Medicinal plants used against gastrointestinal tract disorders by the traditional healers of Sikkim Himalayas

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Ethnomedicinal survey of various tribes in the four districts of Sikkim reveals the use of medicinal plants. The paper records ethnomedicinal values of 36 plants species belonging to 27 families having the activities in gastrointestinal tract disorders. A list of plants species along with their plant names, family, local names, plant parts used and the mode of administration has been enumerated.

Keywords: Indigenous knowledge, Medicinal plants, Gastrointestinal tract disorders, Ethnomedicine, Sikkim Himalayas

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It has estimated that about 80% of the populations living in the developing countries rely almost exclusively on traditional medicine. Indian traditional medicine is based on various systems including Ayurveda, Siddha & Unani and systems used by various tribal communities. The speedy documentation of the prized indigenous knowledge is required to save them from the emergency threats of the destructive over harvesting, habitat degradation and biopiracy. About 70% of the identified medicinal plants of the Indian Himalayas are exposed to destructive harvesting. Number of legislations has enacted to prevent unfair exploitation of biological wealth of the nation. These legislations are used for immediate chronicling of associated indigenous knowledge and biodiversity. Sikkim is a small Northeastern state with its geographical area of 7,098 sq km. Situated at latitude 27°-28°N, longitude 88°-89°N, it has a general relief range of 350-857 m. It is bounded by Singhalila range in the West and Chola range in the East. The northern boundary and a part of the eastern boundary are bounded by Tibetan plateau and to the South is the Darjeeling Gorkha Hill Council of West Bengal. The main drainage system, river Teesta, originates from the Cholhamu Lake in North at 5,259 m, altitude. Besides the history, even floristically, this hilly tract of 12,700 sq km, which refers to Sikkim and Darjeeling district, is grouped as the Sikkim Himalayas, a unique of biological diversity. Its complex terrain system, high humidity, varied aspects and abruptness of altitudinal variation are a few other factors that contribute to immense wealth of biological resources of more than 6,000 species of flowering plants, 500 species of birds, about 400 species of butterflies and 350 species of ferns, more than 238 species of bamboos, and 280 species of orchids.

Methodology
The survey was conducted during 2004-2005. Folklore data were collected from local healers, Bongthing, the medicine man who prescribe herbal remedies to treat various diseases and also from users. The main objective of the study was to record the uses of plants for medicinal purposes through field visits, and interviews (Figs 1-4). Plants were identified and confirmed with the help of the Botanical Survey of India, Gangtok Chapter, Gangtok, Sikkim.

Enumeration
In the following enumeration, the plants are arranged in alphabetical order of plant names along with family, followed local names wherever available, and brief notes on plant parts, modes of use and dose.

*Aconitum ferox* Wall. ex Ser. (Ranunculaceae); *Atisingua bish;* Indian Aconite

Uses: Decoction of tuberous root (10 ml) is taken orally (2-3 times daily) to treat abdominal disorders.
Brassica juncea L. (Brassicaceae); Palangi, Vadisha, Tore; Indian mustard
Uses: Whole plant decoction is taken orally 2-3 times daily for aperients and dysenteric.

Dysoxylum hamiltonii Blume. (Meliaceae); Sipchikang
Uses: Bark decoction is taken 2-3 times daily orally in the treatment of stomachache.
Eulophia campestris Wall. (Orchidaceae); Hattipaila
Uses: Tuber juice is taken orally 2-3 times as appetizer.

Evodia fraxinifolia Hook. f. (Rutaceae); Kanakpa; Kanu
Uses: Root powder (1 teaspoonful) with 50 ml water is taken orally 2-3 times daily to treat dysentery.

Garcinia cowa Roxb. (Clusiaceae); Kaphal; Egg tree
Uses: Raw, sun dried sliced fruit or powdered fruit is taken orally 2-3 times daily to treat dysentery.

Garuga pinnata Roxb. (Burseraceae); Aule dabadabe
Uses: Raw fruits taken 1-2 times daily show digestive properties.

Glochidion lanceolarium Voigt. (Euphorbiaceae); Bangikath
Uses: Bark juice is taken orally 2-3 times daily in stomach complaints.

Havenia duleis Thunb. (Rhamnaceae); Bangikath; Coral tree
Uses: Powdered seeds mixed with water are taken orally for relief in intoxication due to excessive drinking.

Hedera nepalensis Koch. (Araliaceae); Dudela; Nepal Ivy
Uses: Plant juice is taken orally 2-3 times daily as antispasmodic.

Hedyotis corymbosa L. (Rubiaceae); Piriengo
Uses: Plant decoction taken 1-2 times daily prevents gastric irritability and acts as an anthelmintic.

Heynea trijuga Roxb. (Meliaceae); Ankhataruwa, Komalistili
Uses: Leaf decoction is taken orally 2-3 times daily in the treatment of cholera.

