

Research Article

MEDICINAL DIVERSITY AND ETHNOBOTANICAL USAGE OF ASTERACIOUS PLANTS OF GORAKHPUR DISTRICT, UTTAR PRADESH

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ABSTRACT

The Asteraceae family is the largest family of flowering plants, with over 1600 genera and 23000 species are distributed throughout the world and occupy a wide range of habitat. In India, this family is represented by 900 species under 167 genera. Present study deals with an account of 17 medicinally important species of Asteracious plants found within present political boundaries of Gorakhpur District. The study highlights the botanical names, common names, habit, flowering and fruiting period and medicinal uses of Asteracious plants. Some important medicinal plants of this family are *Ageratum conyzoides*, *Blumea lacera*, *Calendula officinalis*, *Carthamus tinctorius*, *Eclipta prostrata*, *Helianthus annuus*, *Tagetes erecta*, *Vernonia cinerea* and *Xanthium strumarium*.

Key words: Asteracious plants, Medicinal uses.

INTRODUCTION

Gorakhpur district lies between latitude 26°46'N and longitude 83°22'E. The district covers an area of 7,483.8 square kilometres (2,889.5 sq mi). It is bounded by Maharajganj district to the north, Kushinagar and Deoria districts in the east, Ambedkar Nagar, Azamgarh, and Mau districts to the south, and Sant Kabir Nagar district to the west. Present work aims to explore the medicinal plant status of Asteraceae family in Gorakhpur district of Uttar Pradesh.

Family Asteraceae is commonly referred as the aster (means star), daisy, or sunflower family, which is an extremely large and widespread family of Angiosperm. They are rich in secondary metabolites which serve as storage compounds or as chemical defenders and these are the basis of their very widespread uses as medicinal plants. There is no single class of constituent which is unique to the family, but the Asteraceae family is the array of characteristic constituents like sesquiterpene lactones (SLs), pentacyclic triterpene alcohols, fatty acid-derived acetylenic compounds, methylated flavonols and flavones, inulin-type fructans and fatty oils in the seeds are common and dominant constituents in the chemical make-up of many species of the family. Essential oils and diterpenoids are also widely distributed. Alkaloids, cyanogenic glycosides, amides, coumarins and several types of phenolic constituents exhibit a much more limited distribution.

The family is characterized by a special inflorescence consisting of flowers aggregated into capitula. The capitulum (head), surrounded by an involucre of protective bracts, is the functional flower and usually acts as a single attraction unit. It can contain flowers (florets)

with corollas of the same morphology (homogamous head) or a combination of several types of corollas (heterogamous head with disc and ray florets). The florets, arranged on the expanded receptacle, may display either actinomorphic or zygomorphic symmetry. The calyx is often replaced by a pappus of variable structure; which can be reduced or completely absent. The corollas have five petals fused at the base to form a corolla-tube. They can occur in various forms; the basic types are tubular, bilabiate, radiate and ligulate corollas, classified on the basis of the arrangement of the lobes. There are usually 5 stamens in sunflowers, featured by filaments inserted on the corolla-tube and by anthers united into a tube surrounding the style. The ovary is inferior and uni-locular, with one basal ovule. The fruit is single seeded, normally an achene or very rarely a drupe. It is often apically crowned by the persistent pappus, derived from the calyx, which assists in dispersal.

METHODOLOGY

Field explorations were conducted and processed by following standard Herbarium techniques. A check-list of the species from the area under study was prepared. The collected specimens were identified and medicinally important species were sorted out with the help of relevant literature. The information of medicinal uses was also gathered with the help local herbal-men and Vaidyas.

DESCRIPTION OF PLANTS

1. *Ageratum conyzoides* L. Sp. Pl. 839, 1753.

Common Names : Appo Grass, Goat weed, (Eng). Visadodi (H). Visamustin (S).

Erect annual hispid hairy herbs. *Fl. & Fr.*: Almost throughout the year.

