

Medicinal plants of Auraiya District, Uttar Pradesh, India: their uses and conservation status

R. B. Yadav¹, Lal Ji Singh^{2*}, Sanjay K. Verma¹ and Ajay Kumar³

¹Department of Botany, Janta Mahavidyalaya, Ajitmal, Auraiya-206121, India

²Botanical Survey of India, Andaman & Nicobar Regional Centre,
Port Blair-744102, India

³Department of Agricultural Botany, Janta Mahavidyalaya, Ajitmal,
Auraiya-206121, India

E-mail: rbyadavjmv@gmail.com; laljisingh1970@rediffmail.com;
sanjayvermajmv@gmail.com; ajayvermajmv@gmail.com

*Corresponding author

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ABSTRACT

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The paper deals with extensive ethnobotanical survey of Yamuna and Chambal ravines and other rural areas of Auraiya District, Uttar Pradesh, India during June 2011-April 2013. 45 plant species belonging to 42 genera and 30 families of angiosperms were recorded. The medicinal importance of these plants, which are used by the rural peoples as traditional medicine for various ailments like anti-inflammatory, antipyretic, asthma, malaria, snake bites, diabetes, diarrhoea, dysentery, indigestion, gastric problems, cut and wounds, is enumerated for the first time in this communication.

Key-words: Medicinal plants, ailments, Auraiya District, Uttar Pradesh, India

INTRODUCTION

India has rich diversity of medicinal plants. The traditional uses of medicinal plants in healthcare practices are providing clues to new areas of research, hence its importance is well recognized. In the Indian systems of medicine, most practitioners formulate and dispense their own recipes, hence this requires proper documentation and research. However, information on the uses of indigenous plants for medicine is not well documented from many rural areas of India including Auraiya district.

Auraiya district is located in the south-western part of Uttar Pradesh. It is geographically located between 26°21' and 27°01' north latitudes and between 78°45' and 79°45' east longitudes. Yamuna and Chambal rivers make the southern boundary of the district and their ravines have dense vegetation with dry climate. The total forest area, including the reserve and protected, is 102.65 km², which is 4.87% of the total geographical area of the district. According to Champion and Seth (1968), the forests of this zone are Northern *Acacia* Scrub type. Yamuna and Chambal ravines have rich

herbal diversity although these areas are highly prone to soil erosion. Along the sides of both rivers, the soil is sandy loam while in some other areas, it is alkaline and barren. The soil health of this area plays a vital role in the bio-geochemical composition of the plants.

Reckless exploitation of herbal medicines by Ayurveda drug traders, agricultural activities, over grazing and deforestation leads to depletion of vegetation cover of the area. Authors have tried to study medicinal plants of the remote areas of district that would be beneficial in their systematic utilization along with making conservation strategy in the future. Berkes and Turner (2006) stated that medicinal plant conservation strategies need to be understood and planned on the basis of an understanding of indigenous knowledge and practices.

MATERIAL AND METHODS

A field study was done to document the indigenous healthcare knowledge of various ethnic groups of Yamuna and Chambal ravines and other localities of rural areas during June, 2011 to April, 2013. Large number of plants has been collected and the information on their traditional uses was gathered from local inhabitants. The information about folk medicinal use, vernacular names of plants and the parts of the plants used are documented. To understand the existing traditional knowledge on medicinal plants, personal interviews and focus group discussions were conducted. For the personal interviews a semi-structured questionnaire survey was used amongst the local traditional plants healers. The plants were collected during different seasons of the year from their natural habitat. These plants were processed for herbarium preparation. Plants were identified with the help of herbaria and relevant literatures (Roxburg 1833, Benthum & Hooker 1862-1883, Hooker 1872-1897, Duthie 1903, Gamble 1935, Bailey 1949, Hutchinson 1959, Willis 1966,

