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ETHNOBOTANICAL AND THERAPEUTIC IMPORTANCE OF SACRED PLANTS OF TERAI REGION OF GORAKHPUR DIVISION

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ABSTRACT

Plants play a major role in the religious and spiritual beliefs all over the world apart from its therapeutic potential. The sacred plants are worshipped throughout India owing to its mythological significance and are recognized by diverse cultures in different ways encoding various rules for their protection. The association of medicinal plants and indigenous knowledge of local people has made the two traditionally, ecologically and economically inseparable. An attempt has been made to identify folklore medicinally important plants which are frequently used by local people of Terai region of Gorakhpur division.

KEYWORDS: Ethnobotanical, medicinal importance, religious, Terai.

INTRODUCTION

India has a very rich biodiversity, unique physical and ethnic diversity, traditional culture, and much indigenous knowledge or tribal wisdom. [1] India is ranked sixth among the 12 mega biodiversity countries of the world. Over 47,000 species of plants have been recovered by the Botanical Survey of India, (2003).

Ethno medicine is the mother of all other systems of medicine such as Ayurveda, Siddha, Unani, Nature cure and even modern medicine. According to the All India Ethno-biology Survey conducted by the Ministry of Environment and Forests (MoEF, 2006), [2] there are more than 7,500 species of plants that are being used by 4,635 ethnic communities for human and veterinary health care across the country. WHO estimate, about 80% of the population in developing countries depends directly on plants for its medication. [3]

Man is using plants in various ways since existence of his life on the earth. They use it in many ways including worshipping, astrological practices and for the protection and betterment of human life.[4] People rendered divine honour and worship trees and plants. The main reason for associating plants with religious rites and beliefs was probably for conservation or we can say that it was the hidden concept of conservation of plant biodiversity.

The Terai landscape of north-eastern Uttar Pradesh (UP) constitutes a mosaic of human habitation, natural and semi-natural vegetation comprising grasslands and forests. The native communities also show great diversity in having religious and ethnic knowledge. High human density and resultant pressure on plant resources and habitats have pushed many species towards rarity and local extinction. The unique traditional cultures and indigenous knowledge are also depleting gradually due to urbanization, industrialization and other socioeconomic developments.

The ethnomedicinal plant wisdom as a part of indigenous knowledge plays a vital role in the primary healthcare of people. [5] It has the potential for isolation of safe and effective drugs and for sustainable utilization of ethnomedicinal plant genetic resources (PGR) and their conservation is highly needed. [6] In this paper some of the plant species which have ethno medicinal importance by the local people are discussed.

MATERIAL AND METHODS

Study area and Vegetations

The study area is situated in Eastern part of Uttar Pradesh between latitude of 27º05' to 27º25' North and longitude of 83º20' to 84º10' East. The division comprises Maharajganj, Gorakhpur, Kushinagar and Deoria districts. The soil of this area is gangatic alluvial brought down by rivers like Ghaghara, Rapti, Rohin and Gandak from the Himalayas. The Gorakhpur Division is a Terai region (Fig 1.) has dense forest covers close to the foothills of Himalayas. All the forests of Gorakhpur Division including Achalgarh, Banki, Campierganj, Chowk, Kushmahawa, Kushmahi, Lehradevi, Madanpur (out of Gorakhpur Division), Madhualia, Nichlaul, Pakari, Tehrighat and Tilkonia are rich in species composition of higher plants.

Methods

The study area and indigenous communities were surveyed in different seasons during 2010 to 2013. The information on uses of Ethno-medicinal plants was gathered with the help of local people, knowledgeable and experienced traditional healers and practitioners and confirmed through visits to different localities and recorded.

