Study of ethno-botanical herbaceous plants and their utilization in district Agra, Uttar Pradesh

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ABSTRACT

Uttar Pradesh is known as a rich source for valuable medicinal herbs. These herbs found here are distributed throughout India and to various parts of the world. From the ancient time herbs have been used as the source of botanical medicine by the human beings. Herbs are the richest source of medicines due to the presence of biochemicals in them which are useful to cure various diseases. The present study includes ethno-botanical importance of the herbs commonly used by different local communities. Ethno-botanical density as well as diversity may vary from region to region and habitat to habitat. Keeping this in view an extensive survey work was carried out in Agra (western part) of Uttar Pradesh state of India for the medicinal herb resources to obtain information about the traditional uses and knowledge of local people about these popular herbs. Based on the results it was found that 118 species had useful medicinal uses to treat different human and livestock ailments. Various plant parts were being used for curing different types of serious diseases such as tuberculosis, leprosy, asthma, piles, dengue fever, typhoid, blood bleeding etc in human beings and domestic animals.

Keyword: Medicinal herbs; medicinal values; ethno-botany; traditional use

INTRODUCTION

Man has been using several plants to avert pain, cure diseases and to provide relief from health problems. The ancient people and old cultures over ages knew the use of several medicinal plants to cure diseases (Sher et al 2011). India has perhaps the richest repository of traditional knowledge on the medicinal uses of plants. The country possesses an ancient system of healthcare-based medicinal plants of diverse nature ranging from higher plants to microorganisms from which more than 80 per cent of therapeutic products are derived and have been used for 6,000-7,000 years (Balakrishnan et al 2009).

The economic benefits of livestock populations remain low due to prevailing livestock diseases which are among the principal bottlenecks of livestock performance and cause of high economic losses of the resource poor farmers (Tekle 2014). A great variety of traditional materials are used to treat and prevent livestock health problems (Bekele and Musa 2009). Medicinal plants which have been used both for prevention and cure of various diseases of humans and animals from time immemorial occupy the largest portion (Giday and Ameni 2003).

In the recent years interest in herbal medicines has increased both at home and abroad as they are known to be comparatively less toxic than the synthetics (Yusuf et al 2007). It is not the economic botany rather more of pure economics as associated with the tribal medicine; it is at a very young stage as far as the studied area is concerned (Ali and Ghosh 2006).

METHODOLOGY

Reconnaissance surveys were conducted throughout the district for locating the community groups, their distribution, status and traditional way of

life, the degree of traditional knowledge practices etc. The selected villages were visited regularly and data pertaining to herbs in their life and culture were gathered periodically. Ethno-botanical information was gathered either by interviewing the informants or from the direct observation from the field itself on the uses of herbs. The information of a particular herb used by the community was tested directly or indirectly. The reliability of the information of the herbs used was assessed after repeated verification.

The present investigations were conducted in Agra district of Uttar Pradesh to study the ethno-botany of plants with its utilization (Fig 1). Phytosociological aspects of important forest herbs were gathered to study at four different sites viz Mau Forest, Taj Nature Walk , Kitham Lake (Raunakata) and Chambal Safari (Bahpinahat Agra) in Agra during the year 2016. Study site is situated in the extreme southwest corner of Uttar Pradesh having stretches across 26° 44' N to 27° 25' N and 77° 26' E to 78° 32' E at an elevation 171 m amsl. Its borders touch Rajasthan to its west and south, the district of Firozabad to its East and the districts of Mathura and Etah to its North at the banks of Yamuna and Chambal rivers and has limited forest area sporting trees of Babul, ber, neem and Peepal.

RESULTS and DISCUSSION

The study revealed that there were 118 herbs belonging 36 families which were used as medicines.

Maximum (52) herb species were available on Kitham Lake (Raunakata) followed by Taj Nature Walk (29) and Chambal Safari (13) while Bahpinahat Agra had minimum (7) number of species available on Mau Forest and 17 species were common to all the four sites.

