



## Original Research Article

# Diversity and distribution of ethnomedicinal flora for conjunctivitis from Lucknow Uttar Pradesh, India

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## A B S T R A C T

### Keywords

Ethnomedicinal plants,  
Conjunctivitis,  
Tarai forest,  
Tribe

The aim of the study is to document the traditional indigenous knowledge of local inhabitants based on oral tradition and vanishing from the use of native medicinal plants and herbs which are being utilized by the people for the treatment of conjunctivitis and other ailments. The method adopted for documentation was based on questionnaire, consisting of semi structured interviews employing a check list of questions and direct observation. The present report elucidates a rich and unique profile of phytodiversity of the research area surveyed with 68 plant species which belong to 61 genera and 45 families. Phytochemical and clinical investigations of these plants are desirable for more useful and interesting results.

## Introduction

India has the largest concentration of tribal population in the world. Uttar Pradesh is a tribal populated state, a total of approximate thirty tribals are occurred. Tribal people have traditional knowledge of plant species used for different purposes such as food, beverages, colours, resins, gums and medicine. This knowledge was even passed through generation to generation and played an important role in the conservation and sustainable use of biodiversity. They also have knowledge about in situ conservation of numerous plant resources in the form of sacred groves Plant-based traditional medical systems continue to Plant-based traditional medical systems continue to quarters of the world's populace. The World Health Organization has estimated that over 80% of the global populations rely chiefly on traditional medicine.

Around 2,000 species are documented in Indian systems of medicine like Ayurveda, Unani and Siddha. The all India ethanobotany survey estimated that over 7,000 plant species are used by 4,539 ethnic communities for human and veterinary care across the country. About 80% of population in developing countries depends directly on plants for medicines according to WHO (Pareek, 1996; Mukhopadhyay, 1998). The knowledge of these indigenous drugs has come through generations verbally is the main subject of ethonobotany (Dhiman and Khanna, 2001). Ethanobotany can be defined as the total natural and traditional relationship and interactions between man and his surrounding local environment (Martin, 2001). Use of plants based drugs and chemicals for curing various ailments and personal adornment is as old as human

cultivation (Yadav and Khan, 2012, Jain *et al.* 2010, Singh and Sharma, 2011, Jain and Kadal, 2008; Kadel *et al.*, 2011).

The Lucknow districts comes under the capital of Uttar Pradesh, India contain rich forests. Proper documentation of ethnomedicinal information collected from these Gond and other tribal's of the forests will be an addition to our knowledge on ethnomedicinal plants of the country and will be useful in formulations of different plant based drugs for the treatment of human diseases.

Therefore, the present study was undertaken to document the ethnomedicinal knowledge of Lucknow districts and used for treatment of different human diseases and most of the information of ethnomedicinal plants are scattered in a number of publication and so far a complete account of ethnomedicinal plant is not available. In view of this, the present work was undertaken to explore and collect the ethnomedicinal plants used for the treatment of conjunctivitis by local people and others of the area.

## Materials and Methods

Frequent field trips in different seasons were arranged in order to collect information about the ethnomedicinal uses of plants by the local people from January 2011 to December 2012. The specimens were collected, pressed, dried, preserved, mounted and identified through the available taxonomic literature, manuals and floras (Hooker, 1872–1897; Jain and Rao 1976; Jain, 2003).

The specimens were deposited in the herbarium maintained by the Department of Life Science in Singhania University. The data taken in the field was transferred to the slip pasted on the herbarium sheets.

## Results and Discussion

The data on ethnomedicinal 68 plant species belonging to 61 genera and 45 families were collected in different season. Information regarding their botanical name, vernacular name, family, parts used in ethnomedicinal use is enumerated below here.

