

AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS IN KARNAL CITY OF HARYANA

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ABSTRACT

Ethnobotany may be a distinct branch of scientific discipline managing various aspects like anthropology, archaeology, botany, ecology, economics, medicine, religious, cultural and several other disciplines. Ethnobotany is sometimes defined as anthropological approach to botany. Ethno-botanical studies have gained importance during recent years. Floristic survey of Karnal city, Haryana (India), was conducted from 2020 -2021 for on enumeration of ethnobotanical plants. Overall, 90 ethnobotanical species belonging to 83 genera and 46 families are documented. Among the families Fabaceae with 12 species is that the dominant family followed by Asteraceae with 6 species. The major plant parts used for preparation of traditional medicines are leaves, seeds, stem, fruits and roots. They're employed by the agricultural people for the treatment of varied disease like, headache, asthma, diarrhoea, dysentery, cardiovascular diseases, toothache, acne, diabetes, gonorrhoea, skin problem, calculus, piles, cancer, male and feminine sexual diseases

Keywords: Ethnobotany, Karnal, Haryana, medicinal plants, traditional medicines.

INTRODUCTION

The plants are the ideal for the survival of masses as they supply daily requirements like food, shelter, clothes, timber and also life supporting ecological services (1). The wild plants also act as the sources of medicines for treatment of the many ailment. The word ethnobotany is made of two words ethno and botany. This term was coined by John William Harshberger in 1895. This branch deals with study and evaluation of relationship between plants and human society. Later Schultes (1962) described ethnobotany as “the study of the connection between people of primitive societies and their plant environment”. India is one among the rich mega diversity country of the planet that cherish a good sort of medicinal plants. Various products and chemicals produced by plants will be beneficial for all different life forms and ethnobotany reveals their use to meet human needs. From the last two centuries synthetic drugs are in additional use for treatment of assorted health problems but now a days herbal medicines are preferred more because people believe that drugs obtained from plant sources are more safe. Further, there's common practice to use wild plant as medicine by local people in their tradition. As an estimate of World Health Organization (WHO) about 80% of world population is getting health benefits from plants. (2)

Ethnobotany reveals historical and present plant use to fulfil a good type of human needs; therefore, the documentation of ethnobotanical knowledge is very important for species conservation and sustainable use of resources (16). Furthermore, such studies are often significant in revealing locally important plant species, sometimes resulting in the invention of

crude drugs (17,18). Medicines derived from plants possess a potentially safer and more consistent medicine than synthetically produced drugs (4). India is an tremendous repository of cultural heritage for diverse ethnic groups and it's a chic tradition of folks practices of utilization of untamed plants (5). In ancient Indian literature the use of plants for medicinal purposes has been mentioned a long back (19). First record of medicinal plants was recorded in Rig Veda between 4500–1600 BC and Ayurveda between 2500–600BC (20). The All-India coordination project on ethno biology reported the employment of more than 10,000 wild plant species to fulfill chief healthcare, food, and other material requirements of tribal communities in India. of those about 8,000 wild plant species are employed by them for medicinal purposes (6,7).

Plants are employed by tribal and native people for cure of assorted diseases. As most of the diseases of modern society are life style disease and therefore the use of herbal medicines can overcome such problems (Kumar 2000). More over several difficult diseases have problem related with vitality, diabetes, memory loss, may well be cured effectively by use of herbal medicine, which is mostly insufferable by the Allopathic medicines. Upadhyay et al (2008); Saini et al (2010); Sharma and Kumar (2011) Sharma and Kumar (2012) have conducted studies on Ayurvedic crude drugs for cure of digestive diseases, leprosy, skin diseases, malaria and paralysis.

Anthropogenic impact has caused the good loss of plant resources due to continuous exploitation within the form of cattle grazing, fuel-wood collection and fires, the many medicinal plants face threat of extinction and loss of genetic diversity. (3). So, it becomes very important to survey and document the floristic diversity and ethnobotany of important medicinal plant on earth. Keeping within the view the above aspects the survey of angiosperm diversity additionally as ethnobotany of Karnal city has been conducted to assess and documentation of natural wealth of Karnal city, Haryana, India. Identification of plant species and traditional knowledge of their therapeutic uses are important for the adequate utilization of herbal plant resources. Various workers studied the Flora of Haryana (8-14). However, there are merely a few reports on the ethnobotanical use of plants in Karnal city. Documentation of ethnobotanical information and traditional knowledge plays an important part in research, chiefly when the literature and field work are accurately evaluated (15). Therefore, survey of Karnal city has been conducted for accurate documentation of species occurring within the area and their use by local people and traditional healers. to have medicinal usage in folk and documented systems of drugs like Ayurveda, Unani, Siddha and Homoeopathy.

MATERIAL AND METHODS

Study Area

Karnal district falls in the north-eastern part of the Haryana State, India and is bounded by north latitudes 29°25'05" and 29°59'20" and east longitudes 76°27'40" and 77°13'08". The area of the district is 1,967 km². Loamy clay, loam, clay and sandy are the soil types in different parts of the district. Mean annual temperature is 25°C and mean annual rainfall is 696 mm, majority of which occurs during monsoon months. The main climatic features of area are like cold winters, hot summers and very less rainfall.

METHODOLOGY

Extensive field surveys will be conducted in different areas of the city during different seasons through regular field visits in 2019-2020 to get maximum output. For the collection of specimens, preservation and ethnobotanical information standard methods were adopted. Majority of ethnobotanical data was collected from farmers, herbal practitioners and local people living in and near the study area. The old age group people provided most of the information who have a very long association with plants. The data was collected through informal interviews and discussion. All collected specimens were photographed in their natural habitat, identified with the help of available flora. The medicinally important plant parts and their uses were cross checked from available literature.

