A Contribution to the Ethnopharmacological Study of the Shivalik Forests of Saharanpur, Uttar Pradesh

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Abstract

This paper deals with the results of an ethnopharmacological survey conducted in the Shivalik forest division Saharanpur of western Uttar Pradesh. Ethnomedicinal uses of 37 plant species belonging to 31 families are described. For each plant species are given the correct botanical and prevalent local names, the part of the plant used, claimed medicinal use(s) and mode of administration. The study has revealed many therapeutic uses which have not been hitherto reported. The potential of traditional medicines and ethnopharmacology in development and discovery of new pharmaceuticals has been highlighted.

Keywords: Ethnopharmacological survey, Folk medicines, Shivalik forests, Saharanpur, Western Uttar Pradesh.

Introduction

Western Uttar Pradesh has vast area, varied flora and diverse cultures. Traditional phytotherapy exists in every cultural area of this region. This is the reason that a lot of information regarding the folk medicinal uses of local plants has been documented from tribal pockets and rural areas across this part of the country (Alam et al., 1987, 1990; Ali, 1999; Ali et al., 2003, 2011a, 2011b; Ali and Singh, 1998; Anis and Iqbal, 1994; Atique et al., 1985a, 1985b, 1985c, 1993; Azam and Hisamuddin, 2009; Khan, 2002; Khan and Khan, 2002, 2003, 2004; Khan et al., 2003a, 2003b; Maheshwari and Singh, 1984; Mittal et al., 2008; Aslam and Masood, 2003; Siddiqui et al., 1989, 2000; Singh and Agarwal, 2008; Singh and Ali, 1989; Singh et al., 1989, 2008, 2009; Singh and Khan,1990; Singh and Rashid, 2003; Tomar, 2007a, 2007b, 2008a, 2008b; Tomar and Singh, 2006a, 2006b). A review of literature revealed that a few fieldworks have also been done on medicinal plants as well as traditional medicines of district Saharanpur as evident by the published reports available for this district (Ahuja, 1965; Dhiman et al., 2006; Husain and Siddiqui, 1987; Khanna and Ramesh, 2000). But, no comprehensive account of folk medicines of Shivalik forest division had previously been reported. Hence, an extensive ethnopharmacological survey was conducted in this part of Uttar Pradesh. In this communication information on various herbal preparations obtained during the fieldwork is presented.

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The study area lies between 30º 0′-30º25′ North latitude and 77º 32′-78º 01′ East longitude in the north of Saharanpur district of western Uttar Pradesh (Fig. 1). It is surrounded by the Kalsi soil conservation forest division (Uttarakhand) in the north, Social forestry division Saharanpur in the south, Rajaji National Park (Uttarakhand) in the east and the river Yamuna in the west which separates it from Karnal and Yamuna Nagar districts of Haryana. The division presents many varieties of features and differs in general appearance than any other portion of Doab land as well as Gangetic Plain as a whole. There are the steep hills of Shivalik chain which appear in a far more marked form in Saharanpur than any other district of Uttar Pradesh while below the hills are to be seen in a modified form the prevailing characteristics of the Bhabar and Tarai regions.

Shivalik forest division has a tropical climate because of the proximity to the Himalayan region. The area receives average rainfalls of about 110 cm. It's Tarai and down hills is rich in forest vegetation which is generally of northern tropical dry deciduous type. Shivalik pine forests with dominance of 'Chir' (*Pinus roxburghii* Sargent) are found on the higher reaches of the hills. The division comprises of three forest ranges namely Barkala, Mohand and Shakumbhari with reserve forests covering an area of 33229.46 hectare. The forest areas surveyed include Mohand, Shahjahanpur, Kaluwala, Khajnawar, Karondi, Khara, Maganpur, Badshahibagh, Khaironwali, Barkala, Shakumbhri, Sahensra Thakur, Kothri, Jasmor located in different forest ranges of the division which are predominantly inhabited by *Vangujjars.* Traditionally, these tribal used to migrate during winter from the hills but now they have been settled here in the Shivalik forests. They have their own dialect and food habits. Their elders still possess good knowledge of medicinal uses of local plants acquired in the course of long experience and close association with the forests.

