Aromatic Medicinal Plant Resources in Uttar Pradesh, India

Ranjeet Kumar Yadav* and Anand Prakash
Sam Higginbottom Institute Agriculture, Technology & Sciences, Allahabad, Uttar Pradesh, India

Abstract

A study on the native uses of ethnobotanical species was carried out in the Lakhimpur-kheri district of Uttar Pradesh state in India with the major objective of identifying different medicinal plant species. Production and productivity of many wild-type plants have increase manifolds but the challenges of malnutrition and threat of climate change continues by the time. The ethnobotanical data were collected through questioners by interviewing local communities and Hakims. The medicinal practitioners were treating the common diseases like cough, cold, snake bite, diabetes, wounds, fever, toothache and the antitumor activity. In total 21 species belonging to 18 Genera and 15 Families were recorded which were used by inhabitants of the area.

Keywords: Medicinal plants; Wild edible plants; Lakhimpur-kheri District; Uttar Pradesh.

Introduction

Human beings have always made use of their native flora, not just as a source of nutrition, but also for fuel, medicines, clothing, dwelling, and chemical production. Traditional knowledge of plants and their properties has always been transmitted from generation to generation through the natural course of everyday life [1]. Documentation of the indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources [2]. Therefore, establishment of the local names and indigenous uses of plants has significant potential societal benefits [3]. In recent years, traditional use of plants for medical purposes has drawn the attention of researchers in our country as well [4-9]. World over tribal population still store a vast knowledge of using local plants as food material and other specific uses [10]. An Ethnobotanical field study reveals that the ethnic people have considerable traditional knowledge of wild-type plants and their utilization. The literacy percentage among between total people, tribal only 0.4% is found. They live in group comprising 8-10 families scattered over a wide range in terai region. The Tharu tribal inhabiting widely separated namlets in the terai region were studied for the first time for collection of ethnobotanical data. They follow Hinduism however there are quite a handful of them who have taken up other religions like Islam, Animism. It is a recent phenomenon that quite a few number of Tharu tribes have got influenced by the preaching of Buddhism as well as by Christianity. Each and every village of Tharu community has got their indigenous deities like Bhuinyar and Gor-raja. The vegetation growing in these forests plays a vital role in the life and health care of the tribes.

Materials and Methods

The Dudhwa National Park lies in the sub-Himalayan region referred to as the Terai belt. The Park is tucked between India and Nepal in the Lakhimpur-kheri District of the Indian State of Uttar Pradesh, is located between 27° 41’ and 28° 42’ N latitudes and 80° 2’ and 81° 19’ E longitudes. Dudhwa is the last remnant of Terai region, one of the most endangered ecosystems on the planet. The field tour was undertaken during March 2012-March 2013 covering different areas in the remote tribal populated areas. Plants of ethn-economic importance were recorded from knowledgeable local people, especially the village leaders, Baidyas and Hakims who accompanied the authors in the field. The information obtained was cross-checked with other persons. Some plants were already known, but the modes of their uses are different and quite interesting. It was confirmed with the available literature [11-14]. The voucher specimens were collected, processed and have been deposited in the ethnobotanical herbarium, NBRI Lucknow. The scientific names, vernacular name, phenology, chemistry and their mode of utilization are also given.

Results

The present investigations have recorded 21 aromatic medicinal plant species used by tribal and rural communities in north eastern part of Lakhimpur-Kheri District. Our study shows that many Gaudi-Funta households living close to the Dudhwa National Park harvest date and that it is a relatively profitable activity. The Ethnomedical data presented herein are only one major head namely; ethnomedical species used by tribal peoplefor various purposes Table 1.

Medicinal plants are common and medicinally important to treat various diseases. The local people of Gauri-funta preferred preparing the medicines by plants either as single or as in a combination with two or several plants and plant parts, since the combination rapidly cures the diseases and also enhance the immunity power of the patients. For example Extract of Cordia dichotoma leaves is used to cure cough but is also used in hair oil. While Equal amount Tamarindus indica and Ficus racemosa stem bark powder mix in coconut oil and applied on just burned skin with help of feathers of hen. This is constant with the other general observation which has been reported earlier in relation to medicinal plant studies by the Indian Traditional System of Medicine like Siddha and Ayurveda (Kirtikar and Basu; Asolkar et al.,) [31,22]. The ethanol extract of Dillenia Pentagyna showed the most potent antitumor activity, i.e. % ILS – 55% and % ILS – 48% at a dose of 50 and 100 mg/kg/day [32]. Different plant parts of these species, such as, root, leaf, fruit, bark and seed were used as medicine.

