceae	H	Skin diseases
100	<i>Adhatoda vasica</i>	Acanthaceae	S	Bronchitis, leprosy, blood disorders, heart troubles, thirst, asthma, fever, vomiting, loss of memory, leucoderma, jaundice
101	<i>Hygrophila auriculata</i>	Acanthaceae	H	Cough, blood disorders, jaundice
102	<i>Tectona grandis</i>	Verbenaceae	T	Anaemia, asthenia, fever
103	<i>Lantana camara</i>	Verbenaceae	T	Measles, asthma, ulcers, swellings, eczema, tumors, high blood pressure

104	<i>Clerodendrum inerme</i>	Verbenaceae	S	Skin diseases, venereal infections, elephantiasis, asthma, topical burns
105	<i>Clerodendrum viscosum</i>	Verbenaceae	T	Malaria, scabies, skin diseases, sores, spasm, scorpion sting, snake bite
106	<i>Phyla nodiflora</i>	Verbenaceae	H	Knee joints, ulcers, boils
107	<i>Leucas aspera</i>	Lamiaceae	H	Snake bites, fevers, cough, cold, Nasal disorders
108	<i>Ocimum basilicum</i>	Lamiaceae	H	Headaches, coughs, diarrhea, constipation, warts, worms, kidney malfunctions
109	<i>Ocimum sanctum</i>	Lamiaceae	H	Bronchitis, bronchial asthma, malaria, diarrhea, dysentery, skin diseases
110	<i>Mentha spicata</i>	Lamiaceae	H	Fevers, headaches, digestive disorders
111	<i>Mirabilis jalapa</i>	Nyctaginaceae	H	Dysentery, diarrhea, muscular pain, abdominal colic
112	<i>Boerhavia diffusa</i>	Nyctaginaceae	H	Cancer, jaundice
113	<i>Celosia argentea</i>	Amaranthaceae	H	Improving eyesight, diarrhea, bloodshot eyes, hypertension, cataracts, poison from snake bites
114	<i>Achyranthes aspera</i>	Amaranthaceae	H	Healing of wounds, inflammation, skin infections, leprosy, diarrhea, scabies, venereal disease, ulcers, snake bite
115	<i>Alternanthera sessilis</i>	Amaranthaceae	H	Bronchitis, asthma
116	<i>Basella alba</i>	Basellaceae	H	Boosting libido
117	<i>Euphorbia hirta</i>	Euphorbiaceae	H	Female disorders, respiratory ailments (cough, coryza, bronchitis, and asthma), worm infestations in children, dysentery, jaundice, pimples, gonorrhoea, digestive problems
118	<i>Euphorbia thymifolia</i>	Euphorbiaceae	H	Bronchial asthma and paronychia
119	<i>Ricinus communis</i>	Euphorbiaceae	S	Abdominal disorders, arthritis, backache, muscle aches, bilharziasis, chronic backache
120	<i>Emblica officinalis</i>	Euphorbiaceae	T	Improves Immunity, hair care, reduces stress, eye care, respiratory health, treats anaemia, blood purifier, diuretic
121	<i>Phyllanthus niruri</i>	Euphorbiaceae	H	Jaundice, gonorrhoea, frequent menstruation, diabetes
122	<i>Ficus benghalensis</i>	Moraceae	T	Ulcers, erysipelas, vomiting, vaginal complaints, fever, inflammations, leprosy
123	<i>Ficus religiosa</i>	Moraceae	T	Gonorrhoea, skin diseases
124	<i>Ficus racemosa</i>	Moraceae	T	Diabetes, liver disorders, diarrhea, inflammatory conditions, hemorrhoids, respiratory, urinary diseases
125	<i>Cannabis sativa</i>	Cannabinaceae	H	Chronic pain relief, hallucinogenic, hypnotic, sedative, analgesic
126	<i>Ceratophyllum demersum</i>	Ceratophyllaceae	H	Wounds, fever, burning sensation, hemorrhoids or piles, intrinsic hemorrhages, hyperdipsia, epistaxis
127	<i>Musa x paradisiaca</i>	Musaceae	H	Ulcers, dysentery, and bronchitis, cooked flowers are good food for diabetics
128	<i>Zingiber officinale</i>	Zingiberaceae	H	Dyspeptic symptoms (diffuse abdominal pain), loss of appetite
129	<i>Asparagus racemosus</i>	Liliaceae	H	Pain, anxiety, cancer, diarrhea, bronchitis, tuberculosis, dementia, diabetes
130	<i>Aloe barbadensis</i>	Liliaceae	H	Wound healing, dental plaque, canker sores, constipation., skin health, blood sugar
131	<i>Eichhornia crassipes</i>	Pontederiaceae	H	Skin care
132	<i>Pandanus fascicularis</i>	Pandanaceae	S	Skin diseases, ulcers, fever, and diabetes
133	<i>Cyperus rotundus</i>	Cyperaceae	H	Dysmenorrheal and menstrual irregularities
134	<i>Catharanthus roseus</i>	Apocynaceae	H	Wasp stings, stomach ache and to heal wounds

Abbreviation: T= Trees; H= Herbs; S= Sherbs and C= Climbers.

## Conclusion

Awareness of taxonomy is an excellent method for the identification of various species of plants. In order to face the demands of biodiversity conservation in the 21st century, taxonomic awareness is essential. "Awareness of biodiversity and the functioning of the ecosystem is of vital importance as it provides us with data through scientific Studies to examine and explain biodiversity.

This study provides basic details about the various plant species currently present in the district of Sambhal. Such a list may play an important role for local and regional authorities interested in protecting this precious diversity of medicinal plants in order to make possible use of the health of future generations and for the sustainable development of the region."

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