

## ETHNOMEDICINAL FLORA: AYURVEDIC SYSTEM OF MEDICINE IN A REMOTE PART OF THE INDO-TIBETAN HIMALAYAS

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**ABSTRACT**—Ethnomedicinal flora of the Ayurvedic system of medicine was studied in one of the remotest parts of the Indo-Tibetan Himalayas. Ayurvedic medicine has been in vogue for >7,000 years in many parts of Asia. The herbal remedies documented in the remote, precarious, and enigmatic Himalayan ecosystem may suggest new ways to combat dreaded killer diseases and improve human health.

Ayurveda is a holistic system of medicine which represents an ancient practice of therapies in many parts of Asia. Its history can be traced to 5000 B.C. in the Himalayas, where remote monasteries and sparsely populated hamlets are ideal repositories of this treasure-trove of ancient medicine. Millions of people in Asia depend on this system of medicine. There are >2,000 single drug prescriptions used in the Ayurvedic system of medicine, and almost 85% of these are of plant origin.

Ayurvedic therapy concentrates on the patient as a whole and stresses botanical medicines, whereas allopathy relies mainly on the active principles isolated from plants. Furthermore, the symbol of Ayurveda is a lotus flower, whose eight petals represent the eight medical specialties of this system of medicine. A global trend towards holistic treatment seems to suggest that a greater understanding of this ancient alternative medical system is vital for the amelioration of human health.

Since time immemorial, the plants of the Himalayas have richly contributed to the indigenous systems of medicine. Preliminary studies (Hemsley and Pearson, 1902; Steward, 1916; Abrol and Chopra, 1962; Sharma, 1977, 1993, 1994; Buth and Navchoo, 1988) have yielded relevant information concerning the role played by this alpine vegetation in the pharmacopoeia of the area. Furthermore, local governments have patronized indigenous systems of medicine. The Himalayan ecosystem, however, is confronted with ecological crisis of anthropogenic and technological origin. The medicinal wealth and ethnobotanical lore of this delicate ecosystem represent the core of the Ayurvedic system of medicine. The present report, therefore, is an attempt to document some of the ethnomedicinal practices associated with the Ayurvedic system of medicine in the remote, high-elevation (3,000–5,000 m) areas of the Himalayas.

### MATERIALS AND METHODS

The study area was botanized three times between 1994 and 1996. Ethnomedicinal data were collected from the local medicine men, clergy, village folks, rare palm leaf manuscripts, and remote monasteries, known for their traditional wealth of medicinal expertise. Classical Ayurvedic literature available in the area was consulted for comparative analysis of the ethnomedicinal lore associated with medicinal plants in use in the Himalayas.

Voucher specimens were prepared and deposited at the herbarium facilities at The University of Tennessee at Martin, Martin, Tennessee. Taxonomic confirmation of medicinal plants was made at the facilities available at the local Ayurvedic clinics. The area under investigation, situated near the Indo-Tibetan border in the northern Himalayas, lies at 30°45' to 32°45'N longitudes and 76°45' to 78°45'E latitudes at an elevation ranging from 3,000 to 5,000 m.

### RESULTS

Medicinal plants used in the Ayurvedic preparations by the inhabitants of the study area in the Indo-Tibetan Himalayas are listed alphabetically: species; family; local name (in quotation marks), and medicinal use.

*Aegle marmelos* *Corr. (Rutaceae)* "bel"—Ripe fruit is used for laxative and constipation properties. It also is used as a blood purifier. A paste made with tender leaves, turmeric powder, and mustard seeds is used for treating skin diseases. Furthermore, the pulp of the fruit is used with goat's milk for its nutritional properties.

*Albizia procera* *Benth (Leguminosae)* "kinihi"—Leaves and roots are boiled in water. The filtrate is used as an insecticide. It also is used as an antiseptic for wounds.

*Allium cepa* *L. (Liliaceae)* "piyaz"—The bulb is eaten for its diuretic properties. Pickled in vinegar, the bulb is used for the treatment of jaundice, cholera, and stomach disorders. Crushed plant parts are applied over wounds and cuts. The entire plant is chopped, salted, and consumed for its cholesterol-reducing and heart-strengthening properties.

*Aloe vera* *L. (Liliaceae)* "kumari"—Leaf paste is mixed with honey and used for the treatment of gastric ulcers. It also is used for healing scalp wounds and as a cover against dandruff.

*Amygdalus communis* *L. (Rosaceae)* "badam"—After boiling the root in goat's milk, the filtered decoction makes an excellent diuretic. Seed oil is used to treat cardiac problems and as a tonic.