APG III 2009). Medicinal values of these plants were compared with various ethnobotanical studies specially from among the rural and tribal communities (Dastur 1952, Venugopal 1992, Champian & Seth 1998, Shengji, 2001, Joshi 2002, Dutta & Pant 2003, Jain 2004, Acharya 2005, Bagal et al. 2006, Pullaiah, 2006, Parveen et al. 2007, Ved & Goraya, 2008, Gupta et al. 2010, Khandelwal et al. 2011, Lakara et al. 2012, Padal et al. 2013). Local names of these plants were recorded during collection of plants from their natural habitat by meeting with rural peoples and aged persons of the area. The voucher specimens have been deposited in the herbarium of Department of Botany, Janta Mahavidyalaya, Auraiya. In addition, the present conservation status of ethnobotanical flora of Auraiya district, Uttar Pradesh is presented here as determined by application of International Union for Conservation of Nature (IUCN) conservation categories and criteria: IUCN, 2001

OBSERVATION

During the floristic survey and enumeration of medicinal plants (June 2011 to April 2013) from various areas of Auraiya district, the authors observed a well developed ethnobotanical and traditional medicine system among remote village people and recorded 45 species of plants, which are used by local people to cure various diseases and disorders. In the enumeration, plants are arranged in alphabetical order of their botanical names followed by families, vernacular name, and mode of preparation of drugs for various diseases. According to the habitat of the plants, there are 25 herbs, 5 shrubs, 12 trees and 3 climbers. The Yamuna and Chambal ravines are rich in medicinal vegetation but due to undulating terrain these are not easily accessible. These herbal medicines are applied externally as poultice or paste on swelling, wounds and joint pains, internally as decoction, fresh juice and dried powder to cure heart, liver and intestinal disorders, etc.

1. *Abutilon indicum* (L.) Sweet,

Family: Malvaceae

Vernacular name: Kanghi.

Uses: Roots and leaves are used in bronchitis, gonorrhoea, rheumatism, ulcer and diarrhoea.

2. *Achyranthes aspera* L.,

Family: Amaranthaceae

Vernacular name: Chirchita.

Uses: Fresh juice of leaves is used as tincture to cure toothache and foul smell of mouth. Paste of leaves is applied externally to cure poison of scorpion and insect bite.

3. *Acacia arabica* Wild.,

Family: Mimosaceae

Vernacular name: Babur.

Uses: Barks of stem are used to cure toothache, flower and dried lomentum are given in jaundice, dysentery, leucorrhoea and bleeding.

4. *Adhatoda vasica* Nees.,

Family: Acanthaceae

Vernacular name: Arusa.

Uses: Decoction of leaves is powerful expectorant and antispasmodic and given to cure chronic bronchitis and asthma.

5. *Aegle marmelos* Corr.,

Family: Rutaceae

Vernacular name: Bel.

Uses: Fresh juice of leaves is given to cure acidity and blindness, dried powdered fruits used in stomach ache, indigestion, dysentery and colitis.

6. *Allium sativum* Linn.,

Family: Liliaceae

Vernacular name: Lahsun.

Uses: Crushed pieces are applied on affected area to cure abscess.

7. *Aloe barbadensis* Mill.,

Family: Liliaceae

Vernacular name – Gwarpatha.

Uses: Pulp of fleshy leaves is used in rheumatism, enlargement of liver, diabetes,

constipation, menstrual disorders.

8. *Andrographis paniculata* Wall. ex Nees.,

Family: Acanthaceae

Vernacular name: Kalmegh.

Uses: Dried powdered stem and leaves are used to cure Jaundice and liver disorders.

9. *Argemone mexicana* Linn.,

Family: Papaveraceae

Vernacular name: Satyanasi.

Uses: Powdered seed and leaves along with mustard oil are used to cure leprosy and ringworm.

10. *Asparagus racemosus* Willd.,

Family: Liliaceae

Vernacular name: Satawar.

Uses: Dried powdered roots are used as Galactogogue, aphrodisiac and also beneficial in insomnia and night blindness.

11. *Azadirachta indica* A. Juss.,

Family: Meliaceae

Vernacular name: Neem, Arist.

Uses: Leaves, bark and seeds are given to cure fever, headache, blister of mouth, jaundice, rheumatism, malaria piles and small pox.

12. *Boerhaavia diffusa* Linn.,

Family: Nyctaginaceae

Vernacular name: Pathar chatta, Punarnava.

