



Floristic Diversity and Ethnobotany of Southern Part of District Saharanpur (U.P), India

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ABSTRACT

The present study was to explore the traditional knowledge of plants from Southern part of District Saharanpur, Uttar Pradesh, India used for treating various ailments. An extensive survey was conducted in order to access information on floristic diversity and ethnobotanical aspects of the study area during 2020-21 in different seasons. Ethnobotanical information was obtained through open interviews with local people of study area. A total of 50 botanical taxa were documented along with local name, family, habit and parts used. These 50 plants species belongs to 44 genera and 24 families. The most widely used plant part was leaves, followed by root, whole plant, fruit, seed, stem, bark, wood and flower.

INTRODUCTION

Ethnobotany deals with the study of relationship of the tribal and rural people and the plants of their interest, especially medicinal plants. It has a direct role in existence of human beings as the plants support human life by providing food, fodder, shelter, timber, fuel and a variety of medicines to cure various ailments. According to WHO, approximately 80 percent of the world's population depends upon traditional medicine either wholly or partially for its primary health care needs(13). Anthropogenic impact caused great loss to the diversity of plants that includes valuable medicinal plants. The plants diversity is going to decrease day by day due to over exploitation. Therefore, there is instant need of providing conservation to this great wealth of nation. The wild flora of this region contain vast variety of useful plants which have been a valuable source of basic needs of people of this area. In the present study an attempt has been made to identify and describe valuable plants of this region which are highly important as far as their ethnobotanical significance is concerned.

MATERIALS AND METHODS

Geographically, district Saharanpur is located in the North-West edge of Uttar Pradesh. The region forms the northern most part of Ganga-Yamuna Doab. In the North of the district lies district Dehradun of Uttarakhand state and districts Yamuna Nagar and Karnal of Haryana state in the west, district Muzaffarnagar and Shamli in the south and district Haridwar of Uttarakhand state in the east. Saharanpur is situated in the foothills of Shiwalik that constitute the outer Himalaya. The district is characterized with the Shiwalik, Bhabar, Tarai, Khadar and the plain. Hilly tract of the Shiwalik, range along the northern border is stretching from west to east directions. Lying immediately below the Shiwaliks is the Bhabar tract intersected by numerous torrents that drain rainy water into the Yamuna river and its numerous tributaries. The southern part of the district consists of plain and constitute major part of the district. The region is composed of alluvial soil. Hindon is the main river which flows in this region. Katha, Krishna, Dhamola and Panvdhoi are other important rivers of the district.

For the collection of plants, extensive survey of the study area was carried out from September 2021 to March 2022, by gathering ethnobotanical information regarding the utilization of wild plants, and in addition, of some cultivated species. The ethnobotanical information about the utilization of plants as fodder, food, medicines and for other purposes, interviews were organized with rural people of the study area. All possible efforts were made to collect the specimens in their flowering and fruiting stages. Plant specimens were photographed at site for describing basic details. All the data of collected specimens were maintained in field note book (7). The collected specimens were identified with the help of available floras and monographs (5,9,10,12). The gathered information was documented and was then segregated for different medicinal plants on the basis of plant part used and the disease cured.

RESULTS AND DISCUSSION

During the survey, a total of 50 ethnobotanically important plant species were documented along with their scientific name, local name, family, habit and parts used. These 50 plants species belongs to 44 genera and 24 families. All the plants have been listed in alphabetical order with detailed description in Table-1. The dominant families of study area were Asteraceae (25.0%), Amaranthaceae, Malvaceae (20.83% each), Moraceae (16.66%), Caesalpiniaceae, Convolvulaceae (12.50% each) and Rutaceae, Asclepiadaceae and Lamiaceae (8.33% each) (Fig.1).

