

ETHNOMEDICINAL FLORA: THERAPEUTIC SIGNIFICANCE OF MAJOR FOOD PLANTS IN A REMOTE PART OF THE EASTERN HIMALAYAS

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ABSTRACT—Ethnomedicinal studies on the commonly used food plants were conducted in one of the most remote areas of the eastern Himalayas bordering Bhutan, India, Nepal, and Tibet. The Himalayan mountain complex is rich in medicinal folklore and has contributed much, enriching both modern and indigenous systems of medicine. Medicinal folklore of the food plants in this region may stimulate scientific and analytical evaluation of the remedies that may combat dreaded present and future human afflictions.

The most satisfying areas for the conduct of ethnobotanical studies are remote and isolated parts of the world (Schultes, 1960, 1962). The Himalayas, a remote region where Nature reigns supreme, is a treasure trove of medicinal flora. Ethnomedicinal folklore in the Himalayas has richly contributed to Amchi, Sidha, Unani, and Ayurveda—the indigenous systems of medicine as well as to modern medicine. The Himalayas are the major source of more than 3,000 plant species used in the indigenous systems of medicine. This 2,500 km long mountain complex extending from Afghanistan to Burma is the home of several hundred million people and their centuries-old traditions and cultures. The topography of the area presents logistical problems for an ethnobotanist. However, some ethnomedicinal studies (Hemsley and Pearson, 1902; Steward, 1916; Abrol and Chopra, 1962; Sharma, 1977, 1989, 1993, 1997, 2004; Bhattacharya, 1991; Sharma and Sharma, 2002) reveal the medicinal potential of this region. A global awareness and interest in holistic lifestyle suggests a thorough investigation and understanding of this ancient ecosystem rich in medicinal folklore. This study is an attempt to document the therapeutic significance of some of the major food plants in the eastern Himalayas. Furthermore, the scarcity of modern medicines in these remote areas makes the study of the therapeutic uses of commonly used food plants quite relevant.

MATERIALS AND METHODS

The area under investigation was visited and botanized several times between 1992 and 2005. Villages, small towns, hamlets, mud-huts, temples, and monasteries were the sources of ethnomedicinal folklore associated with the therapeutic utilization of commonly used foods and spices in the region. Local village folks, priests, and practitioners of indigenous systems of medicine consulted represented a wide spectrum of the society. Local gatherings and social events were attended to learn about the therapeutic uses of various foods. Old manuscripts available in monasteries and temples also were probed for the centuries-old traditions associated with these practices. Voucher specimens were prepared and deposited at

the herbarium facilities at the University of Tennessee, Martin, Tennessee. Taxonomic identification of the plant material was confirmed by the local clinics and practitioners of indigenous systems of medicine. The area under investigation is a remote, sparsely inhabited part of the eastern Himalayas bordering Bhutan, India, Nepal, and Tibet lying at 26°30'–29°30'N and 88°50'–90°50'E and includes valleys and peaks ranging between 2,000 and 4,000 m.

RESULTS

Food plants used for their therapeutic properties by the inhabitants of the eastern Himalayas are listed alphabetically by family, species, local name (in quotation marks), and medicinal use.

Anacardiaceae

Mangifera indica L. “am”—A drink made from raw fruit roasted in clay oven. The juice is mixed with sugar and water and used to treat stroke. Unripe fruit eaten with honey is considered to be effective against liver and blood disorders. Fresh, tender leaves are soaked in water overnight and the resulting decantate is used for treating diabetes. A small amount of dried, powdered leaves mixed with water is prescribed for diabetes. The bark is boiled in water and filtered. The filtrate is given for controlling excessive bleeding during menstruation. The secretion produced at the time of removing the fruit from the tree is applied for scorpion bites.

Apiaceae

Daucus carota L. “gajar”—Grated root is administered to get rid of intestinal worms. Chewing the roots after meals is a common practice to prevent dental problems including cavities, bleeding gums, and tooth decay. Juice extracted from grated roots is used in treating peptic ulcer and related digestive problems. A preparation with clarified butter, sugar and grated roots is used as a tonic for healthy vision.

Brassicaceae

Brassica juncea Coss. “sarson”—Massage of the scalp with the oil extracted from the seeds is prescribed for healthy hair growth. Body massage with the oil is believed to be of value in

body aches and pains. Leaves and tender shoots are cooked with spices as greens for their laxative effect.