Uses: Decoction of whole plant is given to cure Jaundice, dysfunction of liver and spleen.

13. *Butea monosperma* (Lamk.) Taubert.,

Family: Papilionaceae

Vernacular name: Tesu.

Uses: Grinded stem barks and gum of drum stick to make powder are used to cure dysentery.

14. *Calotropis procera* (Ait.) R.Br.,

Family: Asclepiadaceae

Vernacular name: Akauva, Madar.

Uses: Roots, leaves and flowers are used to cure epilepsy, toothache, dropsy, cholera and rheumatic pain of joints.

15. *Carica papaya* Linn.,**Family: Caricaceae****Vernacular name:** Papita.**Uses:** The latex is applied on infected skin to cure ringworm.**16. *Cuscuta reflexa* Roxb.,****Family: Convolvulaceae****Vernacular name:** Amarbel.**Uses:** Decoction of plant is given to cure enlargement of liver, constipation and in rheumatism.**17. *Cassia fistula* Linn.,****Family: Caesalpiniaceae****Vernacular name:** Amaltas.**Uses:** Leaves and flowers are used in constipation, leprosy and fever.**18. *Cassia occidentalis* Linn.,****Family: Papilionaceae****Vernacular name:** Casaundi.**Uses:** Flower, seed and leaves are given in hysteria, mental disorder, piles and leprosy.**19. *Cassia tora* Linn.,****Family: Papilionaceae****Vernacular name:** Chakaund.**Uses:** Seeds and fresh leaves are beneficial in eczema, ringworm, leprosy and goiter.**20. *Centella asiatica* Linn.,****Family: Apiaceae****Vernacular name:** Brahmi.**Uses:** Juice of fresh leaves or dry powdered leaves are used for brain tonic, insomnia, hysteria and blood pressure.**21. *Cannabis sativa* Linn.,****Family: Cannabinaceae****Vernacular name:** Bhang.**Uses:** Leaves are used in insomnia, hysteria, cough, bronchitis, piles, rheumatism and muscle pain.**22. *Convolvulus microphyllus* Linn.,****Family: Convolvulaceae****Vernacular name:** Shankhpushpi.**Uses:** Dried powder of whole plant is used as brain tonic and in epilepsy, high blood pressure, diabetes, sunstroke.**23. *Cyperus rotundus* Linn.,****Family: Cyperaceae****Vernacular name:** Motha.**Uses:** Dried powdered rhizome and roots are used to cure epilepsy, fever, wound healing, diabetes, colitis and as an anthelmintic.**24. *Datura metel* Linn.,****Family: Solanaceae****Vernacular name:** Dhatura.**Uses:** Seeds and leaves are used in headache, hysteria, bronchitis, rheumatism and reduce swelling on joints.**25. *Eclipta alba* Hussk.,****Family: Asteraceae****Vernacular name:** Bhangra.**Uses:** Fresh juice of leaves is given in migraine and high blood pressure, diphtheria and along with sesame oil as hair tonic.**26. *Embelica officinalis* Goertn.,****Family: Euphorbiaceae****Vernacular name:** Aonla.**Uses:** Dried powdered fruits are used to cure constipation, piles, dysentery, loss of appetite, leucorrhoea and diabetes.**27. *Euphorbia hirta* Linn.,****Family: Euphorbiaceae****Vernacular name:** Badi dudhi.**Uses:** Fresh juice of whole plant is given in colitis, dysentery, diabetes, dropsy and to cure intestinal worms.**28. *Ficus glomerata* Roxb.,****Family: Moraceae****Vernacular name:** Gular.**Uses:** Barks, latex and leaves are given in small pox, leucorrhoea, piles and in diabetes.