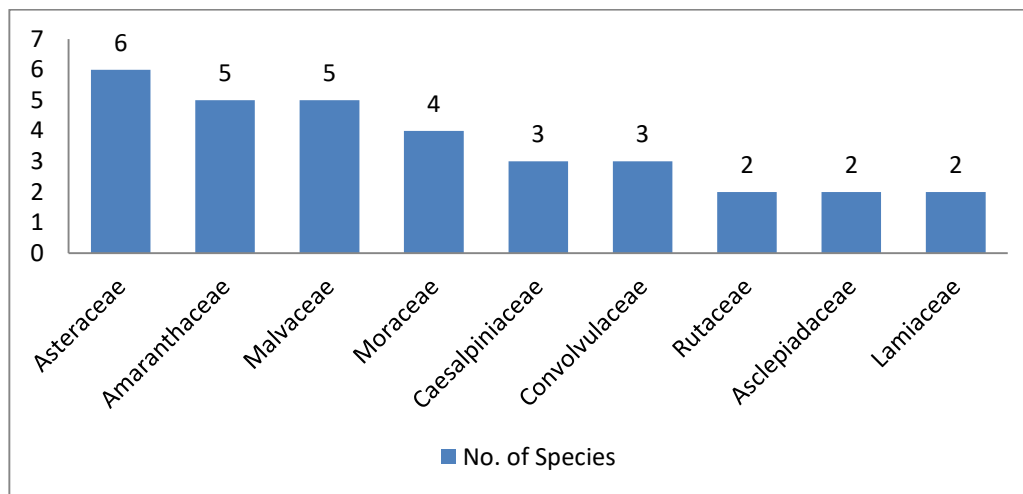


Fig. 1. Graphical representation showing number of species used among dominant families of study area.

The habit wise distribution of specimens revealed that herbs constitute the highest proportion (24 spp., 48%), followed by trees (14 spp., 28%), shrubs (10 spp., 20 %) and climbers (2 spp., 4%) (Fig.2 &3).

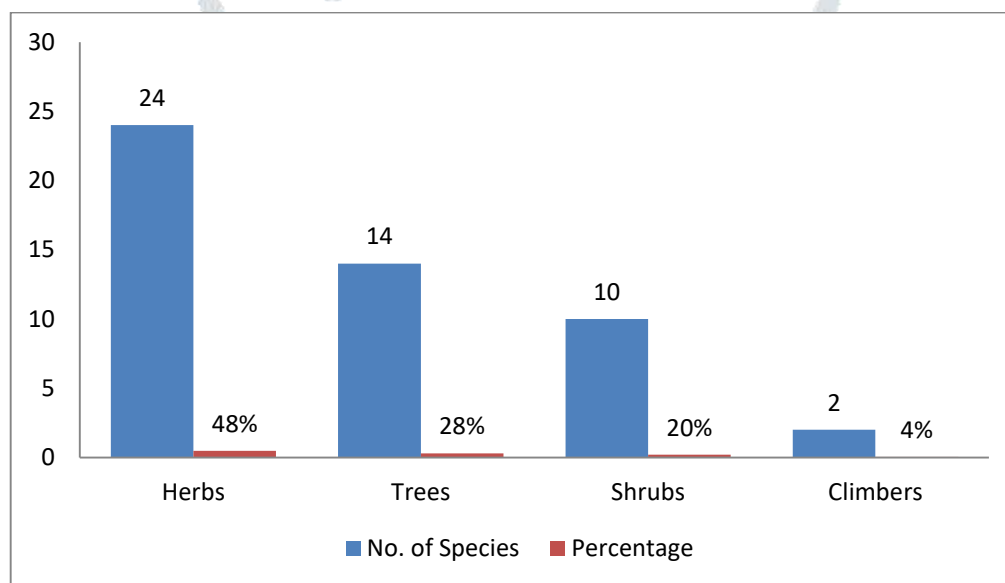


Fig. 2. Graphical representation showing habit wise distribution of species.