Habitat: Very commonly found as a weed in waste localities, in cultivated fields, along the banks of canal, in fruit orchards and even in crevices of walls.

Parts used: Roots & Leaves.

Medicinal uses: Roots are acrid, digestive, thermogenic, appetiser, and ophthalmic; useful in *Kapha & Vata*, dyspepsia, ophthalmia, renal and vesical calculi. Leaves are styptic and antidiarrhetic; commonly used for haemorrhoids, wound and sores. Leaf poultice is good for boils and juice is used as a lotion for eyes.

Ethnobotanical usage: Antilithic for kidney stone, antiseptic, used in boils, burns, Cancers, diarrhoea, febrifuge, flatulence in colic, headache, leprosy, muscular pain, piles, prolepsis anus, ringworm, scabies, skin disease, swell body, uterine disorder, wounds.

2. *Blumea lacera* DC. in Wight, Contrib. 14. 1834.

Common Names: Janglimuli, Kakronda, Kukkurbanda (H).

Annual, with a strong odour of turpentine; *Fl. & Fr.*: Jan-May

Habitat: Common in wastelands especially near drains

Parts used: Whole, Plant.

Medicinal uses: Plants are pungent, bitter, and antipyretic; cures bronchitis, blood diseases, fevers, burning sensation, thirst. Roots kept in the mouth cures diseases of the mouth (in *Ayurveda*). Leaves juice is used as an anthelmintic, febrifuge, astringent, and diuretic; mixed with black pepper, given in bleeding piles. It is useful in liver disorder, abdominal disorder, and ophthalmia. Roots mixed with black pepper are given in cholera.

Ethnobotanical usage: Burns, cuts, wounds, bronchitis, fever, piles, knee injury, urine complaints.

3. *Calendula officinalis* L. Sp. P1. 921-1753.

Annuals, erect, hispidly pubescent; stem corymbosely branched above; *Fl. & Fr.*: Jan.-Apr.

Parts used: Leaves & Flowers

Habitat: Commonly grown as ornamentals in gardens and cultivated for medicinal purposes.

Medicinal usage: Leaves are considered resolvent and diaphoretic; flowers are stimulant, antispasmodic and emmenagogue. A decoction of the flowers is used as drink in measles and smallpox; and the expressed fresh juice proves a useful remedy in jaundice, and suppression of the mouthly flaw. The flowers if rubbed on any part recently stung by a bee or wasp will quickly relieve it.

4. *Carthamus tinctorius* L. Sp. P1. 830. 1753

Common Names: Safflower (Eng) Barre, Karrah, Kausmba, Kussum (H). Karha, Kusum (U)

Erect branching herbs, *Fl. & Fr.*: Feb.-April.

Habitat: Cultivated as winter season crops.

Parts used: Leaves, flowers & seeds.

Medicinal usage: Leaves are laxative, appetiser and diuretic; useful in diaorrhoea and ophthalmopathy. Flowers are bitter, liver tonic, diuretic, laxative, expectorant, sedative and emmenagogue; useful in strangury, leprosy, inflammations, boils, ringworm, scabies, leucoderma, haemorrhoids and bronchitis. Seeds are bitter, purgative, carminative, aphrodisiac, diuretic and tonic; useful in leucoderma, scabies, catarrh, pectoralgia, arthritis and constipations. Oil applied to sores and rheumatic swellings. Capsules are laxative and diaphoretic, used in janudice

5. *Centipeda minima* (L.) A. Br. & Aschers. Ind. Sem. Hort. Berol. App. 6. 1867.

Common Names : Nagdowana, Nakchhikni, Nakkchikni, Pachittie (H). Chhikkani, Chhikkika, Kruranasa, Kshavaka, kshavakrita, Sanvedanapatu, Tikshna, Ugra, Ugragandha (S).

Annuals, prostrate, glabrous or sparsely woolly herb. *Fl. & Fr.*: Nov-Mar.

Habitat: Frequently found in wet places.