29. *Jasminum officinalis* Linn.,**Family: Oleaceae****Vernacular name:** Chameli.**Uses:** Fresh leaves are used as anthelmintic, headache, infertility, leprosy and in mouth ulcer.**30. *Kalanchoe pinnata* (Lam.) Pers.,****Family: Crassulaceae****Vernacular name:** Kusum.**Uses:** Decoction and fresh juice of leaves are given to cure bronchitis, diabetes, blood cancer, cholera and to dissolve stones of kidney.**31. *Melia azadirach* Linn.,****Family: Meliaceae****Vernacular name:** Bakayan.**Uses:** Powdered bark and seeds are taken in leucorrhea, rheumatism, leprosy, piles, and diabetes.**32. *Moringa oleifera* Linn.,****Family: Moringaceae****Vernacular name:** Shahjan.**Uses:** Bark, leaves and roots decoction is given to cure pneumonia, meningitis, headache, cancer and seeds are used as aphrodisiac and reduce swelling in the body.**33. *Oxalis corniculata* Linn.,****Family: Oxalidaceae****Vernacular name:** Tinpatia.**Uses:** Fresh leaves are used in headache, foul smell of mouth, gummosis, piles, bleeding.**34. *Phyllanthus niruri* Linn.,****Family: Euphorbiaceae****Vernacular name:** Bhumi aonla.**Uses:** Dried powder and decoction of root, stem and leaves of plant are given to cure jaundice, intestinal ulcer, dysentery and malaria.**35. *Ricinus communis* Linn.,****Family: Euphorbiaceae****Vernacular name:** Arand.**Uses:** Leaves are used as anthelmintic,

laxative, intestinal disorder, piles and in menstrual disorder.

36. *Sida cordifolia* Linn.,**Family: Malvaceae****Vernacular name:** Kharenti.**Uses:** Roots and leaves are used in diabetes, leucorrhea, dysentery, constipation and rheumatism.**37. *Solanum nigrum* Linn.,****Family: Solanaceae****Vernacular name:** Makoia.**Uses:** Decoction of leaves and stem used to cure enlargement of liver and spleen, dysentery, diuretic and debility.**38. *Solanum virginianum* Linn.,****Family: Solanaceae****Vernacular name:** Bhatkataliya.**Uses:** Decoction of flowers and fruits are used to cure cough, bronchitis, toothache and gastric disorders.**39. *Syzygium cumini* (Linn.) Skeels.,****Family: Myrtaceae****Vernacular name:** Jamun.**Uses:** Dried powder of seeds is antidiabetic, pulp and leaves juice are given in liver disorder, dysentery, toothache and mouth ulcer.**40. *Tamarindus indica* Linn.,****Family: Caesalpiniaceae****Vernacular name:** Imli.**Uses:** Seeds and leaves are taken in powder form to cure diabetes, dysentery and applied externally in ringworm and leucoderma.**41. *Terminalia arjuna* (Roxb. ex DC.) Wight & Am.,****Family: Combretaceae****Vernacular name:** Arjuna, Kahua.**Uses:** Decoction of bark is excellent cardiac tonic and beneficial in high blood pressure.

42. *Tinospora cordifolia* (Willd.) Miers.,**Family: Menispermaceae****Vernacular name:** Giloy.

Uses: Decoction of stem and leaves are given to cure diabetes, malaria, rheumatism, jaundice, leprosy, dengue fever.

43. *Tribulus terrestris* Linn.,**Family: Zygophyllaceae****Vernacular name:** Trikantak, Chota gokhru.

Uses: Decoction and dried powder of seeds are given in bronchitis, dysentery, infertility and in urinary trouble.

44. *Withania somnifera* Linn.,**Family: Solanaceae****Vernacular name:** Ashwagandha.

Uses: Dried powder of roots is used to enhance body vigour and to cure nervous disorders.

45. *Zingiber officinale* Rosc.,**Family: Zingiberaceae****Vernacular name:** Adrak.

Uses: Seeds soaked with milk are given to cure diarrhoea.

These medicinal plants are the true backbones of a wide range of local health traditions and constitute many classical drug formulations and hundreds of home remedies. In addition, the present study also provides important information about the present status of conservation of ethnobotanical flora of Auraiya district, U.P.