*Corresponding author: Ranjeet Kumar Yadav, Sam Higginbottom Institute Agriculture, Technology & Sciences, Allahabad, Uttar Pradesh, India. Tel: +91-9454989762; E-mail: ranjeetnbri@rediffmail.com

Received April 13, 2014; Accepted June 17, 2014; Published June 25, 2014

Citation: Yadav RK, Prakash A (2014) Aromatic Medicinal Plant Resources in Uttar Pradesh, India. Med Aromat Plants 3: 160. doi: 10.4172/2167-0412.1000160

Copyright: © 2014 Yadav RK, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
Citation: Yadav RK, Prakash A (2014) Aromatic Medicinal Plant Resources in Uttar Pradesh, India. Med Aromat Plants 3: 160. doi: 10.4172/2167-0412.1000160

Table 1: Ethnomedicinal plant species used by tribal people for various purposes.

| S.N. | Botanical name /Family | Vernacular name / Life form | Phenology | Chemistry | Mode of utilization |
|------|------------------------|-----------------------------|-----------|-----------|---------------------|
| 1.   | Abrus precatorius Linn./ Fabaceae | Gumachi / climber | July/ November | Two new steroids- abrin and abridin isolated from seeds | Root powder is used for the treatment of scorpion bite. |
| 2.   | Abutilon indicum (Linn.) Sweet / Malvaceae | Kanghi / Shrub | September / November | Amino acids, glucose, fructose, and galactose isolated from leaves | Eat the four to five leaves for regularity in Menstrual cycle. |
| 3.   | Achyranthes aspera Linn/ Acharantheraceae | Aghada / Herb | October/ March | Ecdysterone (Polygopine-A) from roots and two oleonolic acid based Saponin from fruits | The plant is used in eye disease and anti-fertility. |
| 4.   | Adhatoda zylamei Medic/ Acanthaceae | Arusa / Shrub | October/ April | Four new quinazoline alkaloids- vasicoline, adhatodine, vasicolinone and anisotokine isolated from inflorescence | Leaf power is cooked then taken used in cold and cough. |
| 5.   | Aegle marmelos (L.) Corr / Rutaceae | Bel / Tree | April/ August | 6',7'-epoxyaurapten, marmesin-1''-α-L-rhamnoside and palmitic, oleic, linoleic, linolenic & stearic acid | Crushed leaves applied on knee joint pain. The ripe fruits are eaten. |
| 6.   | Andrographis paniculata Wall./ Acanthaceae | Kalmegh/Herb | September / December | Stereoc structure of a diterpenes glucoside- neocandngropholic acid, Caffeic, chlorogenic and dicafeoylquinic acids isolated from leaves | Plant is used in malarial fever. |
| 7.   | Aristolochia indica Linn. / Aristolochiaceae | Israul / Climber | September / December | Two new sesquistereps hydrocarbons- ishwarane and aristolochene from roots | Leaf and fruit juice is used in fever. |
| 8.   | Boerrahavia diffusa Linn. / Nyctaginaceae | Gadapurna / Herb | Major part of the year | β-ecdysone, triacantonic and β-sitosterol 5,7-dihydroxy, 3, 4'-dimethoxy and 6, 8 dimethyl flavone | Root is used in Jaundice. |
| 9.   | Datura inoxia Mill. / Solanaceae | Datura / Shrub | July/ December | Alkaloid rich species, such as tropinone, tropine, scopine pseudotropine, scopoline,etc.| Seed paste along with Kolina oil is used in arthritis. |
| 10.  | Carissa opaca Stapl / Apocynaceae | Karaunda / Shrub | March/ October | Carissone [23]. | Root paste is used as body pain. |
| 11.  | Cassia fistula Linn. / Fabaceae | Ahiogra / Tree | April/ October | Rhein, glucose, sucrose and fructose isolated from bark | Dry fruit is making powder then used like toothpaste. |
| 12.  | Cordia dichotoma Forst./ Boraginaceae | Lasoura / Tree | March/ May | Macrophylline-β-sitosterol, α- lenolicen, palmitic, linoleic and oleic acids | Leaf power is used as cough medicine. |
| 13.  | Dillenia pentagyna Roxb./ Dilleniaceae | Agai / Tree | April/ June | Alkaloids, flavonoids, tanins and Saponin are isolated from fruits | The leaf extract isused as anticancer diseases. |
| 14.  | Ficus religiosa Linn./ Moraceae | Papal / Tree | April / September | Tannins, saponin, flavonoids, steroids, terpenoids and glycosides | Fruit along with milk is used in sterile women. |
| 15.  | Ficus racemosa Linn. / Moraceae | Gular / Tree | April/ July | β- Sitosterol glucoside, Friedelin and lupeol isolated from stem bark | Bark powder is used as medicine. |
| 16.  | Scoparia dulcis Linn./ Scrophulariaceae | Bundighas / Herb | Most part of the year | Friedelin, glutinol, α-amyrin, betulinic, llaanicolic and dulceolic, colox and betulinic acid isolated from roots | The leaf paste is applied boiled and skin disease. |
| 17.  | Solanum indicum Linn. / Solanaceae | Tukovilati/ Shrub | Most part of the year | Glycoalkaloid solasonine, solanine isolated from fruits | Seeds are used in toothache. |
| 18.  | Solanum nigrum Linn./ Solanaceae | Bhatkoya /Herb | December/ June | Solasodine isolated from berries of both normal and albino strains | The root and stem is used for easy delivery. |
| 19.  | Tamarindus indica Linn./ Caesalpinaceae | Intli / Tree | May /April | A polysaccharide isolated from seeds contained glucose, galactose and xylose | Stem bark and leaf are used as medicine for joint pain. |
| 21.  | Ziziphus xylopyrus Wild/ Rhamnaceae | Kathber / Tree | April/ November | Buetinolic acid from Wood and bark | The fruits and bark is used as tannin. |