RESULTS AND DISCUSSION

The ethnobotanical survey revealed that 90 species were being used as medicine (Table-1). These species belong to 83 genera and 46 families (Fig-2). Habit wise grouping shows herbs (57.95%) were more frequently used for traditional medicine preparations as compared to shrubs (12.5%), trees (25%) and climbers (4.45%) (Fig-3). The family Leguminosae was represented by recorded (10 genera,12 species) followed by Asteraceae (6 genera,6species), Amaranthaceae (5genera,5species), Solanaceae (4 genera,5 species), Malvaceae, Urophorbiaceae (4 genera,4species each),Poaceae , Brassicaceae,Convolvulaceae (3 genera,3 species each),

Moraceae (2 genera,5 species), Myrtaceae, Meliaceae (2 genera,2 species each), Lamiaceae, Phyllanthaceae, combretaceae (1genera, 2 species each) and 31 families were represented by 1 genera,1species each. Five families were represented by 2 species each and 25 families were represented by single species (Table - 2) (Fig 4). Most widely used medicinal part are the leaves, accounting 29.12% of the reported medicinal plant uses, followed by whole plant (19.41%) and root (14.56%), seeds (10.67%), fruits (8.73%), stem (9.75%) and flower (4.85%). Some other plant parts such as tuber, rhizome, flower, bud and latex are also used occasionally which account for only 2.91% of the total uses of the plant parts (Fig 5). With the help of these plants a wide range of common ailments like skin diseases, ulcer, rheumatism, respiratory diseases, indigestion, etc., are treated. Greater part of the preparations in the form of juice extracted from the freshly collected plant parts are taken orally.

Ethnobotany, in totality, is virtually a brand-new field of research, and if this field is investigated thoroughly and systematically, it'll yield results of great value to the ethnologists, archaeologists, anthropologists, plant-geographers and pharmacologists etc. The herbal medicine also suits to the social and cultural needs of the people and influence the patient's physical, mental and emotional states as well. The herbal drugs prepared with the normal methods through slow grinding and mixing processes conserves all the natural substances within it within the 'naturally balanced form' without losing any essential component and maintains the activity and purity of the drug. The presence of several essential components within the 'naturally balanced state' is probably the very basis which accounts for the minimal side effects of herbal drugs. they're being tested since yore and proved to own side benefits in situ of adverse effect generally produced by synthetic and chemical based harmful products. variety of plants could also be processed in cosmetics which are in great demand in India and abroad likely. Perhaps the outstanding example, a minimum of in present time of the utilization of the literature is that the huge compilation of all anti-tumour plants, cited in old texts and native folk medicine from everywhere the planet for screening purpose at Cancer Chemotherapy service Center (CCNSC). Our ancient literature may be tapped for information on medicinal

plants. it's estimated that nearly one third of about 15,000 higher plant species in India are utilized by the tribal and poor people. No authentic record of any kind except some archaeological sculptures of Mohenjo-Daro is available from the prevedic period during this country. But, Rigveda and Atharvaveda, which go back to 2000 to 1000 B.C. are our oldest sacred text resources. They contain valuable information regarding medicinal plants of that period. Thus, from the very precedent days, Indian folk life has not only been including trees, plants and flowers as members of their family but has also found in them the image of God. it's for this reason that the songs, tales and other expressions are replete with deep affection for trees and plants. The Floristic and Ethnobotanical survey of various parts of Karnal district of Haryana state, India revealed that this area is rich in plant diversity and seventy-one in all these species are utilized within the treatment of varied human diseases. Most of these medicines are prepared from herbs (61.97%) and use of whole plant or leaves is commonest for preparing medicine. However, an increased act because of urbanization and industrialization is posing a threat not only to flora of this region but also to the species which are used as medicines by the local people. Therefore, there's an urgent must spread awareness among local people by promoting measures like controlled grazing, reforestation, proper land management to push the sustainable use of medicinal plants.

Table 1

Enumeration of ethnobotanically important species collected from study area

Sr. no.	Botanical Name	Common Name	Family	Habit of plant	Plant Part used	Importance
1.	Abrus precatoria Linn.	Ratti/ Chirmati	Fabaceae	Climber	Root and seed	Seed helpful to boost nervous system and many nervous disorders also paste of seed applied to cure joints pain, while root decoction used to treat cough, cold and also to remove the intestinal worm.
2.	Abutilon indicum (Linn.) Sweet	Kanghi	Malvaceae	Herb	Root and leaves	Decoction of root as well as powder is used to cure chest infection and fever and Leaf juice in early morning used to cure kidney stone and dry leaf powder

						used to treat cattle diarrhea
3.	Acacia nilotica (Linn.) Willd.	Kikar, Babool	Fabaceae	Tree	Stem bark	Bark decoction used as a gargle and pods used in urino-genital diseases. Young twig are chew as toothbrushes to clean teeth.
4.	Achyranthus asper Lam.	Ultakant a/ kutri	Amaranthaceae	Herb	Root, tender stem, fresh leaves and flowers	Decoction of whole plant is utilised in pneumonia, cold cough also it is diuretic so help to cure renal dropsies. Flowers and seed have antivenom properties so help in snakebite if applied in paste form externally. Tender leaf substitute spinach.
5.	Aegle marmelos Linn.	Belpatra	Rutaceae	Tree	Chiefly fruit and leaves also	Ripe fruit juice have cooling effect so used coolant also have properties to cure chronic dysentery and other stomach disorder. Leaf juice also cure diarrhoea and gastric problems
6.	Ageratum conyzoides Linn.	Janglip Udina	Asteraceae	Herb	Leaves	Whole plant paste is used for healing wound, eczema, chest pain, muscular pain, swelling of joints, plant juice is used