Herbal medicine, their pharmacognostic characterisation and their uses are actually the cultural assets alive and preserved in the remote cut - off areas like North Western Tarai region which has a diverse flora having nearly more than nine hundred species of higher plants. A large number of species are being used as medicinal and aromatic plants. In India more than 80 % of the people belonging to the rural areas still depend upon herbal medicines specially to prevent abortion, achieve easy delivery, eye, gastric and respiratory problems, fever, antidote for snake and scorpion bites, sunstroke, arthritis, rheumatism, hydrocoel, toothache, body ache, cough, dysentery, jaundice, to induce sleep, enhance sexual power and cure sexual diseases. In recent years, more efforts have been made to document the traditional knowledge.

The author believes that such ethnobotanical investigation is the fundamental requirement for any developmental planning concerned with human welfare of botanical society. The work is fundamentally helpful to botanists, pharmacognosists, phytochemists and ethnobotanists.

The people of the area are entirely rural and mostly poverty-stricken, under nourished and illiterate. They have to cut forests to sell timber and fuel wood. As a result plants species are disappearing at an alarming rate. A number of medicinal plants like *Acorus calamus*, *Rouvolfia serpentina*, *Chlorophytum tuberosum*, *Litsea glutinosa*,

*Plumbago zeylanica*, *Sterculia urens* and *Withania somnifera* are on the verge of extinction due to over - exploitation. The conservation programmes can protect the medicinal plants with the help of local people. Regeneration of plants is also badly affected due to heavy grazing. The local people and researcher face the challenging task of not only recording knowledge of plants but also applying the results to their studies and to biodiversity conservation and community development. Most of the species are under severe pressure due to their extensive uses in many fields. The community people collect these plants with an unmechanised method because of their great medicinal importance. So there is a necessity for the conservation of all the medicinal plants. It is hoped that chemical analysis of the medicinal plants and their pharmacotherapeutics will provide much needed lead for further research and new drug development.

### Enumeration of plants

1. *Achyranthes aspera* Linn. (Amaranthaceae)  
Latjira- The root along with rock salt and curd water is crushed/ rubbed in a copper utensil. The paste is applied in both the eyes as collyrium to cure conjunctivitis.
2. *Adansonia digitata* Linn. (Bombacaceae)  
Gorakh imli-Paste of tender leaf of plant is applied over inflammations to reduce burning and pain due to conjunctivitis.
3. *Aegle marmelos* (Linn.) Corr. (Rutaceae):  
Bel-The warm decoction of young leaves is applied on inflamed eyes to cure redness. Cow milk butter is applied on leaf of this plant and kept over heat to warm. These warm leaves are kept over eyes and tied with fresh cloth. The leaf juice is applied in the eyes thrice to cure conjunctivitis.
4. *Albizia lebeck* (Linn.) Benth. (Mimosaceae)  
Sirish-Leaves and water soaked seed paste is applied thrice over eyes to cure conjunctivitis.
5. *Aloe vera* (Linn.) Burm.f. (Liliaceae)  
Ghrit kumara-The leaf pulp is applied externally to cure conjunctivitis. One to two drops of squeezed material is applied in both the eyes to get soothing relief from pain and inflammation.
6. *Alternanthera sessilis* (Linn.) R.Br. (Amaranthaceae)  
Sessile joy weed, dwarf copper leaf. Leaf juice is used as an eye lotion to cure conjunctivitis.
7. *Amomum subulatum* Roxb. (Zingiberaceae)  
Cardamom-Three drops of oil extracted from seed is applied three to inflamed eyelids daily to cure conjunctivitis.
8. *Argemone mexicana* Linn. (Papaveraceae)  
Bharbhanda-Two drops of fresh latex is applied in eyes thrice a day to cure redness and water discharge due to conjunctivitis.
9. *Azadirachta indica* A. Juss. (Meliaceae)  
Neem -The poultice of leaf are applied on eye lid twice to cure conjunctivitis.
10. *Bidens pilosa* Linn. (Asteraceae)  
Spanish needle-Two-three drops of leaf juice is applied thrice daily to eyes to cure conjunctivitis.
11. *Boerhavia diffusa* Linn. (Nyctaginaceae)  
Gadapuraina, Punarnava-Two drops of root juice is applied thrice to cure conjunctivitis.
12. *Calamus rotang* Linn. (Arecaceae)  
Batbelai-The juice of leaf is applied in eyes to get relief from irritation due to conjunctivitis.