CONSERVATION STATUS

In the present study, 45 species of flora of Auraiya district, Uttar Pradesh were evaluated according to IUCN risk categories and criteria (IUCN 2001). The threat level summary indicates that 11 species are vulnerable to threatened. In Auraiya district, a large number of medicinal plant species are under various degrees of threat. Authors observed that habitat loss, habitat degradation and over-harvesting are major threats. The over exploitation is a direct threat to the genetic

diversity of ethnomedicinal plants. Unsustainable harvesting practices result in spreading frontiers of resource depletion, with the negative impacts of over-exploitation confined to the local level resource scarcity becomes critical. This has set in an alarming situation to register an urgent need to promote the in situ and ex situ conservation along with sustainable production of ethnobotanical plants.

DISCUSSION

According to the report of the World Health Organization (WHO), a large population of the world relies on the traditional systems of medicines to meet their primary healthcare needs. It is estimated that 70-80% of people worldwide rely chiefly on traditional, largely herbal, medicine (Farnsworth & Soejarto 1991, Hamilton 2004). These are not only used for primary healthcare in rural areas of developing countries, but also in developed countries as well where modern medicines are predominantly used. However, there is no reliable estimate for the number of medicinal plants that are globally threatened, variously calculated as 4160 or 10000 (Vorhies 2000; Schippmann et al. 2002). Ethnobotanical research and development is a holistic interdisciplinary study of indigenous knowledge and associated skills, practices, beliefs, and social structures pertaining to the healthcare. Use of plants as a source of medicine has been inherited and is an important component of the healthcare system in India. Hence this requires proper documentation and research.

In the present study a floristic survey and enumeration of the traditional medicinal plants of Auraiya district, U. P. is documented in great details for the first time and incorporates a myriad of diverse flora in India. The information was collected on 45 plants species of 42 genera belonging to 30 families. Dicots are dominant with 27 families followed by monocots with only 3 families. Of these, Solanaceae, Euphorbiaceae

and Papilionaceae are the dominating families with 4 genera followed by Liliaceae with 3 genera. During the investigation, authors have observed that these plants hold great medicinal potential and a well-developed traditional medicine system among remote village people. Plants are used systematically for treatment of a wide spectrum of human ailments. The present study reveals that the people of older ages are more knowledgeable about the use of medicinal plants than younger ages. Remote village people have complete trust on the healing properties of medicinal plants, as they have proven beneficial for people suffering from different types of health disorders. An analysis of the various plant parts used for medicinal purpose is classified into roots, stem, stem bark, leaf, flower, fruit and seed. It can be concluded that the remote village people of the district have very good knowledge on the use of medicinal plants.

In addition, authors also observed that due to anthropogenic activities like habitat loss, deforestation, over-harvesting, etc. ethnobotanical flora of Auraiya district, Uttar Pradesh is threatened in most of habitats. Although medicinal plants still play a pivotal role in the primary healthcare of the local people, efforts to ensure the conservation and sustainable use of medicinal species are necessary not only in Auraiya district, Uttar Pradesh and other parts of India, but also at global level because of conservation of medicinal plants in its biocultural perspective. This not only implies conservation of biodiversity but also places an equal emphasis on conservation of cultural diversity.