Parts used: Leaves & Seeds

Medicinal uses : Leaves are sternutatory, expectorant, carminative, emetic, cathartic; enrich the blood, cure nose troubles, night blindness, sore throat, ear pain, amenorrhoea, leucoderm, scabies, ringworm pains in the joints, hiccough, lumbago; used in ozoena, inflammations. Oil is used in lumbago in *Yunani*. It is also considered a hot and dry medicine, useful in paralysis, pains in joints, and special diseases; also as a vermifuge. It is employed to cure the toothache. Crushed plant snuff in fevers and colds.

Ethnobotanical usage: Epilepsy, headache, influenza

6. *Centratherum anthelminticum* O. Ktze. Rev Gen.Pl. I, 320. 1870. *Vernonia anthelmintica* Willd Sp. P1. 3: 1634.1800.

Common Names: Purple Fleabane (Eng). Agnibija, Atavijiraka, Brihanyali, Kana, Kananjiraka, Krishnaphala, Kshudrapatra, Putiphali, Somraji, Tiktajiraka, Vakushi, (S). Janglijiri (U).

Annual, robust, erect, leafy; stems branched, pubescent. *Fl. & Fr.*: Oct-Nov

Habitat: Along roadsides. *Parts used:* Seeds & Leaves.

Medicinal uses: Seeds have a sharp, bitter taste; anthelmintic, purgative, tonic, stomachic, and diuretic; used for asthma, kidney troubles, applied in inflammatory swellings; good for sores and itching of the eyes; Bruised seeds are also given in anasarca and used for plasters for abscesses. Juice of leaf is given to cure phlegmatic discharges from the nostrils. Seeds are also administered in cases of intestinal colic and dysuria; also used for leucoderma, psoriasis, and

other skin affections. Powdered seeds with castor oil have considerable anthelmintic properties (round worm).

Ethnobotanical usage: used in Bone-ache facilitates child birth, fever, malaria, skin diseases.

7.Echinops echinatus Roxb. Fl. Ind. 3: 447. 1832.

Common Names: Gokru (H). Kantalu, Kantaphala, Mukhadantarujapaha, Raktapushpa, Shrigala, Shunakashana, Tikshnagra, Ushtrakanta, Utkantaka, Utkatotkata, Vrittaguchha (S).

Much-branched, spreading, rigid, white-woolly, annual herbs. *Fl. & Fr.:* Jan.-June.

Habitat: Commonly found in waste places. *Parts used:* Entire Plant

Medicinal usage: Plants are pungent, bitter, and hot; cures “Kapha” and “vata” used in strangury, biliousness, urinary discharges, thirst, diseases of heart. Roots are abortifacient, aphrodisiac. Seeds are sweet; cooling, aphrodisiac. Roots are powdered and mixed with *Acacia* gum and applied to the hair to destroy lice; also the powdered roots are applied to wounds in cattle to destroy maggots.

Ethnobotanical usage: Bone-ache, facilitates child birth, fever, malaria, skin diseases.

8.Eclipta prostrata L. Mant. 286, 177; . *Eclipta erecta* L. Mant. 286, 1771. *E. alba* Hassk. Pl. Jav Rar. 528, 1848.

Common Names : Trailing ectipta (Eng). Babri, Bhangra, Mochkand (H). Ajagara, Angaraka, Bhringa, Bhringaraja, Ekaraja, Karanjaka, Kesharaja, Mahabhringa, Mahanila, Markava, Nagamara, Nilapushpa, Pankajata, Pararu, Patanga, Pitripriya, Rangaka, Shyamala, Sunilaka (S). Erect or prostrate, rough, annual herbs. *Fl. & Fr.:* Throughout the year.

Habitat: Commonly found in open pastures, wet places, along water channels and rice fields; when it is found merged in water; long roots at the nodes arise; at hard and dry places, it becomes prostrate and when present in wet and shady places it is usually found erect.

Parts used: Whole plant.