Holarrhena antidysenterica (L.) Wall. (Apocyanaceae); Khuria
Uses: Plant powder or decoction is taken 2-3 times daily for the treatment of acute and chronic diarrhoea and dysentery.

Homonoia riparia Lour. (Euphorbiaceae); Khola ruis; Mongthel-kung
Uses: Root decoction is taken orally 2-3 times daily as laxative.

Juncellus marcopoda Boiss. (Pinaceae); Indian Juniper; Chandan, Dhupi
Uses: Raw fruit and fruit powder is taken with water 1-2 times daily as carminative.

Kalanchoe integramedies (Crassulaceae); Hatnokane
Uses: Leaf juice is taken orally twice daily as purgative.

Knema angustifolia. Roxb. (Myristicaceae); Ramguwa
Uses: Dried fruit powder mixed with water is taken orally 1-2 times daily to treat dysentery.

Lindera neesiana wall. ex Ness. (Lauraceae); Timur
Uses: Raw fruits and dried fruit powder with water is taken daily as aromatic and carminative.

Litsea cubeba Pers. (Lauraceae); Siltimur; Tanghaercherkerng
Uses: Raw fruits are taken orally and used as carminative.

Litsea glutinosa Loure. (Lauraceae); Suppatnyok; Kawala
Uses: Decoction of bark and leaves is taken orally 2-3 times daily in the treatment of dysentery.

Litsea monopetala (Roxb.) Pers. (Lauraceae); Ratmanti; Sunyokkung
Uses: Bark decoction is taken orally 2-3 times daily in the treatment of diarrhoea.

Mangifera sylvatica Roxb. (Anacardiaceae); Chuchiam; Kathorkung
Uses: Fruits (1-2 whole ripe fruits daily) are used orally as laxative.

Marsdenia tenacissima Weight & Arn. (Asclepiadaceae); Bahuni lahara, Sunamari, Kamtiongrik
Uses: Root juice is taken orally 3 times daily as purgative.
Marsdenia tinctoria R. Br. (Asclepiadaceae); Kali lara; Ryom
Uses: Leaf juice is taken thrice daily for stomachache.

Melia azedarach L. (Meliaceae); Bakaina
Uses: Leaf juice is taken orally 2-3 times daily as anthelmintic.

Melia composita Willd. (Meliaceae); Silotkung; Lapsi
Uses: Raw fruit or fruit juice is taken thrice daily as anthelmintic.

Michelia champaca L. (Magnoliaceae); Champak; Ouliachamp
Uses: Flowers are taken orally for stomachache; as carminative and used in the treatment of dyspepsia.

Nardostachys jatamansi DC. (Valerianaceae); Haswa, Naswa Jatamangs; Pampe, Jatamansi
Uses: Infusion of root rhizomes is taken thrice daily to treat stomachache and as laxative.

Oroxylum indicum Vent. (Bignoniaceae); Tatola
Uses: Root bark juice is taken orally 2-3 times daily in diarrhoea and dysentery.

Pavetta indica L. (Rubiaceae); Takali, Kangyaphul; Sundok; White Pavetta.
Uses: The juice of bitter root taken 2 times daily has purgative action.

Polygalac arillata Buch-Ham. (Polygalaceae); Marcha, Karima; Michepnor-kung Michepnor-kung, Cleem-soon-creem; Yellow Milkwort, Red-Eye
Uses: Root juice is taken 2-3 times daily as laxative and emetic.

Polygonum molle D. Don. (Polygonaceae); Tuknu, Thotne, Patussa; Kandyeo-pam
Uses: Whole plant juice is taken twice daily orally to treat diarrhoea.

Premna obtusifolia R. Br. (Verbenaceae); Gineri
Uses: Root decoction is taken twice daily as laxative, stomachache and carminative.

Pterospermum acerifolium Willd. (Sterculiaceae); Hattipaila; Numbong
Uses: Flower juice is taken orally in empty stomach to treat peptic ulcers.

Randia uliginosa DC. (Rubiaceae); Maidal
Uses: Bark decoction is taken 2-3 times daily orally to treat diarrhoea and dysentery.

Rhododendron arboreum Sm. (Ericaceae); Bhorans, Guras, Ghonas, Taggu, Laliguras, Dotial; Etok; Rose-Tree, Tree-Rhodondendron
Uses: Dried flowers fried with ghee are taken daily to check blood dysentery.

Discussion
Present study includes information on 36 plant species belonging to 27 families, used as remedies for gastro-intestinal disorders like diarrhoea, dysentery, stomach pain, laxative, etc. The most common dosage forms are fresh juice, decoction, infusion and dry powder. Sometimes, drugs are taken by chewing a particular plant part. These indigenous methods of treatment based on medicinal plants are still an important part of social life and culture in Sikkim. The claimed therapeutic values of the reported species are to be critically examined to establish their safety and effectiveness and to preserve these flora, which may otherwise be extinct due to deforestation.

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