Among the 36 herb families maximum species (19) were represented by Asteraceae followed by Poaceae species (14), Fabaceae (10), Amaranthaceae (8), Euphorbiaceae (8), Malvaceae (7), Convolvulaceae (7), Solanaceae (6), Cucurbitaceae (5), Acanthaceae (4), Verbenaceae (2), Commelinaceae (2), Lamiaceae (2) and minimum by Lythraceae (1), Papaveraceae (1), Liliaceae (1), Plantaginaceae (1), Chenopodiaceae (1), Capparaceae (1), Menispermaceae (1), Gentianaceae (1), Cyperaceae (1), Pontederiaceae (1), Boraginaceae (1), Linderniaceae (1), Onagraceae (1), Marsileceae (1), Pedaliaceae (1), Oxalidaceae (1), Asclepiadaceae (1), Piperaceae (1), Araceae (1), Portulacaceae (1), Plygonaceae (1), Aizoaceae (1), Zygophyllaceae (1).

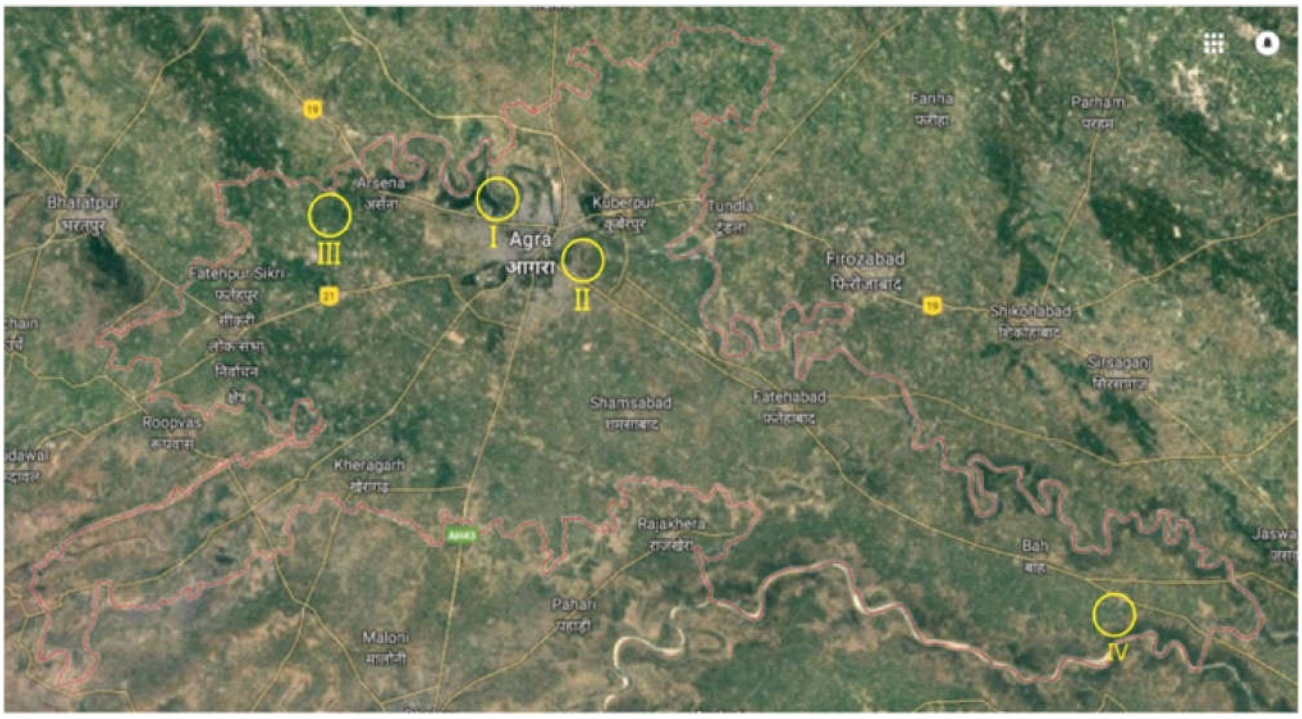

Fig 1. The study area in Agra district Uttar Pradesh

Table 1. Ethnobotanical aspects of herbs in Agra distract of Uttar Pradesh

Botanical name	Family	Local name	Site	Community	Uses
Abutilon hirtum	Malvaceae	Kanghi	Kitham Lake (Raunakata)	Vaidhya	Demulcent, diuretic, treats diarrhoea; bladder inflammations, wounds and ulcers
A indicum	Malvaceae	Country Mallow	Common	Yadav	The leaves used in eye wash, mouth wash, catarrh and bilious diarrhea
Achyranthes aspera	Amaranthaceae	Latjira, Chirchira	Common	Vaidhya	Traditional healer; used in treatment of asthma, bleeding, facilitating delivery, boils, bronchitis, cold, cough, colic, debility, dog bite, dysentery, ear complications, headache, leucoderma, pneumonia, renal complications, scorpion bite, snake bite and skin diseases
Acanthospermum hispidum	Asteraceae	Kattunerinji	Taj nature walk	Vaidhya	Roots used to cure coughing and bronchitis; boiled tea of the leaves reduces fever