						as health tonic, mood refresher and also used to treat urinary disorders, Leprosy, skin disease.
7.	Albizia Lebbek (Linn.) Willd.	Siris, Sireen	Fabaceae	Tree	Stem bark	Stem bark extract used to cure eye irritation, leprosy, bronchitis, piles and treat paralysis
8.	Alternan thera sessilis (Linn.) DC.	Garundi	Amaran ha ceae	Herb	Whole plant	Decoction is taken with little salt drunk to check vomiting of blood. Poultice used for boils.
9.	Amarant hus viridis Linn.	Chaulai	Amaranth aceae	Herb	Fresh leaves	Leaf are good sources of iron, so used as vegetable, also have some ant venom properties to treat scorpion and snake bite.
10.	Anagalis arvensis L.	Jonkmari	Primulace ae	Herb	Whole plant	Plant have properties to treat Leprosy, hydrophobia, dropsy, nervous disorders, gout and used as cattle feed to expel out leeches from nostrills.
11.	Argemon e maxicana Linn.	Satynasi/ Pilibutti	Papaverac eae	Herb	Whole plant, flowers and latex	Decoction of whole pant can treat jaundice and other liver disorders, flowers used to cure cough and latex is directly applied to skin for

						skin problems and healing wound.
12.	Asparagus racemosus	Satavar, satavari, shatamul	Asparagaceae	Herb	Roots	Extracts from dried roots used in case of gastric ulcers and indigestion, also used in hormonal and reproductive issues in females,
13.	Azadirachta indica A. Juss.	Neem	Meliaceae	Tree	Leaves, stem, bark and fruit	Leaf paste is applied superficially on the body to treat small pox, skin diseases and rheumatism. Young twigs are used as toothbrush to clean teeth mainly in pyorrhea. Young leaf juice used as a blood purifier.
14.	Bauhinia variegata L.	Kachnar	Fabaceae	Tree	Pods, root, flower bud and bark	Bark have fibre content and also used in diarrhoea, root have carminative effect, flower bud have laxative and antihelminthic properties.
15.	Boerhavia diffusa L.	Punarnava, Satha, Santhi	Nyctanthaceae	Herb	Whole plant	Root considered expectorant, diuretic, and laxative, used in asthma and for healing wounds.. Root paste used to cure boils, dropsy and fistula.
16.	Brassicarapus subsp.	Sarson	Brassicaceae	Herb	Seeds	Oil obtained from seeds is boiled with methi and garlic

	Compestris Linn.					which is used for body massage of children. Protects from body rashes and gives relief from common cold.
17.	Butea monosperma (Lamk.) Taub.	Dhak, Palash, Tesu	Fabaceae	Tree	Leaves and flower	Leaves paste applied externally to treat rheumatic pain. Leaves used for making plates and lopped for fodder. Flowers succumb a dye known as 'kesu', used for dyeing clothes.
18.	Calotropis procera (Ait.) R.Br.	Aak	Apocynaceae	Shrub	Root, flower, leaf and latex	Dry leaf and flower powder is used to treat rheumatism, and paste applied to cure leucoderma, Ash of root used to remove pus and ash of leaf helpful to cure cough and cold, latex applied for skin problem, toothache, ear pain etc.
19.	Cannabis sativa Linn.	Baang	Cannabaceae	Herb	Leaf, seed and female inflorescence	Decoction of plant used to cure asthma, dysentery. It has sedative, narcotic, hypnotic and hypotensive effect
20.	Cassia fistula Linn.	Amaltas	Fabaceae	Tree	Fruit and seed	Decoction of ripe fruit used to treat asthma, cough, cold and

						bronchitis. Seed known to cure constipation and good for blood purification
21.	Cassia occidentalis Linn.	Kasunda, Bari kasondi	Fabaceae	Tree	Fruit and seed	Leaf paste is applied topically to heal bone fractures and to treat scabies. Seeds used as a hepatotonic and has purgative properties.
22.	Cassia tora Linn.	Panwad	Fabaceae	Herb	Leaves and seed	Leaf paste have soothing effect so applied on skin, also they have purgative effect. seed used to treat inflammation and other fungal infection.
23.	Centella asiatica Linn.	Brahmi	Apiaceae	Herb	Whole plant	Used for treatment of various skin conditions like eczema, leprosy. For relieving anxiety and improving cognition.
24.	Chenopodium album Linn.	Bathua	Amaranthaceae	Herb	Whole plant	A good source of iron and vitamin a. Laxative and antihelmenthic. Root used for liver infection and jaundice
25.	Coccinia indica Wight and Arn.	Ram kachri / Chibaad	Cucurbitaceae	Climber	Root, leaf and fruit	Leaf juice used to cure ulcer. Raw fruit consumed as vegetable and root