Conclusion

Nowadays, data on restricted population and scarce distribution of these species like Achyranthes aspera, Aegle marmelos, Andrographis paniculata, Cordia dichotoma, Carissa opaca, Ziziphus xylopyrus, Tamarindus indica and Dillenia pentagonawere observed locally threatened in the area need both, in-situ and ex-situ conservation and urgent protection for sustainable utilization.

The species like Cordia dichotoma, Dillenia pentagona, Ficus racemosa, Tamarindus indica, Solanum surattense, Scoparia dulcis, Achyranthes aspera, Boerrahavia diffusa, Achyranthes aspera and Aegle marmelos were observed as most important medicinal values. Cultivation is often proposed as an alternative to wild harvesting to reduce pressure on tribe populations and improve local livelihood.

Of these maximum numbers of plants belong to the family Moraceae and Rhamnaceae, which shows a significant ethnobotanical diversity in different regions of north eastern part of Lakhimpur-kheri District.

Acknowledgements

The authors are especially grateful to the Uttar Pradesh State Biodiversity Board for financial support, and National Botanical Research Institute (CSIR). A lot of thanks to village leaders, survey respondents and key informants, Dudhwa National Park in Lakhimpur-kheri.

References

1. Mustafa Kargioglu, Süleyman Cencko, Ahmet Serteser, Nurcan Evliyaoğlu, Muhsin Konuk, et al. (2008) An ethnobotanical survey of inner-West Anatolia,Turkey. HumanEcology 36: 763–777.
2. Muthu C, Ayyanar M, Raja N, Ignacimuthu S (2006) Medicinal plants used by...
traditional healers in Kancheepuram district of Tamil Nadu, India. J Ethnobiol Ethnomed 2: 43.

3. Ugur Cakicioglu, Selima Khatun, Ismail Turkoglu, Sukru (2011) Ethnopharmacological survey of medicinal plants in Maden (Elazig-Turkey). J Ethnopharmacol 37: 469-486.

4. Erdogan T, Gonenc T, Cakicioglu U, Kivcak B (2014) Fatty acid composition of some Centaurea species from Elaz Turkey. Trop. j. pharm. res. 13: 211-216.

5. Gonenc TM, Erdogan TF, Demiric B, Baser KHC, Kivcak B (2012) Chemical composition of the essential oils of Anthemis coelopoda var. bourgaei and A. aciphylla var. aciphylla. Chemistry of Natural Compounds 48: 332-334.

6. Gonenc TM, Kupeli EK, Suntar I, Erdogan TF, Kivcak B (2014) Fatty acid composition and preclinical researches on Anthemis wiedemanniana Fisch Mey: Discovery of a new anti-inflammatory agent. Pharmacogn Mag 10: 53-60.

7. Hayta S, Polat R, Selvi S (2014) Traditional uses of medicinal plants in Elazig (Turkey). J Ethnopharmacol 154: 613-623.

8. Alltundag E, Ozturk M (2011) Ethnomedicinal studies on the plant resources of east Anatolia, Turkey. Procedia Soc Behav Sci 19: 756–777.

9. Tetik F, Civelek S, Cakicioglu U (2013) Traditional uses of some medicinal plants in Malatya (Turkey). J Ethnopharmacol 146: 331-346.

10. Sundriyal M, Sundriyal RC, Sharma E, Purohit AN (1998) Wild edibles and other useful plants of the Sikkim Himalaya, India. Oecologia Montana 7: 43-54.