*Azadirachta indica* *Juss. (Meliaceae)* "neem"—Boiled leaves and tumeric root make a very useful paste for treating skin problems. Seed oil makes a good hair tonic. Green twigs are chewed for oral hygiene.

*Carica papaya L. (Cariaceae)* "papaia"—The green fruit and leaves are ground into a paste. It is used internally and externally for treating cancerous growths, wounds, and ulcers.

*Cedrus deodara Roxb. (Pinaceae)* "devadaru"—Leaf paste is applied locally for bone injuries. It also is rubbed over affected part for the treatment of rheumatism.

*Celastrus paniculatus Willd. (Celastraceae)* "jyothismath"—Oil extracted from the seeds is taken internally to improve eyesight. A paste made from dried leaves and honey is applied locally for the treatment of skin problems.

*Cicer arietinum L. (Leguminosae)* "chana"—The seeds are ground into fine powder. It is mixed with a small amount of lemon juice and yogurt to make a semi-liquid paste. The paste is applied over the whole body before a bath to improve blood circulation.

*Cocos nucifera L. (Palmae)* "narial"—Liquid endosperm, mixed with a few drops of honey, makes an excellent skin lotion for women.

*Curcuma longa L. (Zingiberaceae)* "haridra"—When fleshy tuber is powdered and mixed with honey and warm goat's milk, it is used to relieve the symptoms of coughs and colds. External application of the paste made from fresh leaves and rhizome is very effective against eczema. Freshly prepared hot tea made from the rhizome is claimed to relieve rheumatic pain.

*Diospyros montana Gaertn. (Ebenaceae)* "Lohari"—Leaves are boiled with tamarind (*Tamarindus indica L.*) fruit pulp. The extract is applied locally to treat pain of swollen joints.

*Embelia ribes Burm. (Myrsinaceae)* "vidanga"—Root is boiled in water, and the decoction is effective in relieving chest pains. Leaves are powdered into a paste, mixed with honey, and consumed for the treatment of ulcers of the mouth.

*Ferula narthex Boiss. (Umbelliferae)* "hing"—The oleo gum resin prepared mostly from the root is used for several medicinal purposes. Cooked in lentil soup, it is claimed to improve blood circulation and aid digestion. Vegetable soups with a small amount of this oleo gum resin are used as an expectorant and disinfectant. Furthermore, tea made from it is consumed as a nerve tonic.

*Ficus religiosa L. (Moraceae)* "pipal"—Leaf buds are boiled in goat's milk, and the decoction is taken with honey to treat diarrhea. The filtrate is useful to treat a wide variety of skin problems.

*Fragaria vesca L. (Rosaceae)* "rasbhari"—The leaves are eaten raw or boiled in water for a tea for their diuretic action. The berries are used to make a jam with honey, and the decoction is effective as a diuretic and blood purifier.

*Glycyrrhiza glabra L. (Leguminosae)* "yastimadhu"—A decoction made with powdered root and honey is used in small doses to strengthen the memory. Also, tea made from the root is claimed to act as an expectorant and relieves chest discomforts associated with bronchial complications.

*Mentha longifolia L. (Labiatae)* "pudina"—Leaves are soaked in water overnight with fresh jasmine (*Jasminum officinale L.*) flowers. The mixture is applied over face as a beauty mask. The filtrate is consumed as a diuretic.

*Mucuna pruriens Hook. (Leguminosae)* "atmagupta"—A powder made from seeds is taken with goat's milk to improve sexual vitality. The roots are boiled in water, and the decoction is considered to be a good diuretic. Seed pods in powdered form are mixed with honey, and the mixture is given to expel intestinal worms.

*Nardostachys jatamansi D. C. (Valerianaceae)* "jataman-

si"—Leaves are boiled in water to make a tea which is taken with honey as a tonic and to treat nervous disorders. It also is considered to be useful in regulating menstrual flow.

*Ocimum sanctum L. (Labiatae)* "vishnu tulsi"—A tea made from leaves and seeds is an excellent remedy for coughs, colds, skin diseases, and digestive disorders. It also makes an effective insect repellent. It is considered to be a sacred plant among the inhabitants of the study area.

*Peltigera polydactyla Hoffm. (Lichenes)* "sharda"—The entire plant is washed, pounded, boiled in goat's milk, the resulting mash is soaked in cow's urine to be used as an antiseptic over cuts and bruises.

*Phyllanthus niruri L. (Euphorbeaceae)* "jaramla"—Leaves, shoots, and roots are boiled in water. The decoction is taken with honey or goat's milk for the treatment of jaundice. A poultice of the leaves made with boiled rice is applied externally to wounds.