13. *Calotropis gigantea* (Linn.) Dryand. (Asclepiadaceae)  
Safed Madar-The leaf ash mixed with bees wax is applied as collyrium (Kajal, Soot) to treat red and inflammed eyes.
14. *Calotropis procera* (Ait.) R.Br. (Asclepiadaceae)  
Madar-One gram dried root bark is powdered and mixed with 20 ml. of rose water. After 5 minutes it is filtered. 3 to 5 drops is applied in both the eyes 4 times to cure conjunctivitis. The nails of opposite side feet are diped in the milk of *Calotropis procera* to cure the dried root are burnt so as to make coal. The coal is powdered and mixed with boiled cool water to make into paste. This paste is applied around eyes and the same is rubbed on eye lid several times to cure conjunctivitis.
15. *Camellia sinensis* (Linn.) Kuntz (Theaceae)  
Tea, chay-Two-Three drops of leaf juice is applied in eyes thrice daily to cure conjunctivitis.
16. *Capsicum annuum* Linn. (Solanaceae)  
Lal Mirch-Two – three drops of leaf juice is applied in the eyes to treat allergies. The paste of ripe and dried fruit of *Capsicum annuum* bandaged on the big toes to cure inflammation and redness of eyes due to conjunctivitis.
17. *Coptis teeta* Wall (Ranunculaceae)  
Three drops of rhizome extract is employed as salve to eyes thrice daily infected with conjunctivitis.
18. *Cassia auriculata* Linn. (Caesalpinioideae)  
Aavartoki-Pre soaked seed are made in to paste. The paste is applied thrice over inflammed eyes to cure conjunctivitis.
19. *Cassia occidentalis* Linn. (Caesalpinaceae)  
Kasaudi-One drop of fresh leaf juice is applied in both the eyes in morning and evening to cure conjunctivitis.
20. *Centella asiatica* (Linn.) Urban (Apiaceae)  
Lambak-Leaf decoction is taken twice a day to treat various eye diseases.
21. *Chassalia curviflora* Wall Thw (Rubiaceae)  
Chassau-Three drops of root decoction is applied thrice daily in inflammed eyes to cure conjunctivitis.
22. *Cissampelos pariera* Linn. (Menispermaceae)  
Puranpadi, Akandi-Leaf juice is used in case of inflammed eyes so as to cure conjunctivitis.
23. *Coriandrum sativum* Linn. (Apiaceae)  
Dhania-Twenty grams of Corriandrum are powdered and mixed with 250 ml water. It is boiled and filtered. One drop of filtrate is dropped in both the eyes thrice daily.  
The juice of fresh leaves is mixed with equal amount of ladies milk. One drop of this mixture is applied thrice in both the eyes to cure.
24. *Curcuma longa* Linn. (Zingiberaceae)  
Haldi, Turmaric-One gm. rhizome is boiled in 250 ml water and filtered. The two drop of filtrate is applied in eyes after every two hours interval to cure conjunctivitis.
25. *Cuscuta reflexa* Roxb. (Convolvulaceae)  
Amarbel, Giant dodder-Juice of *Cuscuta* mixed with small amount of sugar is applied on inflammed eyes.
26. *Cynodon dactylon* (Linn.) Pers. (Poaceae)  
Doob-The poultice of leaves is applied over eyes externally. It is also used in *Catarhal ophthalmia*.
27. *Dendrocalamus strictus* (Roxb.) Nees (Poaceae)  
Bans-The juice of younger branch is used for eye infections.