Medicinal usage: Plants are, anti-inflammatory, anthelmintic, vulnerary, ophthalmic, digestive, carminative, diuretic, aphrodisiac, febrifuge; useful in elephantiasis, inflammations, gastropathy, anorexia, helminthiasis, skin diseases, wounds, ulcers, hypertension, strangury, leprosy, fever, jaundice and cephalgia. It is a good hair tonic; used for blackening of hairs. Seeds are good for increasing sexual vigour.

Ethnobotanical usage: Antidote to snake bite, antifertility, asthma, bronchitis, carbuncle, elephantiasis, eye troubles, conjunctivitis, fever, gastric, gland swelling, headache, hepatic diseases, etching, jaundice, leucoderma, liver complaints, malaria, promotes hair growth, scorpion sting, skin diseases, sores, spleen enlargement, tonic, toothache, ulcer, wounds.

9.Elephantopus scaber L. Sp. Pl. 814. 1753.

Common Names: Prickly-leaved Elephant’s Foot (Eng), Hastipadi, Gojihava (S).

Erect, rigid herbs, leaves mostly radical. *Fl. & Fr.:* Sep.-Dec.

Habitat: Plants have been commonly found growing in fruit orchards, preferably in mango orchards.

Parts used: Roots, leaves & flowers.

Medicinal usage: Plants are bitter, acrid, astringent, antipyretic constipating, diuretic and tonic. decoction of roots and leaves are given in dysuria, intermittent fevers, diarrhoea and bronchitis. Root decoction is specific for haemorrhoids and a paste made of leaves is very specific for skin diseases. Flowers are astringent, bitter, sweet, ophthalmic and expectorant.

Ethnobotanical usage : Abortifacient, amoebic dysentery, blood dysentery, cough, cuts, debility of children, dropsy, facilitate child birth, fever, filaria, gonorrhoea, headache, heart disease,

inflammation, liver complaints, pimple, post natal complaints, rheumatism, swelling, stomachache, tooth worms, tetanus, urine complaint, vomiting, wounds.

10. Emilia sonchifolia (L.) DC. in Wt. Contr. 24. 1834. *Cacalia sonchifolia* L. Sp. P1. 835. 1753.
Common Names: Sarasruth (S). Hiranakhuri (H).

Erect or rarely diffuse herbs. Stems often rooting at the nodes. *Fl. & Fr.:* Oct.-Jan.

Habitat: Usually found in wet places and also in rice fields.

Parts used: Whole Plant.

Medicinal usage: Plants are astringent, antipyretic, ophthalmic, anti-asthmatic; useful in gastropathy, diarrhoea, nyctalopia, cuts & wounds and intermittent fevers and asthma. Decoction of plant is febrifuge; mixed with sugar it is given in bowel complaints. Pure juice of leaves is poured drop by drop into the eyes in night-blindness and eye inflammations. Leaves are used to cure sore throat.

Ethnobotanical usage: Boils, bowel complaints, bruises, diarrhoea, eye diseases, inflammation, cataract, night blindness, wounds.

11. Helianthus annuus L. Sp. P1. 904. 1753.

Common Names : Lady Eleven Clock, Marigold of Peru, Sunflower (Eng). Hurhuja, Surajmukhi (H). Adityabhakta, Suryamukhi, Suryavarta, Suvarchala (S).

Annual plants, markedly pubescent. *Fl. & Fr.:* Dec-March.

Habitat: Cultivated in gardens

Parts used: Leaves, roots flowers & seeds.

Medicinal usage : Flowers are pungent and hot; anthelmintic; antiperiodic, cures “*kapha*” skin disease, itching, ulcers, leprosy, hysteria, fever, biliousness, asthma, bronchitis, urinary discharges; anaemia; Decoction of root strengthens teeth and cures toothache. Leaves are emetic; applied in lumbar pain. Flowers have a bitter bad taste; tonic, emmenagogue, aphrodisiac; lessen inflammations; given in insanity; applied in complaints of chest, liver, lungs; used in piles, ophthalmia, cure diseases of kidney. Seeds are diuretic and expectorant. Drug has successfully been used in bronchial, and pulmonary affections, coughs and colds.