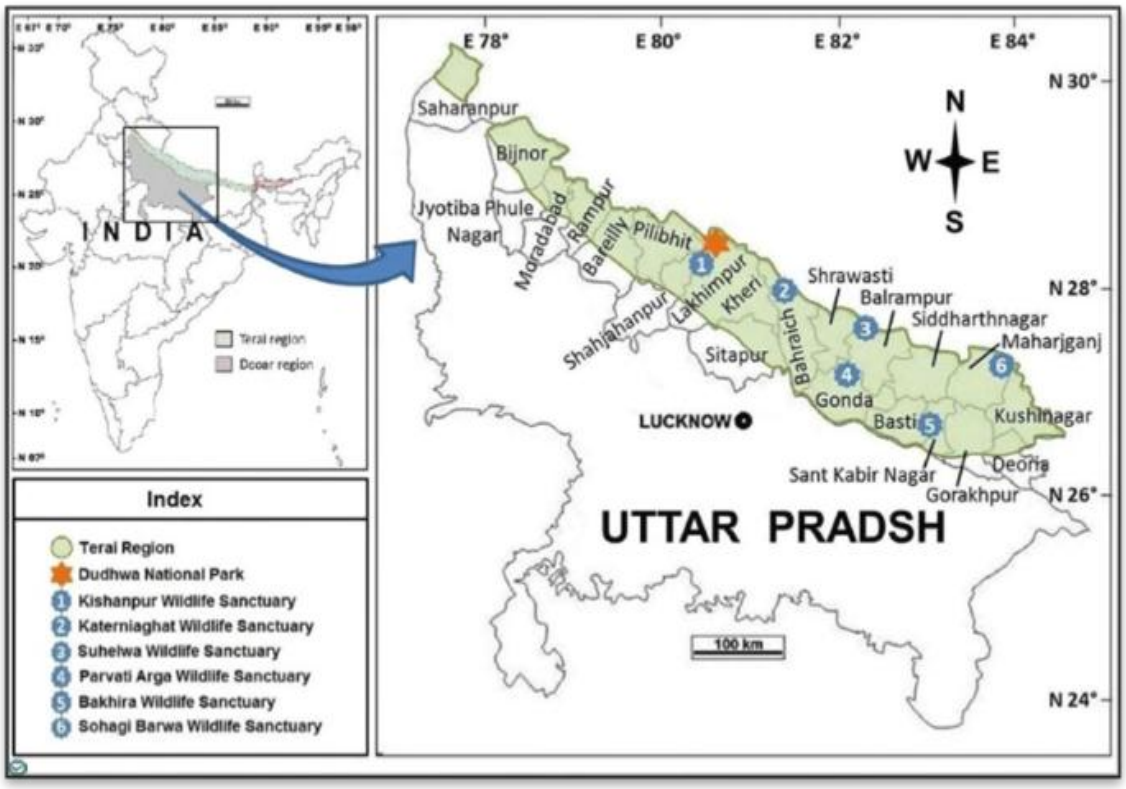


Fig-1 Study area

RESULTS

Present works deals with identify folklore medicinally important plants in this region. A total of eleven genera are enumerated.

1. *Boerhaavia diffusa* L.

Family- Nyctaginaceae (Fig-2)

Local name- Punarnava; Sanskrit- Rakt Punarnava, Shothaghni; English- Hogweed

Sacred value- The herb is pungent, bitter, and laxative and considered a great liver tonic. It shows magical effects in hepatic disorders and cures ulcers. Roots are used as diuretic and highly valued by healers. [7]

"Punernavavruna Tikta Katupaka himalaghu,
Vatala Grahini shlempittarakta Vinashini.
Katukashayanurasa Pandughani Dipani Sir,
Shophanilgarshleshmehri Varnayodarpranut."

Pharmacological property- Root produces rejuvenating drug. The root extract has significant antioxidant activity due to presence of alkaloids, flavonoids and steroids. The alkaloid fraction of the root has evidenced a dramatic effect in reducing elevated levels of cortisol under stressful conditions. It is very helpful in curing cardio-vascular ailments. The alkaloid fraction *punarnavine* stimulates action of heart and kidney. [8]

2. *Calotropis procera* (Ait) R.Br

Family- Asclepiadaceae (Fig-3)

Local name- Madar, Ark; Sanskrit- Arka; English- Roostertree, Calotropis.

Sacred value- It is a plant of "Nav-grahavatika" where it represents the planet sun. Leaves are used in sacrificed rites. The flowers are used in the worship of Lord Shiva and Hanuman. The twigs are used as a substitute for tooth brushes in the Smritisar Granth. The twigs are also employed in sacred fires as Samidhas (Hawan).

"***Ashmantakh kshayastu Himah Pittakaphapah,***
Kashayah shitsangrahi dahtrikshana-mehjit"

Pharmacological property: It contains Calotropagenin , Calotropin ,Uscharin, Calotoxin, and Gigantin and highly toxic alkaloids. [9] The latex is reported to contain cardiac steroid glycosides. The extract is bacteriolytic. The dry latex possesses potent anti-inflammatory activity and exhibits antioxidant and antihyperglycemic effects. [10] The powdered root promotes gastric secretion and is useful in asthma, bronchitis and dyspepsia.