Brassica oleracea L. "bandgobhi"—Cooked vegetable with added salt and black pepper is eaten for its anti-constipation properties. It is also recommended for weight reduction. Leaves are washed in warm water and then placed over wounds, blisters, and skin eruptions as compresses. Furthermore, this vegetable is consumed for its value in strengthening the immune system.

Raphanus sativus L. "multi"—Juice extracted from the root is prescribed for urinary disorders such as painful urination and kidney stones. Leaves are chopped, boiled, and allowed to cool. A small amount of jaggery is added and the mixture is prescribed for patients suffering from jaundice. Leaves and seeds are used to make a paste to be applied over the skin for eczema and rash.

Chenopodiaceae

Spinacia oleracea L. "palak"—Leaf juice is prescribed for maintaining good dental health and the prevention of dental cavities and gum disease. Daily use of raw or cooked leaves and stems is recommended for preventing night blindness. Fresh leaves are recommended for constipation. Leaves cooked with onions and clarified butter are recommended for anemia.

Cucurbitaceae

Cucumis sativus L. "khira"—Fresh fruit is prescribed for constipation and as a diuretic. A drink made with juice from fresh fruit and mixed with carrot and spinach juice is consumed to stimulate hair growth. Slices of the fruit and fresh leaves are placed over the face to keep the skin soft and smooth. A poultice of leaves is used in treating skin rash and boils.

Lagenaria vulgaris L. "lauki"—Fresh fruit juice is used for treating urinary infections. It acts as a diuretic and is prescribed for its anti-acid properties. Leaves and the fruit are cooked as greens for treating insomnia. Leaf juice also is applied over scalp for insomnia.

Momordica dioica Roxb. "karela"—Freshly squeezed fruit juice is taken in the morning on empty stomach for diabetes. A decoction made by boiling the chopped fruit in water and adding some turmeric and ginger root is used by diabetic patients. Juice of the fruit is mixed with buttermilk and is consumed for piles, itching, and skin problems. Leaf juice is recommended in cholera and as a liver tonic.

Euphorbiaceae

Emblica officinalis L. "amla"—A small amount of juice squeezed from the fruit and mixed with a glass of bitter gourd (*Momordica dioica*) juice is used as a remedy for diabetes. A mixture of juice taken with honey is considered an effective remedy for improving vision and for the treatment of glaucoma. Powdered dry fruit is mixed with honey and taken with goat's milk as a remedy for scurvy. A jam made from the ripened fruit and taken with goat's milk is considered an excellent defense against infection in old age. The fruit is cut into small pieces and soaked in water overnight. The water is used as a hair tonic and also to prevent graying.

Fabaceae

Cicer arietinum L. "channa"—Flour made from the seeds is mixed with mustard oil and yogurt and the paste is applied over the face and other parts of the body to improve skin texture and to treat pimples, dryness, and rash. Seeds are

soaked in water overnight and the water is given to diabetic patients. Seeds boiled in water with a small amount of mustard oil are used to treat anemia. Soup made with seeds, onions, and turmeric is recommended as a laxative and for lowering blood cholesterol.

Trigonella foenum L. "methi"—Leaves are cooked as greens and prescribed for diabetes. Seeds are soaked in water overnight and the decantate is consumed for diabetes and liver disease. Cooked leaves and seeds also are used for anemia. Leaf juice is used to massage the scalp as a tonic and for hair growth. A tea made from seeds is given in high fevers. A gargle made from seeds is considered to be effective in treating sore throat and bad breath.

Lamiaceae

Mentha longifolia L. "pudina"—Leaves are crushed to make a paste. The paste is taken with warm water for indigestion. Tea made by boiling leaves in water is recommended to aid digestion and treat diarrhea and nausea. Leaves are boiled in water and the tea is taken with a small amount of honey for abdominal pain. Leaf juice is used externally for eczema and other skin problems.

Lauraceae

Cinnamomum zeylanicum Breyn. "dalchini"—Bark is boiled in water with black pepper and cardamom. The decantate is used for respiratory problems and fever. Dried, powdered bark is sprinkled on fruits as a tonic and a remedy for diabetes. Tea made with bark is recommended for controlling blood sugar.