Ethnobotanical usage: Bone fracture, carbuncle, colic, diarrhoea, dysentery, dysuria, eye complaints, fever, menorrhagia, nose bleeding post-natal, scorpion sting, snake bite, sores spleen complaints wounds, toothache.

12. Sonchus oleraceus L. Sp. P1. 794. 1753.

Common Names: Milk Thistle, Du Tistel, Hare’s Lettuce, Hare’s Palace, Hare’s Thistle, Milk Weed, Milk Thistle, Sow Thistle, Sprout Thistle, Turn Sole(Eng), Didhi (H).

Erect annual, glabrous or sparsely glandular-hispid herbs. *Fl. & Fr.:* Jan.-Apl.

Habitat: Commonly found in waste localities and also as a weed of gardens and crop fields.

Parts used: Roots & leaves.

Medicinal usage : hydragogue cathartic and acts powerfully upon liver, duodenum, and colon. An infusion of roots and leaves are used as a tonic and febrifuge. Plant is used for cleansing and healing ulcers.

Ethnobotanical usage: Febrifuge, used in jaundice, galactagogue, liver complaints

13. Sphaeranthus indicus L. Sp. P1 927, 1753. *S. mollis* Roxb. Hort. Beng. 62, 1814 *non. nud.* *S. hirtus* Willd. Sp. P1. 3:2395, 1804.

Common Names : Gorakmundi, Mundi (H). Alambusha, Aruna, Avyatha, Bhikshu, Bhukadambika, Bhutaghni, Boda, Kadambapushpa, Krodachuda, Kumbhala, Lotani, Mata, Mundi, Parivraji, Shravani, Tapasvini, Vikacha, Vridha (S).

Viscous, pubescent, much-branched, annual herbs, *Fl. & Fr.:* Nov-Apl.

Habitat: Frequently found in wet places mostly in rice fields.

Parts used: Whole plant

Medicinal usage: Herbs are tonic, laxative, emmenagogue; increases appetite; enriches blood, lessens inflammation; cools brain and gives lustre to eye; good for sore eyes jaundice, scalding of urine, biliousness, boils, scabies ringworm of waist, diseases of chest. Oil from the root is aphrodisiac, used in prolapsus ani. Root and seeds are considered as anthelmintic. Barks ground and mixed with whey, is a valuable remedy for piles.

Ethnobotanical uses: Anthelmintic, blood purifier, cough, eye diseases, fever, gastric diseases, headache, indigestion, jaundice, madness, hysteria, malaria, piles, tonic, tumour.

14. *Spilanthes acmella* Murr. Syst. veg. ed. 13. 610. 1774.

Annual, erect or ascending; stem and branches more or less hairy. *Fl. & Fr.:* Nov-Jan

Habitat: In moist shaded places.

Parts used: Flower- heads

Medicinal usage: Flower-heads are the most pungent part; chewed to relieve toothache, which they do by producing redness of the gums and salivation. Plant is sometimes administered to women after childbirth.

Ethnobotanical usage: Anaesthetic, cold, cough, diarrhoea, dysentery, scabies, toothache.

15. *Tagetes erecta* L. Sp. Pl. 887. 1753.

Common Names : French Marigold (Eng). Genda, Gulatora, Kalaga, Lalamuraga, Makhamali (H). Sthulapushpa, Zandu, Zanduga (S).

Hardy annual, growing upto 60 cm high, erect, branched. *Fl. & Fr.:* Nov-March

Habitat: Grown in gardens

Parts used: Leaves & Flowers

Medicinal usage: Leaves are good for piles, kidney troubles, muscular pain; their juice is used for earache and ophthalmia. Flower is bitter; astringent, carminative, stomachic; good for teeth and gums; lessens inflammations; useful in scabies, belching, scorpion and snake poisoning, liver complaints, bleeding piles. Leaves are used as an application to boils and carbuncles; their juice is given in earache. Flowers are used in diseases of the eyes; unhealthy ulcers, blood purifier and their juice given for bleeding piles.