3. *Emblica officinalis* Gaertn

Family-Euphorbiaceae (Fig-4)

Local Name- Amla, Aonla; Sanskrit- Amlaki; English- Indian Gooseberry.
Sacred value- It is worshipped by the women folk on Amla navmi in the month of Kartik, during which taking food under this tree is considered auspicious. The tree is also worshipped in Vrat-Kaumudi. Powdered fruits of *Emblica* with *Terminalia chebula* and *Terminalia bellirica* are taken in equal proportion (known as 'triphala) with warm water or milk acts a mild laxative. Triphala soaked in water and used for washing eyes. It is also a main constituent of 'Chyawamprasha', 'Brahmarasayana'. [11]

"***Amlakam Kashayamlam Madhuram Shishiram Laghu,***
Dahpittavahimeh shophghnam ch Rasayanam.
Katumadhurakashayam Kinchidamlam Kaphghnam,
Ruchikar matishitam Hanti Pittastratapam."

Pharmacological property: Presence of high amount of Vitamin-C. It contains polyphenolic compound, 1, 3, 6 - trigalloylglucose, terchebin, corilagin, ellagic and phyllenbic acids. Phyllantidine and phyllantin are alkaloid content. It has great antioxidant and hypolipidemic property. The fresh fruit is refrigerant, tonic, diuretic and laxative. It has antibacterial, expectorant, cardiotonic, antipyretic and resistance building properties and used in the treatment of arteriosclerosis. [12]

4. *Ficus benghalensis* L.
Family- Moraceae (Fig-5)
Local name- Vat, Bargad; Sanskrit- Vata; English- Banyan.

Sacred value-It is considered as holy and divine plant. Hindus ladies worship it for the long life of their husband in Vat- Savitri vrat. The tree is called Kalpavriksha, the tree that provides fulfillment of wishes and other material gains. It symbolizes Trimurti –

"Mule Brahma, Twacha Vishnu, Shakhayam Tu Shankarah
Patte patte devanam, Vriksha shreshth Namastubhyam"

Lord Vishnu is believed to be the bark, Lord Brahma the roots, and Lord Shiva the branches. It is mentioned in many scriptures as the tree of immortality. Its aerial root grows down into the soil forming additional trunks and is therefore called Bahupada, the one with several feet. It symbolizes longevity. This tree is also sacred to the **Buddhists**. After attaining enlightenment, Lord Buddha is believed to have sat under a Banyan tree for seven days, absorbed in his new-found realization. In Geeta (10.26), Lord Krishna compared himself to 'Vat Vriksha' – "Off all the trees, I am Vat", symbolizing the eternity of God and nature.

Pharmacological property-The leaf buds of Banyan are beneficial in the treatment of chronic dysentery. The bark and leaf buds of the tree are useful in arresting secretion or bleeding. The latex is commonly used locally for rheumatism, pain and lumbago. The fruit is mild purgative. Concoction of its bark has antidiabetic activity.

5. ***Gloriosa superba*** L.
Family- Colchicaceae (Fig-6)
Local name- kalihari; Sanskrit-Langali, Agnishikha; English- Flame Lily

Sacred Value- It has great indigenous use. The plant is highly poisonous and thus used since ancient time as arrow poison. The rhizome can cause abortion and also used in treating snake bites and scorpion stings. The flowers are used in many rituals.

"Katu- tiktha- Kashaya rasa. Katu vipaka, ushna veerya.
***Katu vipaka, Garbhashaya. Sankochaka, krimighana ch*.**"**
Pharmacological property- Whole plant has high level of toxicity. It has toxic alkaloids Colchicine and Gloriocine. Rhizomes have anti-helminthic property. It is used in uterine contraction, Leucorrhoea and cardiotoxicity. It has shown potential in treating ulcers, piles and wounds. [13]

6. *Ipomoea aquatica* Forsk
Family- Convolvulaceae (Fig-7)
Local name-Karmua, Kalmi saag; Sanskrit-Nalika, Lakshmana; English-Water Spinach

Sacred Value- This plant has special importance while celebrating the birthday of Lord Balaram on the 'Hal shashti Vrat' (Lalahi chathh). Hindu women observe fasting and later eat cooked leaves of *Ipomoea* (Karmua saag) for better health of their children on this Vrat.

In **Christian** religion also many ritual incorporates this plant and it has been given names as 'Seeds of the Virgin', 'Holy Mary Herb' or 'The Virgin's Cloak', demonstrating the syncretism with the Christian traditions and considered a gift from God. [14]

This herb has been considered a great nutraceutical plant from ancient times. It has been considered a good laxative and very effective in sleeplessness, headache and has antimicrobial properties. It is very rich in minerals like Iron (Fe), Magnesium (Mg) and Zinc (Zn).