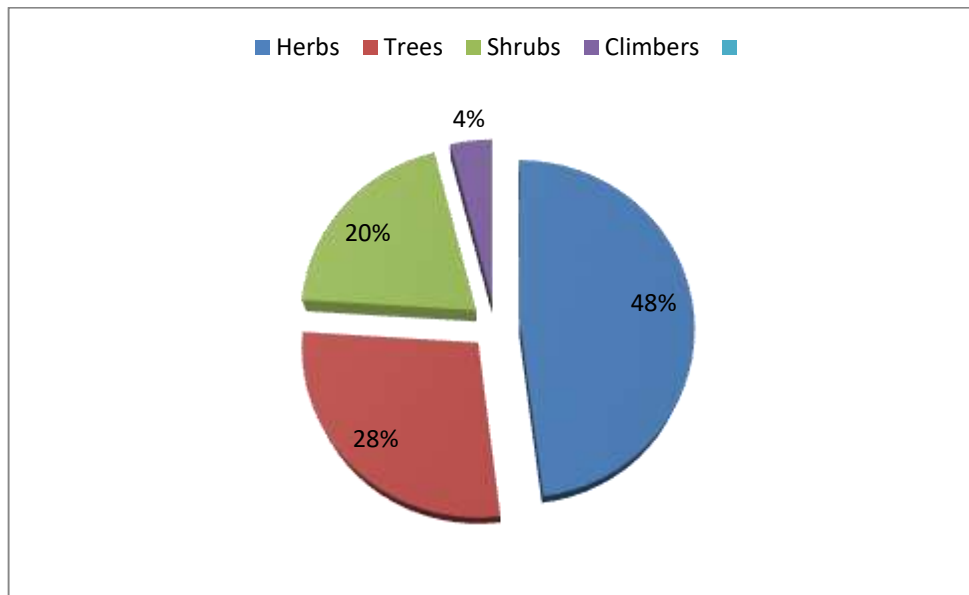


Fig. 3. Pie Chart showing habit wise distribution of species.

The different plant parts used for various ethnobotanical purposes are shown in the Fig. 4, and it is concluded that leaves (35.53%) were the most frequently used part followed by roots (17.10%), whole plant (11.84%), fruits, seeds (9.21% each), stem, bark (6.58% each), wood (2.63%) and flower (1.32%).

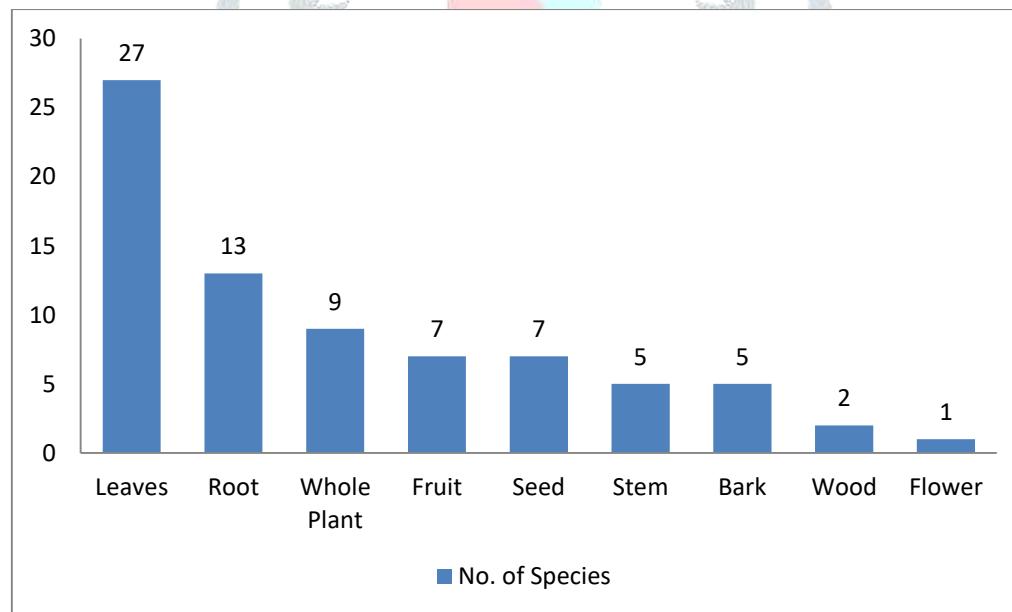


Fig. 4. Graphical representation showing plant parts used for various ethnobotanical purposes.

Table-1: List of Plant Species and their Ethnobotanical Uses

Name of Species	Common Name	Family	Habit	Parts Used	Ethnobotanical Uses
<i>Abutilon indicum</i> (L.) Sweet	Kanghi	Malvaceae	Shrub	Leaf, Root	Leaf juice used to cure kidney stones. Leaves are used in treatment of bleeding piles. Root are useful in treating dental problems. Decoction is used as a solution to wash the eyes.
<i>Achyranthes aspera</i> L.	Chirchita, Latjeera	Amaranthaceae	Herb	Leaf, Root	Decoction of leaves used in cough and abdominal pain. Root decoction mixed with garlic and ajwain is used to cure asthma.
<i>Aegle marmelos</i> (L.) Correa.	Bel Patthar, Bel	Rutaceae	Tree	Leaf, Root	Leaves are used for worship of Lord Shiva. Root paste is applied as an antidote against scorpion bite. Juice of ripe fruit is used for the treatment of gastro-intestinal problems. Leaf juice is used to treat jaundice, asthma, fever and diabetes.
<i>Ageratum conyzoides</i> L.	Neela Phool	Asteraceae	Herb	Leaf	Leaves decoction is used in treatment of dysentery, rheumatism and fever. Leaf extract is used as an antidote against snake bite. Leaves also used to prevent hairs loss.
<i>Alstonia scholaris</i> (L.) R. Br.	Sapt parni	Apocynaceae	Tree	Bark	Bark is used as blood purifier. Decoction of bark is useful in fever to reduce body temperature.
<i>Alternanthera sessilis</i> (L.) R. Br. ex DC.	Garundi	Amaranthaceae	Herb	Leaf	Leaf poultice is used for boils. Decoction of plant is given to nursing mother to increase the milk.
<i>Amaranthus viridis</i> L.	Kantili Cholai	Amaranthaceae	Herb	Whole Plant	Plant is considered as a good source of iron and act as appetizer. Leaves and tender shoots are used as vegetables. Whole plant is given to cure kidney stone.