						decoction known to cure sore throat and useful in Diabetes.
26.	Commelina benghalensis Linn.	Kana	Commalinaceae	Herb	Whole plant	Decoction of whole plant known to cure dysentery. Having laxative, emollient and demulcent effect. Paste is applied for aches and swelling.
27.	Convolvulus arvensis Linn.	Leli	Convolvulaceae	Herb	Aerial parts of plant	Decoction is used in cough, flu, jaundice and skin diseases. It is also used to treat the painful joints, inflammation and swelling
28.	Cordia dichotoma G.Frost.	Lasora, Tenti, Dela	Boranginaaceae	Tree	Leaves, bark and fruit	Juice of the bark along with coconut milk relieves severe colic, moistened bark is applied on boils and tumors. Bark also used to rub teeth to strengthen them. Powder of Kernal of fruits mixed with oil applied on ring worm. Decoction of leaves is used in cough, and cold.
29.	Coronopus didymus (Linn.) J.E. Smith	Jangli hala	Brassicaceae	Herb	Whole plant	Plant extract is used for bone disorders. Used in rheumatism.
30.	Croton bonpland	Ban Tushi	Euphorbiaceae	Herb	Leaf and stem	Dry Leaf powder with reetha and

	ianum Baill.					Amla is used to wash hair for healthy and dandruff free hair. Leaf Juice directly can also utilised for the same. Tender stem juice is known to cure cataract if daily 2-3 drop is put in eye.
31.	Cuscuta reflexa Roxb.	Aakas Bel	Convolvul aceae	Herb	Whole plant	Whole plant juice is used to treat body pain, joint swelling, general debility, fever, rheumatism, headache & food poisoning
32.	Cynodon dactylon (Linn.) Pers.	Doob, Dobri	Poaceae	Herb	Whole plant	Plant decoction is used to keep the body cool. Plant juice diuretic, ant allergic, cures piles and regulates menstrual cycle. Rhizomes used in genito-urinary troubles.
33.	Cyperus rotundus Linn.	Mottha	Cyperacea e	Herb	Roots	Root is used to treat kidney stones, joint inflammation, vomiting, digestive disorders, hyperacidity & summer stroke
34.	Dalbergi a sisso Roxb.	Shisham	Fabaceae	Tree	Heart wood, flower and leaf	Heart wood is good for making door, household and furniture. Leaf paste have cooling effect if applied on sunburn.

						Also "Thandai" of leaf and flower is used in summer. Leaf known to treat urinogenital problem specially gonorrhoea
35.	<i>Datura stramonium</i> Linn.	Dhatura	Solanaceae	Herb	Leaves and seeds	Have narcotic effect so used as drug. Hallucinogenic so used for nervous disorders. Leaf juice known to cure urinogenital problem. Seed are used for Abortion if consumed in limited amount. seed paste in mustard oil treat skin itching and wound
36.	<i>Digera muricata</i> (Linn.) Mart.	Kundra / Tartara	Amaranthaceae	Herb	Whole plant	Fresh leaf is consumed as vegetable being a good source of iron and Vitamins. Flower and seed used in urinary discharge and removes blockages due to calculi. of leaf used to stop bleeding, burning sensation and itching.
37.	<i>Eclipta prostrata</i> Linn.	Bhringraj	Asteraceae	Herb	Whole plant	Leaf powder used for blackening of hair. Important constituent of many hair oil. Plant

						juice for skin problems and plant boiled in mustard oil applied on joint. Leaf decoction relieve headache. A good health tonic and antiseptic.
38.	Erigeron linifolius Willd.	Ban methi, Senji, metha	Asteraceae	Herb	Leaves	Leaves used for lumbago and rheumatism.
39.	Eruca sativa Mill.	Taramira , Seoha	Brassicaceae	Herb	Seeds	Seeds yield a pungent fixed oil with characteristic odour, used in pickles. Young plants used in salads and as a vegetables, also used as green fodder. 19.41%
40	Eucalyptus camaldulensis Dehnh.	Safeda	Myrtaceae	Tree	Gum and leaves	Vapours from boiled leaves are used in curing congestions of the throat. Source of Red Gum, used in diarrhoea and relaxed throats
41.	Euphorbia hirta Linn.	Dudhi	Euphorbiaceae	Herb	Whole plant	Latex of plant is directly applied on skin for skin problems. Decoction of foliage help in treatment of bronchitis while juice known to cure jaundice, fungal infection, syphilis and body nodes. Dried leaf powder cure

						dysentery and piles. Plant with <i>Phyllanthus</i> crushed and juice is taken to treat spermatorrhoea
42.	Ficus benghalensis Linn.	Bargad	Moraceae	Tree	Fruit, prop root, gum and bark	Fruit is consumed as raw. Prop root is used in many urinogenital problems. Bark is applied on wound. Gum has emollient property
43.	Ficus racemosa Linn.	Gullar	Moraceae	Tree	Fruit and bark	Fruit is good source of many minerals. Bark in powdered is known to treat diabetes, leucorrhoea, small pox and Leprosy. Fruit is used to balance hormonal fluctuation. It has aphrodisiac and carminative properties
44.	Ficus religiosa Linn.	Pipal	Moraceae	Tree	Leaves and stem	Young leaves chewed to treat scabies, heart disease, gonorrhoea and bark is used to treat asthma, epilepsy & diabetes.
45.	Fumaria indica (Haussk.) Pugsley	Pitpapa	Fumariaceae	Herb	Shoot	Fresh plant juice with black pepper utilised for blood purification. have antipyretic and anti vomiting properties. Shoot juice cures