Liliaceae

Allium cepa L. "piyaz"—Raw bulbs are prescribed for high blood pressure and for lowering blood cholesterol. Bulbs are also recommended for maintaining a healthy heart. Juice of raw bulb and leaves is used externally for toothache. A decoction made from the bulb and black pepper is given for cholera. A drop of leaf juice is poured into the ear as a remedy for tinnitus. Crushed bulb taken with a small sprinkling of sugar is an effective remedy for bleeding piles.

Allium sativum L. "lasan"—A decoction of the entire plant boiled in milk is given to tuberculosis patients and is used to treat asthma. Raw cloves taken in the morning on an empty stomach are prescribed for high blood pressure and for elevated blood cholesterol. Juice made from the plant is recommended for rheumatic problems. The plant is used in cooking as an aphrodisiac. Pickle made from the cloves is a standard remedy for lowering blood cholesterol and for maintaining a healthy heart.

Musaceae

Musa paradisiaca L. "kela"—Ripened fruit is used for the treatment of ulcers and is effective against dysentery. Cooked fruit and flowers are eaten with yogurt to treat painful menstruation. The fruit also is prescribed for high blood pressure and for insomnia. Juice from the leaves is considered an effective remedy for urinary disorders and kidney stones.

Myrtaceae

Eugenia jambolana Lam. "jamun"—Seeds are dried and made into a powder that is taken with water to treat diabetes. The fruit is prescribed for the same disorder. The bark is dried and powdered and taken with warm water for diabetes. Also, the fruit is used for treating bleeding piles. Tender leaves are boiled in water and the decantate is used to prevent a miscarriage.

Pedaliaceae

Sesamum indicum L. “til”—Oil from the seeds is used to massage the scalp for hair growth. A mixture of seed oil and clarified butter is recommended for external use to treat bleeding piles. External application of a paste made from seeds is of value in treating skin problems like pimples and rash. A few drops of the seed oil are mixed with goat’s milk to be given in cases of dysentery.

Poaceae

Hordeum vulgare L. “jau”—Grains are soaked in water overnight. The strained water is taken to improve urinary flow and to treat digestive problems. Sprouts from germinating grains are consumed as appetizer and for their digestive properties. Grains are fermented for a brew called “chang”, used for its diuretic properties.

Oryza sativum L. “chawal”—Regular use of this boiled cereal is recommended for controlling high blood pressure. This cereal with yogurt and a sprinkling of black pepper is a treatment for diarrhea. It is a recommended diet in high fevers.

Saccharum officinarum L. “ganna”—A mixture of the plant juice, ginger, and lime is recommended as a remedy for enlarged prostate. It is also suggested as a diuretic. The juice diluted with a small amount of water is prescribed in high fevers and for jaundice.

Triticum vulgare Vill. “kanak”—Bran from the grain is widely recommended as a laxative. Sprouts from the germinating grains are used to make juice that is prescribed to treat a wide variety of digestive, circulatory, and skin problems. The tender sprouts are chewed or cut into small pieces and boiled in water to prepare the juice, which is recommended for constipation and as a blood purifier. Sprouts are used externally over wounds as antiseptic.

Punicaceae

Punica granatum L. “anar”—Fresh fruit juice is prescribed for stomach disorders and as a digestive tonic. Small amounts of juice mixed with water are given in tuberculosis. A mixture made by grinding seeds with mint leaves and rock salt is considered to be an excellent remedy for dysentery and diarrhea. The root bark is boiled in water and the decantate is prescribed for expelling intestinal worms. A powder made from dried seeds is taken with water for the treatment of kidney infections.

Rosaceae

Malus pumila Mill. “seb”—Raw fruits are recommended for constipation. Cooked or boiled fruit is made into a paste and used for diarrhea. A paste made with the fruit and mixed with a small amount of honey and cinnamon is recommended for stomach disorders. Juice from the fruit is prescribed for anemia. The skin of the unripe fruit is given as a diuretic and for high blood pressure.

Prunus armeniaca L. “khumani”—Leaf juice is applied externally for skin afflictions such as eczema and boils. Juice from the fruit is given in high fevers. Oil extracted from the kernel may be of value as a hair tonic. Fresh fruit and fruit jam are prescribed as laxatives.