"Nalika Krimi, vatajandara, Tikta.
Arsha, sulaghni, malasodhni, madhuravipaka"
Pharmacological property– *Ipomoea* is considered a natural herb for treatment of various ailments because of the rich source of vitamins, minerals, flavonoids and alkaloids. Glycosides, prostaglandin, leukotriene and various amino acids are also present in the plant. The

extract of stem has radical scavenging activity and great antioxidant property (Di-Hydro Quercetin α –D glycopyranoside;DHQG), owing to its inhibition HIV-infection property.

7. *Prosopis cineraria* L.
Family- Mimosaceae (Fig-8)
Local name- Shami, Khejari, Saangri; Sanskrit- Shami; English- Indian Mesoquite, Spunge Tree.

Sacred Value- It is considered a very auspicious tree. In Hindu epics, the Ramayana and Mahabharata, mention the usefulness and significance of this tree. Lord Rama worshipped Khejari tree, before he led his army to kill Ravana, referred as 'Shami Puja'. Pandavas also worshipped this tree and hid their weapons in it during 'Agyatavasa'.

As per **astrology** Shami tree is associated with planet Saturn or 'Shani' and hence worshipped to please Shani Dev. Shani Amavasya is considered a very auspicious day to worship this plant and get rid of problems in life. It is also used to kindle the sacred fire for performing a 'yajana'. *Prosopis* is the Golden tree of Indian Desert and plays a vital role in preserving ecosystem. Since all parts of the tree is useful, it is called-'Wonder Tree' or 'Kalp Taru'. The conservation of Khejari tree is a religious tenet of Bishnoi community of Rajasthan.
"Shammi Ruksha Kshaya ch Raktpittatisarjit. Tatphalam tu Guru swadu Tikta-Ushnam Keshashnam"
Pharmacological property- It is rich in Posogerine, Flavone glycosides, potassium salts, stigmasterols, Ursolic acids, various amino acids, alkaloids and saponins. It is folk remedy for ailments like leprosy and snake bites. The smoke of leaves is considered good for eye troubles.The bark of the tree is cooling, anthelmintic, cures bronchitis, asthma and muscle tremors.[15]

8. *Sida cordifolia L.*
Family- Malvaceae (Fig-9)
Local name- Bariyar; Sanskrit- Bala, Sitapaki; English- Country mallow.

Sacred value- *Sida* is worshipped by the women folk on 'Jutiya Vrat'in Krishna-Paksha of Ashvin month and is considered auspicious for the long life of children. It is celebrated mainly in Bihar, Jharkhand and Uttar Pradesh states of India and Nepal.[16]

"Hrudroga, Vatarsha, sophanasini, Tikta. Sukrabrundhikari, Balya Visamajwarahrani."

Pharmacological property- *Sida* is rich in ephedrine, norpseudoephidrine (PPA), Phytosterols, alkaloids like vasicine and vasicinol. Ephidrine can be extracted from whole plant (0.085%).This chemical is associated with weight loss and it is a potent bronchodialator. It has diuretic property and also used in the treatment of leucorrhoea, rheumatism and gonorrhoea. [17] *Sida* extract are showing potential in the treatment of cardiovascular ailments and it also affects the Central Nervous system (CNS).

9. *Tinospora cordifolia* (willd) Miers.
Family- Menispermaceae (Fig-10)
Local name- Guduchi, Amrita, Giloy; Sanskrit-Amrita; English- Heartleaf moonseed, Gulancha tinospora.

Sacred value- 'Guduchi' i.e. 'The one who protects the body.' The name Amrita is derived from ancient scriptures, used to bring the dead back to life and keep Gods from growing ill and old. It is also referred as nectar of immortality and heavenly elixir. It is used in ayurvedic preparations for heart diseases and fever. The leaves taken with honey are applied to ulcers and useful in kidney ailments. It is known to stimulate immunity of body. [18]

"Guduchi Katuka Tikta Swadupaka rasayani, Sangrahini Kashayoshna laghvi balya-agnidipni, Jwarkrimi haret ch."

Pharmacological property- It has tinosporic acid, cordiofolioside and various biologically active compounds including alkaloids, diterpenoid lactones and phenolics. It is also the source of novel antibiotics. It has great antimicrobial and anti-inflammatory property. Decoction of Giloy taken with papaya leaves is very beneficial in Dengue fever. It increases the platelet count and pacifies the fever. It also has anticancerous and anti-tumor activity. It has antineoplastic agent which increases the total white blood cell count significantly. It has anti-stress activity similar to diazepam drug (2-5 mg). *Tinospor*a is also showing positive results in Breast cancer treatments.

10. *Terminalia arjuna(* Roxb) W&A.
Family- Combretaceae (Fig-11)
Local name- Arjuna; Sanskrit-Arjuna, kakubha; English-White Myrobalan, Arjun tree.