Aerva lanata	Amaranthaceae	Gorakhbuti or Kapurijadi	Kitham Lake (Raunakata)	Shepherd	The leaves put into soup or eaten as spinach or as a vegetable
Ageratum houstonianum	Asteraceae	Ajgandha, Ganghili	Mau Forest	Jatav	The plant used for ornamental purpose
Ageratum conyzoides	Asteraceae	Yoruba: Imiesu	Kitham Lake (Raunakata)	Yadav	Treatment of ulcers, skin diseases and fever and used for wound dressing
Alternanthera paronychioides	Amaranthaceae	Mart	Kitham Lake (Raunakata)	Yadav	Paste of young shoots with black pepper prescribed to cure acute cough; leaves with a pinch of salt orally administered to cure intestinal worms
A sessilis	Amaranthaceae	Gudari Sag	Kitham Lake (Raunakata)	Mallah	Eaten as vegetable and salad
Alysicarpus monilifer	Fabaceae	Alyce Clover	Kitham Lake (Raunakata)	Mallah	Vegetable species consist of the various parts (sheets, stems, pods and roots)
A ovalifolius	Fabaceae	False Moneywort	Mau Forest	Jatav	The species good forage for horses and cattle; tolerates heavy grazing well
Ammannia baccifera	Lythraceae	Blisterinjannannia	Kitham Lake (Raunakata)	Vaidhya	Treating biliousness [bad digestion, stomach pains, constipation, excessive flatulence (passing gas)]
Argemone mexicana	Papaveraceae	Prickly Poppy	Common	Vaidhya	Extraordinarily important plant for the Aztecs, especially for ritualistic purposes
Apluda mutica	Poaceae	Mauritian Grass	Chambal Safari (Bahpinahat, Agra)	Shepherd	Good fodder especially for buffaloes when young, green internodes very long
Asphodel alternifolius	Liliaceae	Onion Weed	Kitham Lake (Raunakata)	Yadav	Used in the manufacture of paints, varnishes and soap
Axonopus spp	Poaceae	Pearl Grass	Kitham Lake (Raunakata)	Yadav	A good ground cover to prevent soil erosion; used widely as a lawn grass in the tropical and subtropical areas