28. *Dysoxylum malabaricum* Bedd. ex Hiern (Meliaceae)  
Purrippa-Two - three drops of wood oil is applied thrice to cure conjunctivitis.
29. *Eclipta prostrata* (Linn.) Hassk (Asteraceae) :  
Bhringraj, Bhangra-The paste of leaf in applied over eyes to cure conjunctivitis. Two drops of fresh leaf juice is applied in eyes within one hour of sunrise and one hour before sunset to cure conjunctivitis.
30. *Emblia officinalis* Gaertn. (Euphorbiaceae)  
Amla-The fruit sauss mixed with honey and taken only twice a day to improve weak eye sight. It is also an important constituent of triphla which is known for various eye ailments.
31. *Emilia sonchifolia* (Linn.) DC. (Asteraceae)  
Purple sow Thistle, Cupid's, Shaving brush-Two to three drops of leaf juice is applied in eyes suffering from inflammation and redness due to conjunctivitis.
32. *Floscopa scandens* Lour. (Commelinaceae)  
Three drops of stem juice is applied in eyes thrice daily to cure conjunctivitis.
33. *Hedyotis scandens* Roxb. ex. D. Don (Rubiaceae)  
Bakhrilahara-It is used as local medicine for gastric troubles and eye disease where two to three drops of leaf extract is applied thrice to cure conjunctivitis.
34. *Ixora coccinea* Linn. (Rubiaceae)  
Jungal flame, Jungal Geranium- Decoction of flowers is used in inflamed eyes and also as vulnerary.
35. *Kleinhovia hospita* Linn. (Sterculiaceae)  
Bataria teak, Bholā-The leaf juice in used as eye wash several times for soothing relief from pain due to inflammation in conjunctivitis.
36. *Linum usitatissimum* Linn. (Linaceae)  
Alsi, Linseed, Comman Flax-Seeds are soaked in water over night made into paste and squeezed. Two to three drops of extract is applied in each eyes thrice a day to cure the infection.
37. *Lawsonia inermis* Linn. (Lythraceae)  
Mehendi, Henna-Juice of ten gm. fresh leaves, ten gm. cumin (*Cuminum cyminum* L. syn *C. odorum*, *C. officinale* (Apiaceae)), rose water and one gm. roasted alum is mixed and filtered. Two drops of this filtrate is applied in both the eyes three/four times per day to cure conjunctivitis.
38. *Mahonia napaulensis* DC Taming (Berberidaceae)  
Two - three drops of bark and leaf extract is applied to eyes suffering from conjunctivitis.
39. *Mahonia sikkimensis* Takeda (Berberidaceae)  
Two drop of leaf extract is applied thrice daily as medicine in conjunctivitis.
40. *Melia azedarach* Linn. (Meliaceae)  
Fruits are powdered and made into paste. The eyes are covered by the same paste.  
Juice of 1 kg. fresh leaves are mixed with 3 gm. of bhimseni Camphor. It is boiled and dried to make like collyrium. This collyrium is applied to both the eyes in morning and evening to cure conjunctivitis.
41. *Memecylon malabaricum* (Clarke) Cogn. (Melastomataceae)  
The leaves are astringent and the lotion of leaf is used for conjunctivitis.
42. *Moringa oleifera* Lam. (Moringaceae)  
Sahjan, Mungeiphalli, The miracle tree-Five milliliter leaf juice each of Sahjan and *Emblia officinalis* fruit and 250 mg of rock salt is mixed and the same is rubbed gently on eyelid or applied