Prunus communis L. “badam”—Oil from the kernel is recommended for massaging the scalp to treat dandruff, hair loss, and graying of hair. Kernels are soaked in water overnight, the skin removed, ground, and made into a paste used to improve vision and treat anemia. The paste mixed with sugar is used to relieve constipation. Kernel oil is applied

externally for dermatitis and a paste made with ginger root is considered to be effective against cough.

Rutaceae

Aegle marmelos Corr. “bel”—The pulp of the ripe fruit is used as a laxative. The unripe fruit is effective in treating dysentery. Fresh leaves are soaked in water overnight and the decanted water is taken in the morning on an empty stomach to treat chronic ulcers. Leaf oil is mixed with black pepper; the mixture is believed to be beneficial against colds and respiratory problems.

Citrus aurantium L. “nimboo”—The juice of fresh fruits is used as an appetizer and to improve the body’s resistance to disease. A small amount of juice is added to water and taken on an empty stomach in the morning for bowel movement. It is also recommended for treating eye infections. Grated outer skin of the fruit is mixed with honey and taken for neutralizing stomach acidity. The rind is rubbed over the gums to treat gum disease. Fruit juice mixed with water and a little salt is taken to improve urinary flow and also for weight loss.

Citrus decumana L. “chakotra”—Fruit juice is recommended for ulcers. It is useful in diabetes. Fruit juice, mixed with black pepper and a little rock salt, is used to treat malaria. Fruit juice with its pulp and added honey is given to improve urinary flow and also is recommended for weight loss.

Citrus lamounum Risso. “bara nimboo”—Fruit juice with a pinch of salt is prescribed for cholera. It is also effective in the treatment of hypertension. Shredded peel of the fruit is soaked in water overnight and the decantate is taken with a small amount of honey as a heart tonic. Fruit juice in warm water is taken to treat hemorrhage. It is also effective in the treatment of rheumatic pains and gout.

Vitaceae

Vitis vinifera L. “angoor”—Fruit juice is prescribed for liver disorders. Fruit juice is mixed with bits of apricot and the mixture is recommended for treating alcoholics. The juice is mixed with water and given to children for constipation. Dried fruits are soaked in water overnight and the mixture is taken in the morning on an empty stomach for treating chronic constipation. Dried fruit boiled in milk is consumed to restore sexual potency and also is recommended for insomnia.

Zingiberaceae

Zingiber officinale Rose. “adrak”—Fresh root is peeled and a small piece is taken after meals for improving digestion. Fresh root and freshly squeezed juice from the root are considered effective against nausea, indigestion, and stomach pains. Grated root is mixed with honey and taken for colds and coughs. Tea made with the root is believed to be effective in treating menstrual disorders. A paste made with the fresh root is applied over the forehead to relieve tension and headache.

DISCUSSION

The World Health Organization estimates that 80–85% of the people of the world depend upon traditional indigenous systems of medicine for their primary, very basic health needs (Farnsworth, 1986). Indigenous medicines are inexpensive and many developing countries are encouraging their use. Furthermore, it is imperative that the conservation of the habitat and the sustainable use of its resources become our concern so that new medicines may be identified. The Himalayas represent a delicate and pristine ecosystem that is under much

anthropogenic stress. This calls for a strong commitment for its ethnomedicinal exploration. The high costs associated with modern medicine are straining the economies of many developed nations and have moved medical care beyond the reach of much of the world's population.

A major concern among infectious disease specialists throughout the world is the possibility of untreatable plagues of resistant organisms (Weil, 1996). In view of the present crisis in modern medicine and emphasis on alternative therapies, especially in the industrialized world, it seems that medicinal folklore associated with plant species in remote parts of the world should become a major focus of research. Almost half of all prescriptions dispensed in the United States contain substances of natural origin, and over 50% of these medications contain a plant derived active principle (Farnsworth, 1977). Reserpine, vincristine, and vinblastine are some of the examples of medicinal compounds derived from the flora of these remote ecosystems. Many of the so called "wonder drugs" of the 20th century are increasingly ineffective today. This is a plea for encouraging a systematic documentation of traditional ethnomedicinal folklore where we may find new and even more effective "wonder drugs" for the treatment of human afflictions.

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