<i>Argemone mexicana</i> L.	Peeli Katili	Papaveraceae	Herb	Seed	Seeds are used as antidote against snake bite. Latex is used to treat eye infection and jaundice. Seed oil is used to treat cutaneous infections.
<i>Barleria prionitis</i> L.	Vajradanti	Acanthaceae	Shrub	Leaf	Raw leaves are chewed to get relief in tooth ache. Leaf ash is used with honey for cough. Leaves paste is useful in boils and cracked heel.
<i>Bauhinia purpurea</i> L.	Kachnar	Caesalpiniaceae	Tree	Bark, Wood	Bark is used in the treatment of diarrhea. Leaves are used as fodder. Wood is used to prepare agricultural implements.
<i>Calotropis gigantea</i> (L.) Dryand. R. Br.	Safed Aak, Madar	Asclepiadaceae	Shrub	Leaf, Root	Milky juice is applied or ring worm, eczema and swelling. Fresh root twigs are used as tooth brush in toothache. Leaves of the plant are used in treatment of paralysis. Root bark is used in elephantiasis.
<i>Calotropis procera</i> (Ait.) Dryand. R. Br.	Aak, Madar	Asclepiadaceae	Shrub	Whole Plant	Almost all plant parts are used for various purposes. Flowers are used for worshipping Lord Shiva. Leaves used in dysentery. Stem fibres are used to prepare rope and cords. Root and latex are used for treatment of asthma.
<i>Carica papaya</i> L.	Papeeta	Caricaceae	Tree	Fruit	Unripe fruits used as vegetable. Milky juice of unripe fruits used as a cosmetic to remove freckles. Fruit pulp used in making face creams and shampoos. Ripe fruits are used for good digestion.
<i>Celosia argentea</i> L.	Makhmali	Amaranthaceae	Herb	Flower, Seed	Flowers are used for the treatment of diarrhea. Seeds are used to cure painful micturition and dysentery.
<i>Centella asiatica</i> L.	Brahmi buti	Apiaceae	Herb	Leaf	Powdered leaves with cow's milk is given to improve memory. Leaf decoction is given in the treatment of

					leprosy. Leaves are also used to overcome fatigue, stress and mental confusion.
<i>Cleome viscosa</i> L.	Hulhul	Capparidaceae	Herb	Seed	Seeds in the form of poultice is applied on painful joints. Seeds are used as carminative and anthelmintic. Plant is also used as vegetable.
<i>Cordia dichotoma</i> G.Forst.	Lisora	Boraginaceae	Tree	Leaf, Bark	Bark is employed for cough and chest diseases. Wood is used for constructions of boats. Leaves juice and honey is given in foot and mouth disease of cattles.
<i>Cuscuta reflexa</i> Roxb.	Amarbel	Convolvulaceae	Herb	Stem	It is utilized in treatment of liver related diseases. Decoction of stem is employed in constipation and flatulence. Stem paste is given with curd to cure diarrhea.
<i>Dalbergia sissoo</i> DC.	Shisham	Papilionaceae	Tree	Leaf, Wood	Fresh leaves and dried bark is used in bleeding piles. Leaf decoction is given in gonorrhoea. Wood is useful in leprosy, boils, and eruptions.
<i>Delonix regia</i> (Hook.) Raf.	Gul Mohar	Caesalpiniaceae	Tree	Seed, Bark	The seeds are carminative, and also used to purify the blood. Decoction of bark is useful in fever and diarrhoea.
<i>Eclipta prostrata</i> L.	Bhringraj	Asteraceae	Herb	Whole Plant	Plant juice is applied in fever, jaundice, anemia and diabetes. Whole plant is used to treat skin problems and urinary tract infections. Leaf paste mixed with coconut oil is used to prevent hair loss.
<i>Evolvulus alsinoides</i> L.	Phooli	Convolvulaceae	Herb	Leaf	It is used to prepare tonics and medicine for fever. Also used in treatment of syphilis, diarrhoea, bronchitis and asthma.
<i>Ficus benghalensis</i> L.	Bargad, Bar	Moraceae	Tree	Whole Plant	Root paste is applied in leucoderma and ringworm. Fruits are employed in indigestion, sexual debility,