Bacopa monnieri	Plantaginaceae	Barami	Mau Forest	Vaidhya	Used to increase cerebral blood flow likely because of its ability to activate a brain substance called choline acetyltransferase while inhibiting acetylcholinesterase
Brachiaria ramoso	Poaceae	Browntop Millet	Kitham Lake (Raunakata)	Mallah	Seed cooked; used as a boiled whole grain, porridge or unleavened bread eaten as a millet; considered to be superior to the grain obtained from *Panicum sumatrense*
Bidensspilosa	Asteraceae	Spanish Needles	Kitham Lake (Raunakata)	Mallah	Tender leaves cooked as vegetable by poor people
Bryonopsis laciniosa	Cucurbitaceae	Shivlingi	Chambal Safari (Bahpinahat, Agra)	Vaidhya	Effect on sexual behaviour of male rats evaluated
Cassia tora	Fabaceae	Coffee Pod	Common	Vaidhya	The dried and fresh leaves used in the treatment of ulcers, ring worm and other parasitic skin diseases
Celosia argentea	Amaranthaceae	Quail Grass	Kitham Lake (Raunakata)	Brahman	Leaves mixed with honey applied to inflated areas or abscesses; the seeds widely used for the treatment of diabetes mellitus
Chenopodium album	Chenopodiaceae	Bathua	Kitham Lake (Raunakata)	Yadav	Used in Roti, Parantha, Pakodi, Raita etc
Chloris barbata	Poaceae	Swollen Windmill Grass	Taj Nature Walk	Shepherd	Used as fodder when young
Cirsium arvense	Asteraceae	Creeping Thistle	Kitham Lake (Raunakata)	Mallah	Best used in a mixture with other vegetables
Citrullus vulgaris	Cucurbitaceae	Hindworanh	Chambal Safari (Bahpinahat, Agra)	Shepherd	The epicarp used as a fodder for cattle
Cleome viscosa	Capparaceae	Banosorisho	Kitham Lake (Raunakata)	Vaidhya	Crushed leaves used against scorpion biting
Clerodendron infortunatum	Verbenaceae	Hill Glory Bower	Taj Nature Walk	Vaidhya	Anti-inflammatory activity against the carrageenan-, histamine- and dextran-induced rat paw edema
Clitoria ternatea	Fabaceae	Aparajita	Taj Nature Walk	Vaidhya	Juice of leaves applied inside nose for migraine
Cocculus hirsutus	Menispermaceae	Monkey Rope	Common	Mallah	Juice of leaves used for curing skin diseases
Coccinia grandis	Cucurbitaceae	Kundru	Chambal Safari (Bahpinahat, Agra)	Mallah	Used as a wild vegetable in rural areas
Commelina benghalensis	Commelinaceae	Benghal Dayflower	Chambal Safari (Bahpinahat, Agra)	Vaidhya	Taken to reduce high blood pressure
C diffusa	Commelinaceae	Climbing Dayflower	Kitham Lake (Raunakata)	Vaidhya	Used for poulticing wounds and skin infections such as boils and ulcers
Convolvulus pluricaulis	Gentianaceae	Shankhpushpi	Kitham Lake (Raunakata)	Vaidhya	Used as a brain tonic
Corchorus aestuans	Malvaceae	Hade-Ka-Khet, Chonch	Taj Nature Walk	Yadav	Eaten as salad vegetable or potherb; used for vegetable bouillon

C olitorius	Malvaceae	Jute Mallow	Kitham Lake (Raunakata)	Vaidhya	Consumption of the leaves to be demulcent, deobstruent, diuretic, lactagogue, purgative and tonic
Croton bonplandianum	Euphorbiaceae	Ban Tulsi	Common	Vaidhya	Leaf paste applied for the skin diseases
Cynodon dactylon	Poaceae	Dub	Common	Shepherd	Good cattle feed
Cyperus spp	Cyperaceae	Motha	Common	Brahman	Used in treatment of nausea, vomiting, dyspepsia, colic, flatulence, diarrhea etc
Dactyloctenium aegyptium	Poaceae	Coast Button Grass	Chambal Safari (Bahpinahat, Agra)	Mallah	Seed ground into flour and cooked; the whole plant used in a decoction to remedy lumbago
Digitaria sanguinalis	Poaceae	Hairy Crabgrass	Mau Forest	Jatav	Provides graze for animals; clipped and bundled as hay
Desmodium gangeticum	Fabaceae	Sarivan	Kitham Lake (Raunakata)	Yadav	Used as a Rasayan; used to cure cough
Desmostachya bipinnata	Poaceae	Daab	Common	Yadav	Used for thatching and making rough rope and brooms
Dichanthium annulatum	Poaceae	Delhi Grass; Jargu Grass	Taj Nature Walk	Vaidhya	Used for controlling soil erosion
Digera arvensis	Amaranthaceae	Lesua	Kitham Lake (Raunakata)	Sepherd	In India plants and seeds used as famine food
Diplocyclos palmatus	Cucurbitaceae	Put Loguli	Taj Nature Walk	Vaidhya	Anti-inflammatory paste
Echinochloa colona	Poaceae	Jungle Rice	Taj Nature Walk	Mallah	The seed cooked whole or ground into flour and used as a mush or porridge used mainly in times of shortage
Eclipta prostata	Asteraceae	Bhangra	Kitham Lake (Raunakata)	Yadav	A source of black dye for colouring hair
Eichhornia crass/pes	Pontederiaceae	Water Hyacinth	Kitham Lake (Raunakata)	Mallah	Said to be used as a carotene-rich table vegetable in Formosa
Emilia sonchifolia	Asteraceae	Cupid's Shaving Brush	Kitham Lake (Raunakata)	Vaidhya	The juice of the leaves used in treating eye inflammations, night blindness, cuts and wounds and sore ears
Euphorbia geniculata	Euphorbiaceae	Wild Poinsettia	Kitham Lake (Raunakata)		No evidence
E heterophylla	Euphorbiaceae	Fireplant	Kitham Lake (Raunakata)	Vaidhya	Extract of leaves used for anti-inflammatory activities by carrageenan-, histamine- and dextran-induced rat paw edema
E hirta	Euphorbiaceae	Asthma Herb	Common	Vaidhya	Leaves and flowers of the plant used to treat leucorrhoea in females among people of tribes in Bangladesh
E indica	Euphorbiaceae	Doodal	Taj Nature Walk	Vaidhya	Applied externally on ulcers, cuts and burns
E microphylla	Euphorbiaceae	None	Taj Nature Walk		No evidence
E thymifolia	Euphorbiaceae	Chhotiduddhi	Taj Nature Walk	Vaidhya	Used in ophthalmia and other eye troubles, ardor, sores, atrophy, dysentery and breast pain
Gnaphalium polycaulon	Asteraceae	Banpalang	Mau Forest	Jatav	The plant being astringent and vulnerary; whole plant used as cattle fodder