						diarrhea
46.	Ipomoea cairica(Linn.) Sweet	Behaya	Convolvulaceae	Climber	Whole plant	Leaf paste applied over ring worm, skin itching and dried stem use as fuel.
47.	Lantana camara Linn.	Raimuniya Panchphuli	Verbenaceae	Shrub	Whole plant	Decoction used in tetanus, rheumatism, malaria, wound healing and as antidote to snakebite. Used for making agarbattis.
48.	Lawsonia inermis Linn.	Mahendi	Lythraceae	Shrub	Leaf	Fresh leave paste used for head cooling hair dye and also used to treat leprosy & sprain.
49.	Malva parviflora Linn.	Panirak, Sonchal	Malvaceae	Herb	Leaves and seeds	Leaves infusion used as nerve tonic, decoction used as a taenicide. Seeds demulcent, yield fatty oil, used to cure cough and ulcers in the bladder
50.	Meliazardarach Linn.	Bakain, Dek, Dhrek	Meliaceae	Tree	Leaves, gum, fruit and seeds	Decoction from leaves and fruit taken early in the morning as blood purifier and to cure acne. Gum collected from tree used in spleen enlargement. Seeds yield a drying oil, used for soap making and hair-oils.
51.	Melilotus indica	Ban methi,	Fabaceae	Herb	Leaves and seeds	Seeds used in bowel complaints

	(Linn.) All	Senji, metha				and infantile diarrhoea. Used as discutient and emollient. Used as a fodder for animals
52.	Morus alba Linn.	Tut,Tutri	Moraceae	Tree	Leaf, stick and fruit	Fruit are edible and good sources of vitamin and many minerals. Fruit also known to cure sore throat, dyspepsia and melancholia. Leaf are food for silk worm so helps to rear. Sticks are very flexible and strong so used to make house hold utensils like chair and table.
53.	Ocimum basilicu m Linn.	Ram tulsi, Ban tulsi	Lamiaceae	Shrub	Leaves, flowers	Used in treatment of headache, coughs, diarrhea, constipation warts and worms.
54.	Ocimum sanctum Linn.	skin disease	Lamiaceae	Shrub	Leaves and seeds	Leaves extract used to cure stomachache and headache. Root decoction used in malarial fevers.
55.	Opuntia elatio r Mill.	Nagphan i	Cactaceae	Herb	Fruits	Baked fruit used in whooping cough, their syrup increases the flow of bile and control spasmodic cough and expectoration
56.	Oxalis cornicu la Linn.	Amrul sak, Khattami tha	Oxalidace ae	Herb	Whole plant	Fresh plant juice used in anaemia, dyspepsia, piles, and tympanitis.

						Leaf juice used to counteract <i>Datura</i> poisoning
57.	Parthenium hysterophorus Linn.	Gajarghas	Asteraceae	Herb	Root	Decoction of roots is used in dysentery and helpful in skin disorders. Plant used as tonic, febrifuge, emmenagogue and analgesic
58.	Phyllanthus emblica Linn.	Amla	Phyllanthaceae	Tree	Fruit	Dry fruits powder is taken with milk to improve immunity and also to treat asthma, cough, constipation and ripe fruits also used in pickles, juice for sharpness of eye sight, jaundice, hair growth, & hair washing
59.	Phyllanthus niruri Linn.		Phyllanthaceae	Herb	Leaves	It plays an important role in treating urinary tract stones, dysentery, ulcers, swellings.
60.	Physalis minima Linn.	Rasbhari	Solanaceae	Herb	Fruit	Ripe fruits are eaten by villagers to treat burning sensation of urinary track, diuretic, joint inflammation, blood purifier, skin disease, pimples, and liver tonic.
61.	Plumbago zeylanica Linn.	Chitrak, Chita	Plumbaginaceae	Shrub	Roots	Root extract and decoction is astringent, antidote, treating indigestion and

						externally applied for all skin patches
62.	Portulaca oleracea Linn.	Kulfa, Lunak, Khursa	Portulacaceae	Herb	Seeds	Seeds powder used to cure night emission. Used in the treatment of scurvy, liver, spleen, kidney, bladder, cardio-vascular diseases and ulceration of the mouth.
63.	Prosopis juliflora (Sw.) DC.	Shammi	Fabaceae	Shrub	Leaves and pods	Syrup prepared from grounded pods is given to children showing retardation in motor development, leaves are used in treatment of oral infection, painful and frequent urination, powdered leaves are brewed in water and liquid applied to treat irritation, conjunctivitis etc.
64.	Putranjiva roxburghii Wall.	Putijiva	Euphorbiaceae	Tree	Leaves and seeds	Decoction of leaves used for treating cold, fever, and rheumatism, seed paste is useful against headache, seeds are used to treat sterility, and habitual abortions.
65.	Ranunculus scleratus Linn.	Shim, Aglaon, Jaldhaniya	Ranunculaceae	Herb	Whole plant	Juice used in asthma, pneumonia and rheumatism. Seeds used as a tonic and stomachic, also prescribed in

						kidney troubles and in the treatment of colds
66.	Ricinus communis Linn.	Aarandi	Euphorbiaceae	Shrub	Leaves and seeds	Leaves are tied on the breast of women to increase milk secretion or leaf juice is taken for the same purpose. Seed oil is applied to get relief from stomachache and cure dryness.
67.	Rumex dentatus Linn.	Jungli Palak	Polygonaceae	Herb	Whole plant	Used as fodder for cattle. Extract of leaves known to cure mouth sore, wound healing and insect bite. Root in dried powder form if taken cure constipation. Seeds help in post-delivery recovery.
68.	Saccharum munja Roxb.	Sarkanda, Moonj, Sara	Poaceae	Herb	Whole plant	Used for making baskets, ropes, mats, ornamental sitters and toys. A good source of furfural and young leaves provide fodder.
69.	Sesamum indicum Linn.	Til, Tili	Pedaliaceae	Herb	Leaves and seeds	Seeds used to extract benne oil, used for making soap and as cooking oil. Seed oil used to cure eye pain, ear pain, scabies, all ulcers and strengthen body. Fresh leaves used in affections of bladder and