11. Singh KK, Anand Prakash (1996) Observation of Ethnobotany of the col tribes of Varanasi. Journal of Economic and Taxonomic Botany 12: 133-137.

12. Singh KK, Maheswari JK (1985) Forest in the life and economy of the Tribals of Varanasi districts, Uttar Pradesh, India. Journal of Economic and Taxonomic botany 6: 109-116.

13. Singh KK (1997) Flora of Dudhwa National Park: Kheri distt. U. P. Environment and Forests. Government of India, New Delhi.

14. Jain SK (1991) Dictionary of India Folk Medicine and Ethnobotany. Deep Publication, New Delhi.

15. Singh KK and Maheshwari JK(1992) Folk medicinal uses of some plants among the Tharus of Gorakhpur district, Uttar Pradesh, India. Ethnobotany 4: 39-43.

16. Anjula Pandey (2002) A less known edible tree, Lauka (Crescentia cujete) from Uttar Pradesh, India. Journal of Economic and Taxonomic botany 3: 662-664.

17. Malhotra CL, Singh S (1985) Additional notes on wild edible plants of India. Journal of Economic and Taxonomic Botany 6: 125-127.

18. Rastogi, Mehrotra (1990) Compendium Indian medicinal plants, volume 1. PID, New Delhi, 10.

19. Rastogi, Mehrotra (1990) Compendium Indian medicinal plants, volume 1. PID, New Delhi, 13.

20. Rastogi, Mehrotra (1990) Compendium Indian medicinal plants, volume 2. PID, New Delhi, 45.

21. Aminuddin MA and Singh V K (1982) Solasodine in albino strain of Solanum Xanthocarpum. Pharmazie 37: 674.

22. Gabriel Rosangkima, Thengtom Rongpi and Surya Bali Prasad (2010) Ethnomedical value of some anticancer medicinal plants from north-east India: an in vivo screening in murine tumor model. Sci. Vis 10: 123-132.

23. Rastogi, Mehrotra (1990) Compendium Indian medicinal plants, volume 2. PID, New Delhi, 250.

24. Pushpangadan P (1997) Ethnobotany: India a status report .Ministry of Environment and Forests. Government of India, New Delhi.

25. Erdogan T, Gonenc T, Cakicioglu U, Kivcak B(2014) Fatty acid composition of some Centaurea species from Elaz Turkey. Trop. j. pharm. res. 13: 211-216.

26. Babu K, Shankar SG and Rai S (2010) Taxonomy, phytochemical composition and pharmacological prospectus of Ficusreligiosa linn. (Moraceae). Turk. J. Bot. 34: 219-224.

27. Tetik F, Civelek S, Cakicioglu U (2013) Traditional uses of some medicinal plants in Malatya (Turkey). J Ethnopharmacol 146: 331-346.

28. K. Anwar and A. Ghani (1973) Bangladesh Pharm. J. 2, 25.

29. Sipahimalani AT, Banerji A, Chadha MS (1972) Biosynthesis and interconversion of phytoecdysterones in Sesuvium portulacastrum L. J. Chem. Soc., Chem. Commun 11: 692-693.

30. Stephen Rollins (1984) Chemical Abstracts document delivery service. Online Information Review 8: 183-191.

31. Asolkar LV, Kakkar KK, Chakra O J (1992) Second Supplement to glossary of Indian Medicinal Plants with active principles Part- 1 (A-K). NISC, CSIR, New Delhi, 45.

32. Pushpangadan P (1997) Ethnobotany: India a status report .Ministry of Environment and Forests. Government of India, New Delhi.

33. Babu K, Shankar SG and Rai S (2010) Taxonomy, phytochemical composition and pharmacological prospectus of Ficusreligiosa linn. (Moraceae). Turk. J. Bot. 34: 219-224.

34. Asolkar LV, Kakkar KK, Chakra O J (1992) Second Supplement to glossary of Indian Medicinal Plants with active principles Part- 1 (A-K). NISC, CSIR, New Delhi, 13.

35. Pushpangadan P (1997) Ethnobotany: India a status report .Ministry of Environment and Forests. Government of India, New Delhi.

36. Pushpangadan P (1997) Ethnobotany: India a status report .Ministry of Environment and Forests. Government of India, New Delhi.

37. Pushpangadan P (1997) Ethnobotany: India a status report .Ministry of Environment and Forests. Government of India, New Delhi.

38. Pushpangadan P (1997) Ethnobotany: India a status report .Ministry of Environment and Forests. Government of India, New Delhi.

39. Pushpangadan P (1997) Ethnobotany: India a status report .Ministry of Environment and Forests. Government of India, New Delhi.