					piles and general debility. Stem decoction is used to get relief from piles and exudation of puss. Bark infusion used as a tonic and in treatment of dysentery and diabetes.
<i>Ficus racemosa</i> L.	Gular	Moraceae	Tree	Fruit, Root	Unripe fruits are used in jaundice and diarrhoea. Root juice is applied in case of mumps and other glandular swellings.
<i>Ficus religiosa</i> L.	Peepal	Moraceae	Tree	Whole Plant	The plant is worshipped by people. Twigs are used as tooth brushes. Unripe fruits are useful in premature ejaculation and general debility. Stem bark is used in skin problems, throat and urinary infections. Leaf powder mixed with water is taken orally to get relief from body pain
<i>Gomphrena celosioides</i> Mart.	Kasia	Amaranthaceae	Herb	Whole Plant	Plant used for treatment of malaria, jaundice, cough and diarrhoea.
<i>Ipomoea cairica</i> (L.) Sweet	Morning Glory	Convolvulaceae	Climber	Leaf	The plant is useful in treatment of cough, asthma and tuberculosis. Leaf paste is applied in skin diseases.
<i>Lawsonia inermis</i> L.	Mehandi	Lythraceae	Shrub	Leaf	Paste of leaves is applied over skin to cure burns. Leaves are source of red-orange dye and used for dyeing the hairs and hands. The paste of leaves is also applied to check burning sensation. Gargle with decoction of its leaves is good medicine for gum disease.
<i>Mimosa pudica</i> L.	Lajwanti, Chhuimui	Mimosaceae	Shrub	Leaf, Root	Plant powder is used as good medicine for asthma. Plant paste is applied on fistula and piles. Root decoction used in urinary disorders. Leaves juice is helpful in treatment of glandular swellings.
<i>Moringa oleifera</i>	Sahjan	Moringaceae	Tree	Leaf,	Young fruits (pods) are edible

Lam.				Fruit	as vegetable. Root decoction is given to treat asthma and bronchitis. Leaves juice along with honey is dropped into eyes in conjunctivitis. Young fruits are used for making pickles.
<i>Morus alba</i> L.	Shahtoot	Moraceae	Tree	Fruit, Leaf, Stem	Leaves act as food for rearing silk-worms. Leaf paste is useful for healing of wounds. Shoots are woven into durable baskets. Fruits are eaten and also used for sore throat, dyspepsia and melancholia.
<i>Murraya koenigii</i> (L.) Spreng.	Kari-patta, Mithi Neem	Rutaceae	Shrub	Leaf,	Leaves are used as flavoring agent. Root juice is applied for kidney related troubles. Leaves infusion is used for the treatment of diarrhea, dysentery and fever.
<i>Ocimum americanum</i> L.	Tulsi, Krishna Tulsi	Lamiaceae	Herb	Leaf, Seed	The leaves mixed with the tea are used in fever. Seed decoction in potash water is used as coolant in fever. Seed powder is used in case of leucoderma and other skin diseases. Fragrant leaves used in sauces and soups.
<i>Ocimum basilicum</i> L.	Tulsi, Sweet Basil	Lamiaceae	Herb	Leaf	Leaves yield a volatile oil, used as a flavoring agent and perfume. Leaf along with honey is used as decoction to cure cold, cough and fever. It is used as a flavoring for confectionary, sauces, pickles and beverages. Plant used as stomachic, antipyretic, expectorant and stimulant.
<i>Oxalis corniculata</i> L.	Khatti- Booti	Oxalidaceae	Herb	Leaf	The leaves are good source of vitamin C. The leaves are chewed raw due to its sore taste. Juice of its leaves act as antidote against Datura poisoning. Leaf juice is used to treat piles, anemia and skin problems.