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REFERENCES

- Acharya A. B. 2005. *Ayurved, Jaributi Rahasya*, Divya Prakashan, Haridwar.
- APG III 2009. An update of the Angiosperm Phylogeny group classification for the orders and families of flowering plants. *Bot. J. Linn. Soc.* 161: 105-121.
- Bagal R. M., Yadav S. S. & Garud B. D. 2006. Medicinal plants of East Khandesh Satpura with reference to their threat status and uses. *Plant Archives* 6(1): 357-358.
- Bailey L. H. 1949. *Manual of Cultivated Plants*. Macmillan, New York.
- Benthum G. & Hooker J. D. 1862-1883. *Genera Plantarum*. Vol.1-3, London.
- Berkes F. & Turner N. J. 2006. Knowledge, Learning and the Evolution of Conservation Practice for Social-Ecological System Resilience. *Human Ecology*. 34 (4): 479-494.
- Champion H. C. & Seth S. K. 1998. *A Revised Survey of the Forest types of India*. Natraj Publication, Dehradun.
- Dastur J. F. 1952. *Medicinal Plants of India and Pakistan*: D. B. Taraporwala & Co. Pvt. Ltd., Bombay.
- Duthie J. F. 1903. *Flora of Upper Gangetic Plains, adjacent Shivalik and Sub-Himalayan tract*, Superintendent Government Printing, India Calcutta, 2: 1-470.
- Dutta A. & Pant K. 2003. The nutritional status of indigenous people in the Garhwal Himalayas, India. *Mount Res Develop.* 23(3): 278-283.
- Farnsworth N. R. & Soejarto D. D. 1991. Global importance of medicinal plants. In: Akerele et al. (Editors) - *The conservation of medicinal plants* (ed.) Cambridge University Press, Cambridge. pp. 25-51.
- Gamble J. S. 1967. *Flora of the Presidency of Madras* (2nd printed edition) I-III. Botanical Survey of India, Calcutta.
- Gupta R., Thakur B., Singh P., Singh H. B., Sharma V. D., Katoch V. M & Chauhan S. V. 2010. Anti-tuberculosis activity of selected medicinal plants against multi-drug resistant *Mycobacterium tuberculosis* isolates. *Indian J. Med. Res.* 131: 809-813.
- Hamilton A. C. 2004. Medicinal plants, conservation and livelihoods. *Biodiversity and Conservation* 13: 1477-1517.
- Hooker J. D. 1872-1897. *The flora of British India*, Vol. 7. L. Reeve, London.

- Hutchinson J. 1959. Families of the Flowering Plants. (2nd ed.), Vol.1-2. London.
- Jain S. K. 2004. A manual of ethnobotany; pp. 1-8 in Jain S. K. (Editor). Scientific Publishers, Jodhpur, India.
- Joshi S. C. 2002. Medicinal Plants, Oxford and I.B.H. Publication, New Delhi.
- Khandelwal V., Kumar M., Koneri R., Balaraman R. & Kandhavelu M. 2011. Biological Activities of Some Indian medicinal plants. J. Adv. Pharm. Edu. Res. 1: 12-44.
- Lakara G. S., Singh L. J., Kamble M. Y. & Murugan C. 2012. Andaman Va Nicobar Dweep Samooh Ki Kuchh Upyogi Vanspatiya. Vanspati Vani 21: 35-40 (in Hindi).
- Padal S. B., Ramkrishna H. & Devender R. 2013. Ethnomedicinal Remedies of Tree Species of Boakondamma Hills, Chinta Palli Mandal, Visakhapatnam District, A. P., India. Phytomorphology. 63(1-2): 67-72.
- Parveen, Upadhyay B., Roy S. & Kumar A. 2007. Traditional uses of medicinal plants among the rural communities of Churu district in the Thar Desert, India. J. Ethnopharmacol. 113: 387-399.
- Pullaiah T. 2006. Encyclopedia of world medicinal plants, vol. II, Regency Publication, New Delhi.
- Roxburgh W. 1832. Flora Indica or Description of Indian Plants, New Delhi. 1-763.
- Schippmann U., Leaman D. J. & Cunningham A. B. 2002. Impact of cultivation and gathering of medicinal plants on biodiversity: global trends and issues. Inter-Department Working Group on Biology Diversity for Food and Agriculture, Food and Agricultural Organisation of the United Nations, Rome, Italy.
- Shengji P. 2001. Ethnobotanical approaches of traditional medicine studies: some experience from Asia. Pharmaceutical Botany, 39: 74-79.
- Ved D. K. & Goraya G. S. 2008. Demand and Supply of Medicinal Plants in India. Bishen Singh and Mahendra Pal Singh, Dehradun and FRLHT, Bangalore.
- Venugopal S. N. 1992. Medicinal plants useful in Mother and Child Health., Ministry of I. & B. Publishers, New Delhi.
- Vorhies F. 2000. The global dimension of threatened medicinal plants from a conservation point of view. In: Honnef S. & Melisch R. (Editors), Medicinal utilization of wild species: challenge for man and nature in the new millennium, pp. 26-29.
- Willis J. C. 1966. A Dictionary of the flowering plants and Ferns (revised by H.K. Airy Shaw, University Press, Cambridge.