Methodology

The present investigation was carried out in May and June 2011. In the course of fieldwork a number of villages and tribal settlements were visited and information on ethnomedicinal uses was recorded through interviews with local healers of good reputation and other knowledgeable village elders. Data on common name of the plant, claimed medicinal use(s), part used, other ingredients added (if any), method of drug preparation and mode of administration along with doses and duration of treatment were recorded for each claim. Plant specimens were collected and later identified with the help of related floras (Duthie, 1903-1922; Hooker, 1872-1897, Kanjilal, 1901). In

some cases botanical identify was finally confirmed by matching them in the herbarium of Forest Research Institute, Dehradun (DD). Voucher herbarium specimens of all the species were prepared and deposited in the herbarium of the Survey of Medicinal Plants Unit, Regional Research Institute of Unani Medicine, Aligarh (U.P.), India.

Observations

In the following listing medicinal plants are arranged in alphabetical order by their scientific names. Each entry gives information on botanical name, family (between parentheses), vernacular names, locality, field number and collector's name, followed by popular medicinal use(s) with mode of administration. As far as possible, the probable dosage and duration of these crude drugs are also given.

Achyranthes aspera L. (Amaranthaceae); 'Parkanda', 'Bachitta', 'Chirchita'; Karondi (*ZAA9094*). Fresh leaf juice is applied on cuts and wounds, while leaf paste as poultice, is applied on boils to relieve pain.

Adhatoda zeylanica Medic. (Acanthaceae); 'Kala Bansa'; Kaluwala (*ZAA9061*). Lukewarm aqueous decoction of dried leaves is given two times a day for 3-5 days to treat cough.

Adiantum capillus-veneris L.f. (Adiantaceae); 'Hansraj'; Khaironwali (*ZAA9170*). About 20g of dried fronds are boiled in 100 ml of water. This decoction mixed with powder of few black peppers and little honey is taken two times a day for 30-45 days for asthma.

Aegle marmelos (L.) Corr. (Rutaceae); 'Bel'; Badshahibagh (*ZAA9127*). About 10g of roasted pulp of the ripe fruit are given with milk at bedtime for general weakness. It is also used as an aphrodisiac.

Ageratum conyzoides L. (Asteraceae); 'Jangli Podina'; Barkala (*ZAA9250*). A freshly made paste of the leaves, obtained by crushing, is applied on burns.

Azadirachta indica A. Juss. (Meliaceae); 'Neem'; Mohand (*ZAA9238*). Leaf infusion is given orally on an empty stomach in the morning for treating scabies.

Boerhavia diffusa L. (Nyctaginaceae); 'Santhi'; Karondi (*ZAA9086*). Cooked leaves are eaten in jaundice. Root decoction is administered once daily to prevent kidney and liver from the harmful effects of habitual and excessive consumption of country made liquor.

Bombax ceiba L. (Bombacaceae); 'Simbbal'; Khaironwali (*ZAA9182*). Powder of the stem bark mixed with mustard oil is applied on boil to speed up suppuration and healing.

Butea monosperma (Lam.) Taub. (Fabaceae); 'Dhak'; Badshahibagh (*ZAA 9136*). Aqueous decoction of flowers is given orally for anuria.

Capparis zeylanica L. (Capparaceae); 'Lalbindara'; Khara (*ZAA8956*). Seeds are mixed with fodder and given daily to cow to induce conception.

Cassia fistula L. (Caesalpiniaceae); 'Amaltas', 'Karangal'; Mohand (*ZAA9083*). Fruit pulp mixed with 'gur' (solidified sugarcane juice) and little common salt is given to cattle for worm infestation. This preparation is also used for chronic constipation.

Clausena pentaphylla DC. (Rutaceae); 'Harka'; Badshahibagh (*ZAA8889*). In jaundice, patient is advised to look through large and prominent gland dots of the dried leaf in sunlight.