						kidneys.
70.	Setaria glauca (L.) P.Beauv.	Bandra, Bandari ghas	Poaceae	Herb	Whole plant	Grains consumed as food either boiled and eaten or made into flour, also used for making alcohol. Sometimes grains are employed as an adulterant of anise (<i>Pimpinella anisum</i> Linn.). A green Fodder
71.	Shorea robusta Roth	Sal	Dipterocarpaceae	Tree	Bark and gum	Bark powder is taken with milk to treat tonsils, general weakness, ear push, throat pain and gum are given to treat calf dysentery.
72.	Sida acuta Linn.	Swetbala, Sahadevi	Malvaceae	Undershrub	Shoot	Stem abounds in mucilage and used as a demulcent, diuretic and febrifuge. Used in skin troubles, rheumatism and tuberculosis
73.	Sisymbrium irio Linn.	Parjan, Maktrusa	Brassicaceae	Herb	Leaves, seed	Infusion of leaves used in throat and chest infection. Seeds are expectorant, restorative, febrifuge, and tonic
74.	Solanum nigrum Linn.	Makoh, Chirmot hi	Solanaceae	Herb	Leaves and fruits	Decoction of fruit is used against gastric problems, palliative for toothaches and constipation. Leaf decoction is used to cure swelling of hands and feet.
75.	Solanum	Kantakar	Solanaceae	Herb	Leaves and	Decoction of root

	xanthoca rpum Linn.	i	e		fruits	is used to treat cough, asthma and chest pain. In tribes of nilgiri plant is used to treat finger abscess: finger is inserted into a ripe fruit for a few minutes.
76.	Sonchus arvensis Linn.	Sahadevi bari, Pili dudhi	Asteraceae	Herb	Root and leaves	Fresh crushed leaves applied directly on wounds. Used to cure poisoning, swelling, diarrhoea, dysentery, leucorrhoea, white spots of the skin and in dissolving kidney stones. Roots used in cough, bronchitis and in asthma
77.	Stellaria media (Linn.) Vill.	Buchbuc ha, Pani	Caryophyl laceae	Herb	Whole plant	Poultice used to cure cuts, burns and bruises. Used to treat rheumatic pains, asthma, constipation, arthritis, obesity and blood disorders.
78.	Syzygiu m cumini (L.) Skeels	Jamun	Myrtaceae	Tree	Seeds and bark	Seed powder is taken with curd to treat diabetes and ripe fruits are eaten to treat indigestion due to mango, bark decoction is taken in diarrhoea, stomach

						pain, boils, acne, and roughness of skin, headache, and vitiligo.
79.	Terminalia arjuna (Roxb.) Wight & Arn.	Arjun	Combretaceae	Tree	Bark	Dried bark of this tree is crushed to make powder. When mixed with papaya fruit pulp and given twice a day upto a week, gives relief from diarrhea.
80.	Terminalia bellirica (Gaertn.) Roxb.	Bahera	Combretaceae	Tree	Fruits	Fruit is used in popular Indian herbal rasayan treatment triphala, used as a lotion for sore eyes, along with amla and harad used to lower cholesterol.
81.	Tinospora sinensis (Lour.) Merr.	Giloy	Menispermaceae	climber	Stem	Sun dried stem for a week, grinded to make powder. Half tea spoon of this powder with cow milk is effective for recovery from many types of fever particularly from viral fever.
82.	Trianthema portulacastrum Linn.	Santhi	Aizoaceae	Herb	Roots	Whole plant is used as vegetable and plant juice is applied on insect bite and also taken orally to treat hyperacidity, dysentery, diarrhoea.
83.	Tribulus terrestris Linn.	Gokharu	zygophyllaceae	Herb	Leaf, flower and fruit	Mixture of fruits, roots and boiled rice is used to treat white discharge

						and urinary troubles especially in women.
84.	Trigonella foenum-graceum Linn.	Methi	Fabaceae	Herb	Leaves and seeds	Seeds mixed with food lowers blood sugar level, intake of powdered seeds reduce menstrual pain in females, useful in reducing heart burn and high cholesterol level.
85.	Urena lobata Linn.	Bachita, Unga	Malvaceae	Subshrub	Leaves	Plant leaf paste is used to reduce blood pressure, rheumatic pain and body ache
86.	Withania somnifera (Linn.) Dunal	Asgand, Ashwagandha	Solanaceae	Herb	Leaves and roots	Leaves decoction is applied to joints for relief in swellings. Root paste superficially used in rheumatism, inflammatory conditions, ulcers and scabies. Roots used to cure intermittent fevers, cough and dropsy.
87.	Xanthium strumarium Linn.	Chotadhatura, Gokhuru, Bhan	Asteraceae	Herb	Whole plant	Decoction used in chronic malaria, leucorrhoea and urinary diseases. Seeds used for resolving inflammatory swellings. Roots extract used to treat ulcers.
88.	Zizyphus jujube Mill.	Ber, Barari	Rhamnaceae	Small shrub	Leaf and fruit	Fruits edible and recommended in nausea, vomiting and also used for abdominal pain in pregnancy. Leaves paste used to

						prevent hairfall.
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Table-2
Family wise number of genera and species present in the study area