Gomphrena celosioides	Amaranthaceae	Bonnobotaphul	Kitham Lake (Raunakata)	Vaidhya	Used agianst skin problems in cattle and hay fever, asthma and dermatitis in some people
G decumbens	Amaranthaceae	Bachelor's Button	Chambal Safari (Bahpinahat, Agra)		No evidence
Heliotropium ovalifolium	Boraginaceae	Grey Leaf Heliotrope	Kitham Lake (Raunakata)	Mallah	Leaves chewed as a substitute for tobacco
Indigofera cordifolia	Fabaceae	Heart Leaf Indigo	Kitham Lake (Raunakata)	Yadav	Used in India as a Nila
I linnaei	Fabaceae	Birdsville Indigo	Taj Nature Walk	Mallah	The primary use as a dye for cotton yarn mainly for the production of denim cloth for blue jeans
I linifolia	Fabaceae	None	Kitham Lake (Raunakata)		No evidence
Ipomoea hederacea	Convolvulaceae	Ivy Leaf Morning-Glory	Taj Nature Walk	Vaidhya	Juice of the leaves used to treat eye inflammations, cataracts
I nil	Convolvulaceae	Japanese Morning Glory	Kitham Lake (Raunakata)	Vaidhya	Used as a purgative
I obscura	Convolvulaceae	Cirutali	Kitham Lake (Raunakata)	Vaidhya	It is used to cure cold, asthma, dry cough and chest cold
I cairica	Convolvulaceae	Cairo Morning Glory	Kitham Lake (Raunakata)	Mallah	Leaves cooked and eaten as vegetable
Ischaemum indcum	Poaceae	Batiki Blue Grass	Kitham Lake (Raunakata)	Sepherd	Used as forage and cover grass to bind soil and reduce erosion
Justicia adhatoda	Acanthaceae	Adusa	Common	Yadav	Green mature; leaves used to prepare traditional medicines used to cure cough, fever, asthma and dysentery
Lagascea mollis	Asteraceae	Silk Leaf	Kitham Lake (Raunakata)	Yadav	Paste of the inflorescence with black pepper and cow milk given to cure dysentery
Launaea nudicaulis	Asteraceae	Bold-Leaf Launaeae	Taj Nature Walk	Vaidhya	The molluscicidal activity of aqueous extract
L sarmentosa	Asteraceae	Kulhafila	Kitham Lake (Raunakata)	Vaidhya	The juice of the plant used as a soporific for children
Lindernia ciliata	Linderniaceae	Colsm	Taj Nature Walk	Vaidhya	Used in the treatment of jaundice
Ludwigia octovalvis	Onagraceae	Mexican Primrose-Willow	Kitham Lake (Raunakata)	Brahman	Used in the treatment of diarrhoea, dysentery, nervous diseases
Malvastrum coromandelianum	Malvaceae	Kharenti	Taj Nature Walk	Vaidhya	Antidiabetic and antihyperlipidemic activities on alloxan induced diabetic rats in acute and chronic study
Marsilea quadrifolia	Marsileceae	European Water Clover	Kitham Lake (Raunakata)	Vaidhya	Juice made from the leaves diuretic and febrifuge
Martynia annua	Pedaliaceae	Hatajori	Taj Nature Walk	Mallah	Plants parts used as scorpion biting treatment
Merremia aegyptia	Convolvulaceae	Hairy Woodrose	Kitham Lake (Raunakata)	Brahman	The dried leaves used as dressing for burns
M emarginata	Convolvulaceae	Musakani	Kitham Lake (Raunakata)	Mallah	Fried young leaves with groundnut oil and other spices used with bread, called Roti made