Cleome viscosa L. (Cleomaceae); 'Jakhiya'; Mohand (*ZAA9241*). Fresh leaf juice is given for worm infestation.

Crataeva adansonii DC. (Capparaceae); 'Bana'; Mohand (*ZAA9073*). Foliage is fed to cattle for bronchitis.

Dendrocalamus strictus (Roxb.) Nees (Poaceae); 'Bans'; Khaironwali (*ZAA9181*). Crushed vegetative buds are squeezed to obtain the juice and given orally to treat anuria.

Diospyros montana Roxb. (Ebenaceae); 'Panchhi'; Shakumbhri (*ZAA9245*). Stem bark paste is applied on bruise.

Drimia indica (Roxb.) Jessop. (Liliaceae); 'Jangli Gantha'; Barkala (*ZAA9248*). Bulb is crushed and boiled in sesame oil. It is cooled and applied locally to treat muscular pain.

Equisetum ramosissimum Desf. (Equisetaceae); 'Jorjori'; Karondi (*ZAA9161*). Fresh juice of aerial parts is applied on burns for healing and to prevent scar.

Euphorbia hirta L. (Euphorbiaceae); 'Dudhi'; Karondi (*ZAA9145*). Leaf paste is given as galactagogue. For treatment of worm infested wounds, 10-15 leaves of the plant are kept in a cotton cloth and tied around horns as well as neck of cattle.

Ficus religiosa L. (Moraceae); 'Pipal'; Maganpur (*ZAA9126*). Paste of vegetative buds is given for colic.

Gmelina arborea Roxb. (Verbenaceae); 'Kumhar'; Maganpur (*ZAA9197*). Leaf paste is applied on boils as poultice.

Hibiscus rosa-sinensis L. (Malvaceae); 'Gulhar'; Badshahibagh (*ZAA9264*). Fresh flowers are taken raw to relieve abdominal pain.

Holarrhena pubescens (Buch.-Ham.) Wall. ex G. Don (Apocynaceae); 'Kokar', 'Inderjo'; Kaluwala (*ZAA9065*). Stem bark decoction is administered orally against flatulence.

Leucas cephalotes (Koen. ex Roth) Spreng. (Lamiaceae); 'Guma'; Khara (*ZAA9260*). Whole plants are chopped and boiled in water; the resulting decoction is given for common fever. However, flower decoction is given to cattle for anuria.

Litsea glutinosa (Lour.) Robinson (Lauraceae); 'Chandna', 'Meda', 'Rehrn'; Karondi (*ZAA9150*). Paste of the stem bark is used as an external application for traumatic pain and inflammation in cases of cattle.

Madhuca longifolia (Koenig) Macbride (Sapotaceae); 'Mahua'; Sahensra (*ZAA9198*). Decoction of stem bark is given orally as abortifacient.

Mallotus philippensis (Lam.) Muell.-Arg. (Euphorbiaceae); 'Reni', 'Rohini', 'Kamila'; Badshahibagh (*ZAA9056*). Crimson red powder which covers the ripe fruits is collected and dried. One teaspoonful of this powder is given with water once a day for 10-15 days to treat scabies.

Moghania lineata (L.) O. Ktze (Fabaceae); 'Salpanni'; Shakumbhri (*ZAA9223*). Leaf decoction is given to treat fever and body ache.

Nyctanthes arbor-tristis L. (Oleaceae); 'Kuri', 'Harsinghar'; Barkala (*ZAA9253*). Leaf decoction is given orally for common cold with fever. It is also claimed to be effective in flatulence.

Prunus persica (L.) Stokes (Rosaceae); 'Aru'; Badshahibagh (*ZAA9206*). One teaspoon of the leaf juice is given at bedtime for few days to treat worm infestation.

Rauvolfia serpentina (L.) Benth. ex Kurz. (Apocynaceae); 'Sarpgandha'; Maganpur (*ZAA9204*). This shrub is planted in the houses and used to treat joint pain. Dried root is ground to make a fine powder; about 10g of this powder are given with water two times a day for 15-21 days consecutively.