Ethnobotanical usage: Earache, urine complaint, cuts, wounds.

Note : Indian flower contains the pigment-*quercetagenin*.

16. *Vernonia cinerea* L. in Linnaea 4:291, 1829 & 6:273, 1831. *Conyza cinerea* Sp. Pl. 862, 1753.

Common Names: Ash-coloured, Fleabane (Eng), Dandotpala, Sahadevi, Sadodi, Sadori (H), Dandotpala, Devasasha, Devika, Gandhavalli, Govandani (S).

Erect or somewhat decumbent branched herbs, *Fl. & Fr.:* Almost major part of year.(Aug-May)

Habitat: Commonly found on wet or dry places.

Parts used: Entire Plant

Medicinal usage: Plant decoction is used to promote perspiration in febrile conditions. Juice is given in piles. Seeds are employed as an alexipharmic and anthelmintic, and as a constituent of *masalas* for horses. Whole plant is given as a remedy for spasm of the bladder and strangury; flowers are administered for conjunctivitis; the root is given in dropsy.

Ethnobotanical usage: Cholera, dysentery, constipation, fever, impotency. Lactation, leucorrhoea, malaria, night blindness, piles, skin diseases, threadwounds, spleen complaints, wounds.

17. *Xanthium strumarium* L. Sp. Pl. 987. 1753

Common Names : Arishta, Bhulagna, Chandra, Itara, Kambumalini, Kambupuspha, Kiriti, Malavinashini, Medhya, Pitapushpi, Raktapushpi, Sarpakshi, Shankhagalini, Shankhacusuma, Supushpi, Vanamalini (S). Bur-weed lothur, Cocklebur (Eng). Banokra Lapatua, Chhotagokhru, Shankhahuli (H).

Scabrous, erect, unarmed herbs or undershrubs. *Fl. & Fr.*: Sep.-June.

Habitat: Abundantly found in waste places along the railway tracts and on road-sides.

Parts used: Whole Plant

Medicinal usage: Fruits are cooling, demulcent; given in small pox. Seeds contain glucoside xanthostrumarin, oxalic acid. Plant are cooling, laxative, fattening, antilemantic, alexiteric, alterative, tonic, digestive, antipyretic; improves appetite, voice, complexion, memory; cures leucoderma, biliousness, poisonous bites from insects, epilepsy, salivation, fever; good in diseases of teeth in children. Roots are bitter tonic, useful in cancer and tumorous disease. Prickly fruit is considered cooling and demulcent and is given in small-pox.

Ethnobotanical usage: Boils, cancer wounds, eye diseases, headache, herpes, malaria, piles, rheumatism, ringworm, toothache, ulcers, urine complaints.

DISCUSSION AND CONCLUSION

Present work is aimed to serve the purpose of an inventory of the drug plant wealth of the state. The study has revealed that a total number of 40 species of Asteracious plants, in which 17 species have been found to be of medicinal use. These species contain valuable chemical substances and are useful to cure various human ailments. Moreover, the detailed phytochemical screenings of some medicinal herbs are still required.

Globally, there is an increasing interest of herbal usages in the lively hood set-ups. Plants based drugs are safe and has no side affect. The toxicities associated with synthetic medicines have been realized by people in recent years. Due to this, the demand of medicinal and aromatic plants is increasing steeply day by day. This leads to unsustainable exploitation of natural resources by the growing population. Therefore it is essential to conserve these species before extinction by way of their cultivation and stopping wide extraction from the forest area. Public awareness programme should be intensified. Botanists should discharge their duty in building up the public opinion in favour of conservation of the biodiversity of the state and country.

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