<i>Parthenium hysterophorus</i> L.	Gajar ghas	Asteraceae	Herb	Root	Decoction of roots is used as tonic. Root decoction is also used in treatment of dysentery and skin diseases. Whole plant is used as fuel.
<i>Portulaca oleracea</i> L.	Luni	Portulacaceae	Herb	Leaf	Leaves are used in the treatment of kidney, bladder and spleen disorders. It is also used to treat mouth ulcer.
<i>Putranjiva roxburghii</i> Wall.	Putranjiva	Euphorbiaceae	Tree	Fruit, Seed, Wood	Fruits are used for treatment of fever, cold and rheumatism. Seeds are believed to be conception-promoting. It is also used against vaginal infection and urinogenital disorders. Wood used in construction and agricultural implements.
<i>Senna occidentalis</i> L.	Kasaundhi	Caesalpiniaceae	Herb	Leaf, Stem, Seed	Seeds are used for treatment of cough and whooping cough. Roasted seeds mixed with coffee are given for strength. Stem, leaf and seed decoction is used as a purgative. Leaf paste is used in curing eczema and other skin diseases.
<i>Sida acuta</i> (Burm. f.) Bross.	Baraira	Malvaceae	Shrub	Leaf, Root	Boiled leaves are used against elephantiasis. Roots are used for nervous and urinary disorders. Plant fibre is used as a substitute of jute fibre.
<i>Sida cordata</i> (Burm. f.) Boiss.	Baharbuta, Adia bel	Malvaceae	Herb	Leaf, Root, Fruit	Fruit decoction is used in sexual debility. Decoction of root is given in leucorrhoea and gonorrhoea. Leaves crushed and applied on cuts.
<i>Sida cordifolia</i> L.	Kharenti	Malvaceae	Herb	Root	Roots infusion is given in nervous and urinary disorders. Root powder is given with milk in leucorrhoea and frequent micturition.
<i>Sonchus asper</i> (L.) Hill	Dudhi	Asteraceae	Herb	Root, Stem	Young shoots are eaten raw as salad. Root paste is a good medicine for jaundice. Paste of herb is used for treating

					wounds and boils.
<i>Stellaria media</i> (L.) Vill.	Godal	Caryophyllaceae	Herb	Whole Plant	Paste of the plant applied to cuts and wounds. It also helps to treat constipation. Paste of plant mixed with plaster of paris is applied on the broken bones for healing.
<i>Terminalia arjuna</i> (Roxb. ex DC.) Wt. & Arn.	Arjun	Combretaceae	Tree	Bark, Leaf, Fruit	The bark is considered to be a tonic for heart. Decoction of leaves is useful in diabetes. Fruit is also helpful in high blood pressure control. Twigs are used as tooth brush in dental disorders.
<i>Tinospora cordifolia</i> (Willd.) Miers.	Giloy, guduchi	Menispermaceae	climber	Whole Plant	Leaf decoction is given in the treatment of gout. Fruit is used to treat jaundice and rheumatism. Dried stem used in polyurea and skin diseases. Stem juice used in general debility, fever and urinary problems.
<i>Tridax procumbens</i> L.	Sadahari	Asteraceae	Herb	Leaf	It is used to treat dental problems. Leaf juice is used to get relief from ear ache. Leaves are used for treatment of dysentery.
<i>Urena lobata</i> L.	Bachita	Malvaceae	Shrub	Stem, Root	Stem yields a fibre used for making ropes, cordage and carpets. The decoction of stem and roots used for flatulence.
<i>Withania somnifera</i> (L.) Dunal in DC.	Ashwa gandha	Solanaceae	Shrub	Root, Leaf	Powdered roots are employed to improve sexual power. Leaf decoction is used to cure painful swelling. Root powder is used to get relief in inflammation. Root paste is applied to cure rheumatism, ulcers, fever and cough.
<i>Xanthium strumarium</i> L.	Bharunt	Asteraceae	Herb	Whole Plant	Fruits are used in constipation, leprosy and rheumatoid arthritis. Seeds are eaten raw to get relief from headache. Roots are useful in treatment of tumor.

CONCLUSION

The study is of immense importance to preserve the traditional knowledge of plants used by the tribal people in treatment of various health problems. These plants have tremendous potentials for pharmaceutical products of commercial values. But this wealth is going to decrease day by day due to the lack of awareness and proper documentation. Therefore, identification and conservation of medicinal plants is an essential requirement of today for maintaining our traditional knowledge of treatment of various diseases.

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