Shorea robusta Gaertn.f. (Dipterocarpaceae); 'Sal'; Mohand (*ZAA9057*). Powdered gum-resin (l0g) is given with water three times a day for 5 days to treat diarrhoea.

Solanum virginianum L. (Solanaceae); 'Kathiyali'; Karondi (*ZAA9059*). Finely chopped plants are mixed with fodder and given for one week to treat loss of appetite in cases of domestic animals.

Stephania japonica (Thunb.) Miers (Menispermaceae); 'Jangli Nirbhishi'; Shakumbhari (*ZAA9246*). Leaf juice is given orally for treating urticaria.

Syzygium cumini (L.) Skeels (Myrtaceae); 'Jaman'; Khaironwali (*ZAA9185*). Vegetative buds mixed with 'zeera' (fruits of *Cuminum cyminum* L.), 'heeng' (oleoresin of *Ferula asa-foetida* L.) and 'kala namak' (sodium sulphate mixed with sodium chloride) are pounded. One teaspoon of this preparation is given with curd two times a day for 5 days to treat dysentery.

Vitex negundo L. (Verbenaceae); 'Mahala'; Pelyo (*ZAA9066*). Powdered leaves mixed with 'kala namak' are given to cattle for loss of appetite.

Woodfordia fruticosa (L.) Kuntz. (Lythraceae); 'Dhain', 'Dhawai'; Badshahibagh (*ZAA9113*). Water extraction of the stem bark is prepared till it become viscous. After cooling, it is applied on burns.

Discussion and Conclusion

The present study on Shivalik forest division Saharanpur has led to the documentation of ethnomedicinal uses of 37 plant species. The data are authentic and obtained from local healers who have long been using these plants as folk drugs for treatment of various illnesses and injuries of humans and cattle. These herbal preparations are widely accepted and popular throughout the area. A comparison with the available literature on medicinal and economic plants of the country (Anonymous, 1948-1976; 2001; Chopra et al., 1956; Jain, 1991; Kirtikar and Basu, 1935; Nadkarni, 1954; Watt, 1889-1892) revealed that majority of these claims are new or imperfectly known. Usages of medicinal plants presented in the listing are based on ancestral knowledge and empiric experience. Therefore, these species deserve scientific screening and evaluation for exploring their therapeutic potential. Such investigations may yield useful leads needed in the search of new biodynamic compounds of potential therapeutic value. As many conventional drugs of today have their origin in Indian traditional medicine and ethnopharmacology (Mukherjee et al., 2007; Patwardhan, 2005). It is, therefore, imperative that herbal materia medica of the tribals from ethnopharmacologically underexplored or unexplored areas of the country should be documented systematically, before this traditional knowledge is lost due to acculturation of indigenous societies by the erosive effect of modernization.

The objectives of ethnopharmacology are to rescue and document the important cultural heritages before these are lost and to investigate as well as evaluate the agents employed. Thus, it plays an immense role in the evaluation of natural products and more particularly the herbal drugs from traditional and folklore resources (Cordell and Colvard, 2005). The aim of present study is to report the information on most commonly used medicinal plants from the Saharanpur Shivaliks and to contribute to the rich heritage of traditional medicine of western Uttar Pradesh.

Fig. 1: Map of Shivalik forest division Saharanpur (U.P), India.

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Some Folk Medicinal Plants of the Study Area

Fig. 2: Jangli Gantha (*Drimia indica* (Roxb.) Jessop.)

Fig.-3. *Holarrhena pubescens* (Buch.-Ham.) Wall. ex G. Don (Inderjo)

Fig.-4. *Mallotus philippensis* (Lam.) Muell.-Arg. (Kamela)

Fig.-5. *Madhuca longifolia* (Koenig) Macbride (Mahua)

Fig.-6. *Shorea robusta* Gaertn. f. (Sal)

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