					from sorghum flour
M tuberosa	Convolvulaceae	Wood Rose	Kitham Lake (Raunakata)	Vaidhya	The tuber used as drastic purgative
Mimosa pudica	Fabaceae	Laajvanti and Chhui-Mui	Kitham Lake (Raunakata)	Vaidhya	Can be applied externally on boils, ulcers, wounds, fungus and cuts
Momordica dioica	Cucurbitaceae	Kankada	Chambal Safari (Bahpinahat, Agra)	Mallah	Fresh fruit juice and cooked fruit in small amount of oil prescribed for hypertension and diabetes respectively
Nicotiana plumbaginifolia	Solanaceae	Janglitambakoo	Mau Forest	Mallah	Used as insecticide and against toothache
Ocimum americanum	Lamiaceae	Lime Basi	Kitham Lake (Raunakata)	Brahman	Used for coughs; pounded leaves used for respiratory problems
O gratissimum	Lamiaceae	Clove Basil	Chambal Safari (Bahpinahat, Agra)	Brahman	Flowers and leaves rich in essential oils; used in preparation of teas and infusion
Oxalis corniculata	Oxalidaceae	Tinpatiya	Taj Nature Walk	Vaidhya	The juice of the plant given in jaundice and in stomach troubles
Parthinium spp	Asteraceae	Gajargahas	Common	Vaidhya	Used as remedy for inflammation, eczema, skin rashes, herpes, rheumatic pain, cold, heart trouble and gynaecological ailments
Acalypha indica	Euphorbiaceae	Indian Copperleaf	Kitham Lake (Raunakata)	Vaidhya	Anti-inflammatory, anti-tussive, antifungal and antibacterial; used for wounds healing
Pergularia daemia	Asclepiadaceae	Forsk	Kitham Lake (Raunakata)	Vaidhya	Used as anthelmintic, laxative, antipyretic expectorant; used to treat infantile diarrhea and malarial intermittent fevers
Peristrophe paniculata	Acanthaceae	Kaknadi	Kitham Lake (Raunakata)	Vaidhya	Roots used for the treatment of leucorrhoea, wounds and snake bites
Peperomia pellucida	Piperaceae	Alumbre	Kitham Lake (Raunakata)	Yadav	Leaves and stems eaten as vegetable
Phyla nodiflora	Verbenaceae	Bukkan, Jalpapli	Taj Nature Walk	Yadav	In India the infusion of the dried leaves referred to as an excellent remedy for bronchial cough
Physalis minima	Solanaceae	Sunberry	Taj nature walk	Vaidhya	Fruits and flowers used in stomach pain and constipation
Pistia stratiotes	Araceae	Water Lettuce	Kitham Lake (Raunakata)	Vaidhya	Used for topical application for various skin diseases and taken orally as laxative and diuretic
Portulaca oleracea	Portulacaceae	Purslane	Taj Nature Walk	Jatav	Used as a cooked or raw vegetable
Rumex dentatus	Plygonaceae	Toothed Dock	Taj Nature Walk	Vaidhya	Extracts evaluated for antibacterial, antifungal, cytotoxic, antitumor and allopathic potential
Rungia pectinata	Acanthaceae	Comb Rungia	Chambal Safari (Bahpinahat, Agra)	Vaidhya	Bruised leaves applied to contusions to relieve pain and reduce swelling
R repens	Acanthaceae	Kharmor	Taj Nature Walk	Vaidhya	The herb dried and pulverized for use in the treatment of cough and fever
Saccharum munja	Poaceae	Munja	Common	Mallah	Fibre used for making ropes