*Picrorhiza kurroa Royle (Scrophulariaceae)* "katuka"—Dried rhizome is used in making a tea. The tea is used to treat jaundice and liver diseases.

*Piper betle L. (Piperaceae)* "pan"—Fresh leaves are stuffed with various condiments to be chewed after meals as a tonic in cardiac diseases. Fresh leaves also are boiled in water to make a tea that improves digestion.

*Piper nigrum L. (Piperaceae)* "kali mirch"—Dried and powdered berries make an excellent insecticide. Taken with goat's milk, they are effective against malarial fevers.

*Poa cynosuroides Retz. (Poaceae)* "kusha"—One of the sacred herbs of the area. Leaves are soaked in water, and the filtrate is taken as a diuretic. Root, boiled in water, makes a very effective tea against dysentery.

*Santalum album L. (Santalaceae)* "chandana"—A whitish paste, collected by rubbing the wood against a wet stone, is applied externally to treat eczema, rash, and pimples. It also makes a very good skin lotion.

*Saraca indica L. (Leguminosae)* "ashoka"—Dried flowers are ground into a fine powder and taken internally for the treatment of diabetes. The bark is boiled in cow's milk, and the decoction is given to women to control excessive bleeding during menstruation.

*Saussurea lappa Clark (Compositae)* "kustha"—The brownish colored root is washed and boiled in water to make a tea that is taken with honey to treat asthma and coughs. Root extract is applied externally for the treatment of eczema and other skin diseases.

*Semecarpus anacardium L. (Anacardiaceae)* "bhilavan"—The juice of the shell of the nut is consumed in small doses to dissolve abdominal tumors. The juice and the oil from the nut are used externally for tumorous growth and for relieving pain associated with swollen joints.

*Sida alba Burm. (Malvaceae)* "bala"—The root is boiled in water. The filtrate is taken with honey and goat's milk as a general tonic and for nervous disorders. The leaves, cooked as a vegetable, are applied externally for treating bleeding piles.

*Sorghum vulgare L. (Poaceae)* "javar"—Powdered grains are mixed with mustard (*Brassica sp.*) oil. The paste, when applied locally for a period of several months on bald heads, is claimed to stimulate the growth of new hair.

*Stereocaulon himalayense Lamb. (Lichenes)* "chanchal"—The entire plant is boiled in water or goat's milk. The decoction is taken to treat urinary infections.

*Tamarindus indica L. (Leguminosae)* "imli"—Ripe fruit is soaked in water overnight. The filtrate is taken for digestion and

as a laxative. Leaves are cooked in various ways to be used against liver disorders.

*Terminalia arjuna* Wight (*Combretaceae*) “*arjuna*”—The bark is ground and boiled in goat’s milk, the decoction is taken with honey in small doses several times during the day as a heart-strengthening tonic. It also is prescribed for treating hypertension.

*Thamnia vermicularis* Swartz (*Lichens*) “*swarn*”—Milk and other dairy products are exposed to the smoke produced by the burning of the dried plant parts. The smoke acts as a germicide.

*Triticum vulgare* Vill. (*Poaceae*) “*kanak*”—Seeds are ground into flour along with soybean (*Glycine max*) and chana (*Cicer arietinum*). The bread made from this mixture is eaten on a regular basis for treating diabetes.

*Usnea longissima* Ach (*Lichenes*) “*urmil*”—The entire plant is washed, air-dried, soaked in salted water overnight. It is placed locally over the affected part to heal bone fractures.

*Vitex negundo* L. (*Verbenaceae*) “*indrani*”—The pulverized root makes an excellent tooth powder against gum diseases. A decoction, made from dried and powdered leaves boiled in water, makes a good insecticide.

*Zingiber officinale* Rose (*Zingiberaceae*) “*adark*”—A paste made from the root and honey is taken with goat’s milk as a remedy for colds. A tea made by boiling the root in water is effective against rheumatic discomforts. It also is used for its antibiotic and digestive properties.

## DISCUSSION

The Ayurveda, a treasure-trove of herbal medicine, is the most ancient indigenous system of medicine in Asia, and the Himalayan flora has richly contributed to this ancient medicinal relic of antiquity. “Health for All” by 2000 A. D., the goal of the World Health Organization, requires promoting the resources of alternative systems of medicine around the globe. The Ayur-

veda represents a potential source to be explored for new medicines to supplement the existing, well-entrenched allopathic remedies. Furthermore, the Himalayan ecosystem and its flora and ethnomedicinal lore are on a treacherous precipice. It is, therefore, imperative that this enigmatic medicinal lore is deciphered before it dissipates into oblivion.

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