S.No.	Family	No. of Genera	No. of Species
1.	Ranunculaceae	1	1
2.	Menispermaceae	1	1
3.	Fumariaceae	1	1
4.	Papaveraceae	1	1
5.	Brassicaceae	4	4
6.	Capparidaceae/capparaceae	1	1
7.	Caryophyllaceae	1	1
8.	Portulacaceae	1	1
9.	Malvaceae	4	4
10.	Zygophyllaceae	1	1
11.	Oxalidaceae	1	1
12.	Rutaceae	1	1
13.	Meliaceae	2	2
14.	Rhamnaceae	1	1
15.	Fabaceae	10	12
16.	Myrtaceae	2	2
17.	Cucurbitaceae	1	1
18.	Cactaceae	1	1
19.	Aizoaceae	1	1
20.	Asteraceae	6	6
21.	Plumbaginaceae	1	1
22.	Primulaceae	1	1
23.	Apocynaceae	1	1
24.	Convolvulaceae	3	3
25.	Solanaceae	4	4
26.	Pedaliaceae	1	1
27.	Verbenaceae	1	1
28.	Lamiaceae	1	2
29.	Nyctaginaceae	1	1
30.	Amaranthaceae	5	5
31.	Euphorbiaceae	4	4
32.	Moraceae	2	4
33.	Cannabaceae	1	1
34.	Commelinaceae	1	1
35.	Cyperaceae	1	1
36.	Poaceae	3	3
37.	Asparagaceae	1	1
38.	Acanthaceae	1	1

39.	Apiaceae	1	1
40.	Lythraceae	1	1
41.	Phyllanthaceae	1	2
42.	Arecaceae	1	1
43.	combretaceae	1	2
44.	Boraginaceae	1	1
45.	Polygonaceae	1	1
46.	Dipterocarpaceae	1	1

Fig. 1.
Map Showing Study Area



Fig. 2
Proportion of Families, Genera and Species of Ethnobotanical important plants