Senna occidentalis	Fabaceae	Coffee Senna	Kitham Lake (Raunakata)	Vaidhya	Treats diuretic, hemorrhoids, gout, laxative, rheumatism, diabetes and rheumatis
Saccharum spontaneum	Poaceae	Kash	Kitham Lake (Raunakata)	Yadav	Useful for controlling and preventing soil erosion
Sida acuta	Malvaceae	Broom Weed	Common	Yadav	The plant ground and mixed with soft grease and sugar to make a poultice; applied to soften abscesses and release pus
Solanum viarum	Solanaceae	Tropical Soda Apple	Kitham Lake (Raunakata)	Vaidhya	Fruit used to treat asthma, bronchitis, coughs, colds, wounds, toothache, tooth decay and as an abortifacient
S xanthocarpum	Solanaceae	Kanteli	Common	Vaidhya	Used in cough, asthma, pain in chest and certain kind of fevers
S nigrum	Solanaceae	Makoi	Common	Brahman	Used to treat swelling, skin diseases, inflamed and painful parts of body and to clean wounds and mouth sores
S sisymbriifolium	Solanaceae	Sticky Nightshade	Chambal Safari (Bahpinahat, Agra)	Brahman	Plants for future cannot take any responsibility for any adverse effects from the use of plants
Sonchus asper	Asteraceae	Sow Thistle	Chambal Safari (Bahpinahat, Agra)	Yadav	The plant pounded and applied as a poultice to wounds and boils
S oleraceus	Asteraceae	Smooth Sowthtstle	Taj Nature Walk	Mallah	Juice of the plant used for cleaning and healing ulcers
Spilanthes acmella	Asteraceae	Akarkara	Mau Forest	Jatav	Used as poisonous sting in Chittagong hill tracts of Bangladesh where the plant is known as Jhummosak
Setaria viridis	Poaceae	Green Foxtail	Common	Mallah	Used for pasture but the extent and importance of this use is uncertain
Synedrella nodiflora	Asteraceae	Synedrella	Kitham Lake (Raunakata)	Mallah	Young shoots eaten as cooked vegetable; shoots fed to pigs in Papua New Guinea
Trianthema portulacastrum	Aizoaceae	Santhi	Taj Nature Walk	Jatav	Eaten as a leafy vegetable; old leaves used in treatment of gonorrhea
Tribulus terrestris	Zygophyllaceae	Gokhru/Gokshura	Chambal Safari (Bahpinahat, Agra)	Vaidhya	Cooling, diuretic, tonic, aphrodisiac; used in painful micturation, calculus affection urinary discharges and impotence, increases the sperm count
Tridax procumbens	Asteraceae	Coatbuttons	Taj Nature Walk	Yadav	The leaf juice used to treat wounds and stop bleeding
Vernonia elliptica	Asteraceae	Pardabel	Taj Nature Walk		No evidence
Volutarella divaricata	Asteraceae	Oligochaeta	Taj Nature Walk		No evidence
Waltheria indica	Malvaceae	Sleepy Morning	Kitham Lake (Raunakata)	Vaidhya	Treatment of diarrhea, infertility, skin diseases, gonorrhea and for relieving pains
Xanthium strumarium	Asteraceae	Cocklebur	Taj Nature Walk	Vaidhya	Useful in treating long-standing cases of malaria used as an adulterant for *Datura stramonium*

Ethno-botanical aspect

The list of herbs directly involved with the life and culture of different local communities has been given in Table 1. Among them 5 animal fodder herb species were found in district Agra, Uttar Pradesh. The 14 species represented grasses. The herbs involved in the diverse needs of the different local community groups were categorized into 11 useful aspects. Amongst them 118 herbs were used in ethno-botany followed by 17 with edible plants and the remaining were used for various other uses like religious, medicinal, cultural, worshiping purposes etc. With respect to the parts of the herbs used for various ethno-botanical aspects these were bark, flowers, fruits, leaves, seeds, root etc. Mostly the herbs were used for curing human diseases and some veterinary diseases.

CONCLUSION

The present study was conducted to enlist various ethno-botanical herbs of Agra district. It was found that the people had been using local herbs for various purposes. The preservation of this knowledge appears to be the result of continued reliance of local communities on medicinal and edible plants. There is need to conserve and domesticate these precious herbs as most of the species are on the way of extinct. Herbs are one of the most important components of the forests where the different local communities reside.

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