- thrice in each eye to cure conjunctivitis.
43. *Nymphaea nouchali* Burm.f. (Nymphaeaceae)  
Kumudini-Petals are used in redness and inflammation due to conjunctivitis.
  44. *Ocimum tenuiflorum* Linn. (Lamiaceae)  
Dhulungshi-The leaf juice is used for eye disease.
  45. *Oxalis corniculata* Linn. (Oxalidaceae)  
Sengri mekhi-The juice of whole plant is applied as eye drop to cure conjunctivitis.
  46. *Papaver somniferum* Linn. (Papaveraceae)  
Afim, Opium-Dilute opium excudate is applied on upper surface of eyelid several times a day to cure conjunctivitis. Leaf paste of opium is applied on upper surface of eyelid twice or thrice a day depending on the severity of infection.
  47. *Phyllanthus simplex* Retz. (Euphorbiaceae)  
Bhui aomla-Leaf paste is applied over eyes thrice daily to cure conjunctivitis.
  48. *Piper betle* Linn. (Piperaceae)  
Fathi, Pan-The juice of whole plant is applied as eye drop in painful eyes due to conjunctivitis.
  49. *Punica granatum* Linn. (Punicaceae)  
Anar, Pome granate-Five- six leaves are made into paste with the help of water and is applied on eyelids two times each day to cure conjunctivitis.  
Leaves are soaked in warm water and then made into paste. The poultice of the same is rubbed on eyelid very gently several times per day till full relief.
  50. *Rosa chinensis* Linn. (Rosaceae)  
Ranga Gulab-Two - three drops of flower juice is dropped in to eyes to treat eye infections.
  51. *Rosa indica* Linn. (Rosaceae)  
Gulab – Distilled rose water
  52. *Embllica officinalis* Gaertn (Euphorbiaceae)  
Amla- A component of Triphla
  53. *Terminalia chebula* Ratz Obs. (Combretaceae)  
Harr - A component of Triphla
  54. *T. bellirica* (Gaertn) Roxb. (Combretaceae)  
Bahera - A component of Triphla
  55. *Santalum album* Linn. (Santalaceae)  
Safed Chandana, White Sandal Wood
  56. *Berberis vulgaris/B. aristata* (Berberidaceae)  
Two drops of this mixed extract is applied thrice to give soothing effect to eyes and cure conjunctivitis.
  57. *Crocus sativus* Linn.(Iridaceae)  
Two to three drops are applied thrice to relief irritation and cure conjunctivitis.
  58. *Scirpus grossus* Linn. (Cyperaceae)  
Nok-pat-The powdered rhizome is applied on eyelids to cure conjunctivitis.
  59. *Sida cordifolia* Linn. (Malvaceae)  
Bariyar, Bala, Country mallow-The leaves of Sida and Acacia (Babul) are made into paste. The paste is applied on eyes and tide with fresh cloth.
  60. *Spheranthus indicus* Linn. (Asteraceae)  
Ghundi-Leaf paste is applied to treat inflammed eyes and leaf is eaten as precautionary measure for various eye diseases.
  61. *Strychnos potatorum* L. f. (Loganiaceae)  
Nirmali-The paste of pre soaked seeds in employed thrice over eye troubles specially conjunctivitis.
  62. *Symplocos laurina* Wall. ex Rehder (Symplocaceae)  
Lodhra-Pulverized bark is applied over inflamed eyes to cure conjunctivitis.
  63. *Symplocos racemosa* Roxb. (Symplocaceae)  
Bark made into paste is applied thrice over inflamed eyes to cure conjunctivitis.

64. *Syzygium cumini* (Linn.) Skeels (Myrtaceae)  
Jamun-Decoction of 15–20 tender leaves is prepared in 400 ml. water. The eyes are washed with the decoction to cure conjunctivitis of children below one year age.
65. *Tamarindus indica* Linn. (Caesalpiniaceae)  
Imli-Two - three drops of leaf juice is applied on eyes thrice a day to cure inflammations, redness and water discharge due to conjunctivitis
66. *Tectona grandis* Linn. (Verbenaceae)  
Teak-Ashes of wood are applied over swollen eyelids to cure conjunctivitis.
67. *Terminalia chebula* Retz. (Combretaceae)  
Harr-The mashed fruit is mixed with haldi (*Curcuma longa*) and applied twice a day for two days to cure retinal problems. It has an important component of Triphla which is a known ethnomedicine for various eye ailments.
68. *Terminalia bellirica* (Gaertn.) Roxb. (Combretaceae)  
Bahera-Decoction obtained from the fruit pulp is given to improve eye vision. It has an important component of Triphla which is a known ethnomedicine for various eye ailments.

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