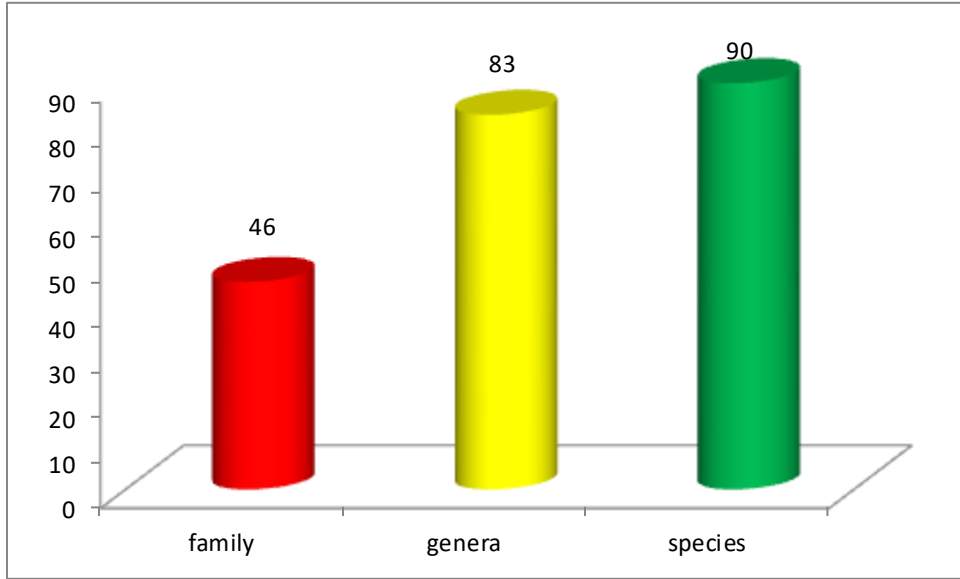


Fig. 3
Showing proportion of percentage of Herbs, Shrubs, Tree, and Climbers

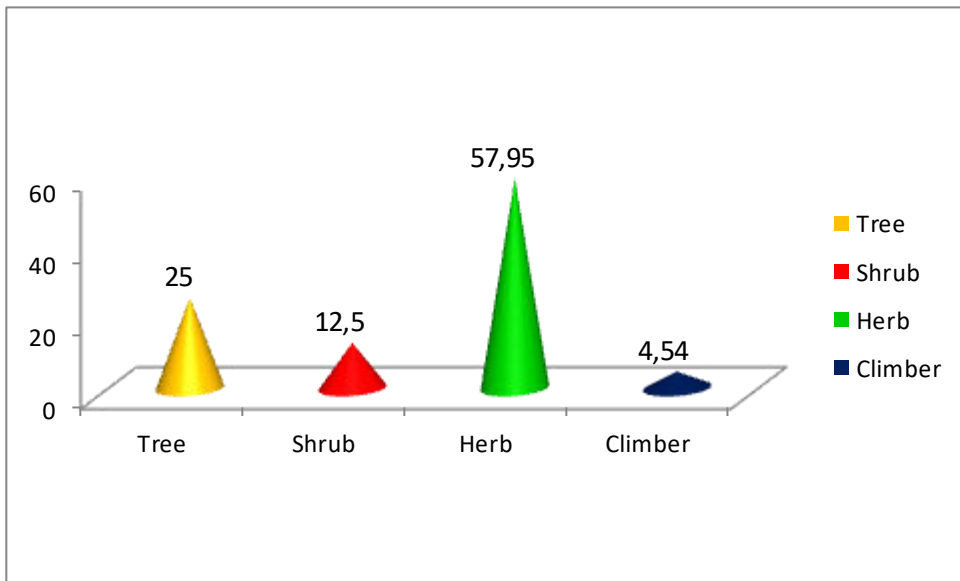


Fig. 4
Number of Genera and Species in leading families of collected plants

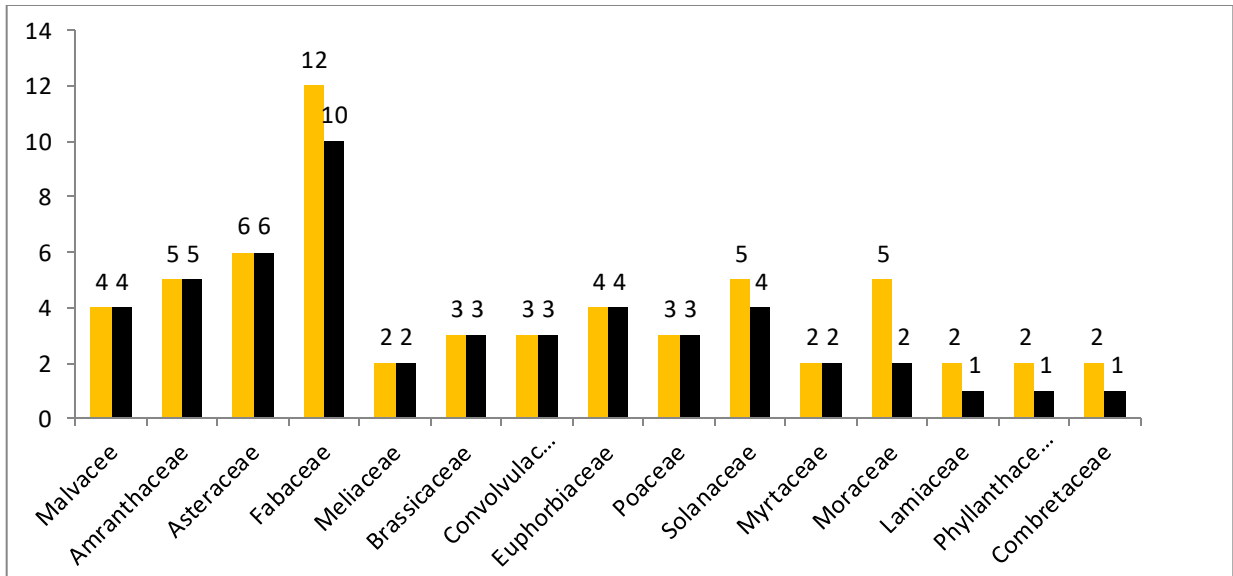
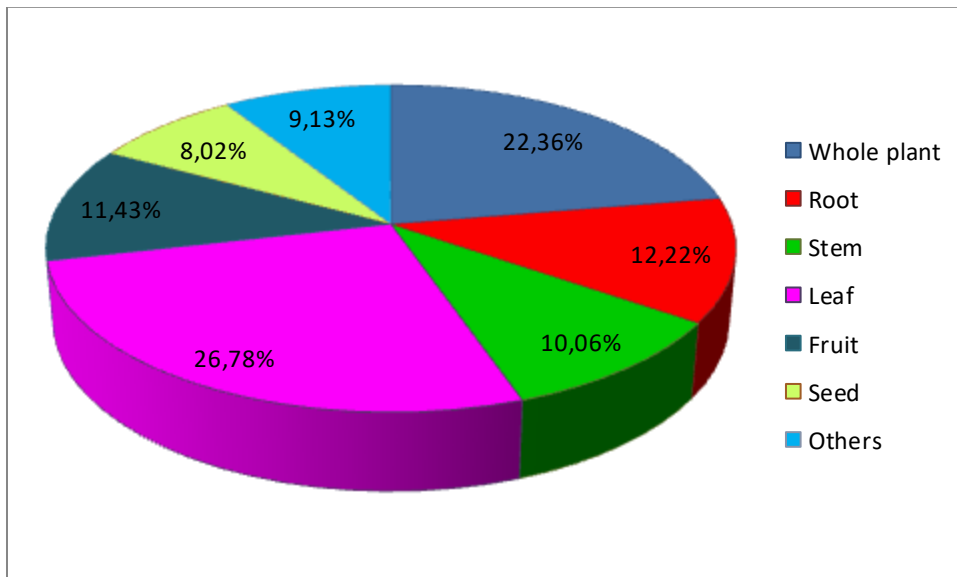


Figure-5
Percentage of different plant parts used in traditional medicine



CONCLUSION

The Floristic and Ethnobotanical survey of Yamuna Nagar district concludes that rural people of district possess rich ethnobotanical knowledge about treatment of varied diseases (diarrhoea, dysentery, male and feminine sexual disease, cardiovascular disease, headache, asthma, toothache, acne, diuretic, diabetes, gonorrhoea, disease of the skin, urinary calculus, hyperthyroidism, piles, and cancer), but this traditional medicinal knowledge is declining with time thanks to rapid urbanisation and migration of rural people. It thus becomes necessary the documentation of ethnobotanical knowledge. This study also suggested that documentation of mental object about plant medicinal uses provides raw material for pharmacological investigation and resulting in discovery of assorted drugs.

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