Sacred value- Arjuna is one of the sacred trees of India. It has acquired the social and religious sanctity with the passage of time. The leaves and flowers are offered to Lord Vishnu and Lord Ganapati on several religious occasions. This tree has been used in India for more than 3000 years as heart remedy. Vagbhatta first used this product for heart ailments in the 7th century A.D. In Astrology Arjun tree is associated to Swati star (Arcturus), hence it is believed those born under swati nakshatra should worship Arjun tree. [19]

"Raktastambhana, Sandhaneeya, Hridayottejaka, Jwaraghna, Medohara Vishaghana, Balya."

Pharmacological property- It contains Arjunone, Arachidic stearate, glycosides, flavonoids, ellagic acid, tannins, triterpenoids, Coenzyme-Q10 and alkaloids. It reduces hypertension, cholesterol levels and very helpful

in cardiac disorders. Reduces angina pain and has excellent anti-oxidant property. It also contains anti-bacterial and anti-fungal activities. Home-remedies of bark of Arjuna are used for healing fractures quickly.[20]

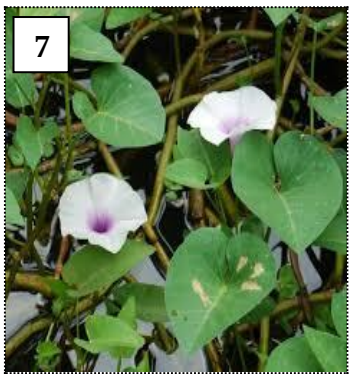
11. *Withania somnifera*
Family- Solanaceae (Fig-12)
Local name: Ashwagandha; Sanskrit name: Asvagandha, Balada; English: Vegetable rennet.

Sacred value: In ayurveda Ashwagandha is considered a 'Rasayana herb' and considered an adaptogen. *Withania* in Sanskrit means "Horses smell" probably originating from the odor of its root which resembles that of a sweaty horse. The species name *somnifera* means "sleep making" in Latin, indicating its sedating properties. Traditionally Ashwagandha was used in the treatment of Arthritis.

"Ashwagandha Katushna syatikta Ch. Madhgandhika, Balya Vathara Hanti Kasshwasakshayvranan. Ashwgandhanilshleyshmashvithr Shothakshayyapha, Balya Rasayni Tikta Kashayoshna-atishukrlaa."

Pharmacological property- Roots contain several pyrazole alkaloids.Withasomnine, steroidal lactones, withaferin A and withanolides. They also contain starch, reducing sugars, hentriacontane, glycosides, dulcitol, and withaniol. It increases muscular endurance and helps in building up of stamina.[21]

Revitalizes body and decreases untimely fatigue caused due to weakness or accumulation of negative energies in the body. It produces an anti-depressant and anti-anxiety effect in rodents comparable to the anti-depressant drug Imipramine and anti-anxiety drug Lorazepam. It has been found to be an excellent supplement for strengthening heart muscles and in case of irregular heart-beat. [22]



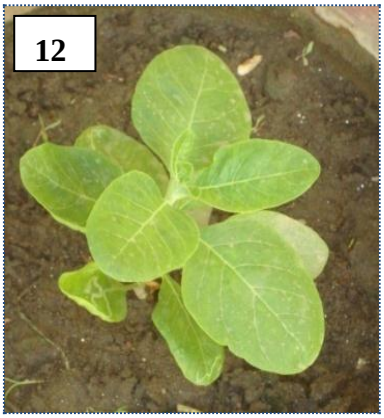


Fig2- ***Boerhaavia diffusa*****, Fig3-*****Calotropis procera*****, Fig4-*****Emblica officinalis*****, Fig5-** ***Ficus sp*****, Fig6-** ***Gloriosa superb*****a, Fig7-** ***Ipomoea aquatica*****, Fig8-** ***Prosopis cineraria*****, Fig9-*****Sida sp*****, Fig10-** ***Tinospora cordifolia,,***
Fig11- ***Terminalia arjuna*****, Fig-12-** ***Withania somnifera***

CONCLUSION

Traditional system of medical practices and conservation of biodiversity through traditional ceremonial and religious functions are among the most valuable and precious gifts of the Indians to the humanity. We need to have strong governmental policies and legislation for conservation of medicinal plant biodiversity *in-situ* and *ex-situ* for sustainable utilization in health care and human welfare. Systematically more attempts should be done to study and document the medicinal plants of the Terai region of Gorakhpur. There is an urgent need to establish herbal drug centers for collecting, processing and preparation of ethno-medicine and to develop cultivation, farming and documentation of potential and promising ethnomedicinal plants in social forestry operation for improving the life and economy of the local and rural people.

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