

Phytopharmacological properties of *Swertia chirata* Potential medicinal herb: an overview

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Abstract: *Swertia chirata* also known as 'chirata' is a medicinal plant indigenous to temperate Himalaya. Its medicinal usage is reported in Indian pharmaceutical codex, the British and the American pharmacopoeias and in different traditional systems of medicines such as the Ayurveda, Unani and Siddha. The plant is used as a bitter tonic in treatment of fever and for curing various skin diseases. Among the different species of *Swertia* reported in India, *Swertia chirata* is considered the most important for its medicinal properties. The bitterness, antihelmintic, hypoglycemic and antipyretic properties are attributed to amarogentin (most bitter compound isolated till date), swerchirin, swertiamarin and other active principles of the herb. Herbal medicines contain *S. chirata* extract in different amounts for its antipyretic, hypoglycemic, antifungal and antibacterial properties.

Keywords: Amarogentin, bitter, hypoglycemic, swerchirin.

I. Introduction

Medicinal plants always played an important role in the health development of mankind. *Swertia chirata* is also known as Haima, kirata Tikta, Nidrari, chiretta. *S. chirata* is found distributed in temperate regions of the Himalaya at an altitude of 1200–3000 m from Kashmir to Nepal, Bhutan and grows in the slopes of moist shady places. And this herbal drug "Chirata" is gathered from dried plants of *Swertia* species. Although full-length plants of *Swertia* are medicinally important but roots are manifold paramount (Anonymous, 1976). Chirata is available in Indian medical conformity as therapy for different kinds of disorders like diarrhea, never ending fever, anemia, liver function disorders and bronchial asthma. As pinpointed by National Medicinal Plant Board, Government of India, *chirata* is in the midst of the 32 awful pre eminent medicinal herbs in the affluent biodiversity of Uttarakhand (India). The widespread uses of *S. chirata* in traditional medicines have resulted in considerable chemical analysis of the plant, and active principles which attribute the plant its medicinal properties have been identified and isolated. The entire plant is used in traditional medicine; however the root is mentioned to be the most powerful part.

II. Classification

Biological Name: *Swertia chirata*, *Gentianachirayita*

Family-Gentianaceae

Indian Name: Chirayata



III. Morphology

It is an annually growing erect and branched herb found in moist and shady places. It normally grows up to a height of three feet or one meter. The plants are in bloom between the period September and October. The flowers are greenish in color with a purple tinge and hermaphrodite in nature. It tastes bitter from root to tip. Due to its bitter taste, it is considered as tonic, astringent, stomachic, improves eye sight, pain in the joints. *S. chirayita* has an erect, about 2–3 ft long stem; the middle portion is round, whereas the upper is four-angled, with a prominent decurrent line at each angle. The stems are orange brown or purplish and contain large continuous yellowish pith. The root is simple, tapering and stout, short, almost 7 cm long and usually half an inch thick.



IV. Cultivation

The plant actually develops best in areas where the summers are cool. Hence, it is no surprise that the chiretta can thrive and flourish both in conditions where there is full sunlight as well as partial shade. The chiretta plants are able to withstand temperatures as low as -15°C and still continue to grow well. The chiretta herb (*S. chirata*) is propagated by its seeds. Sowing is generally done during the spring when the temperature is not above 10°C and in a situation when the soil contains plenty of humus. When the seedlings have grown adequately to be handled, they are taken out individually and planted into separate pots or containers. The young plants are re-planted outdoors during the early part of summer. The plants are usually harvested just when the seeds begin to set in and dried in the sun for use afterwards.

V. Parts Used

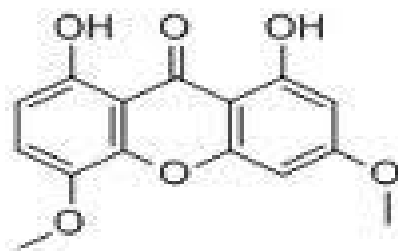
Leaves and whole plant. Although full-length plants of *Swertia* are medicinally important but leaves and roots are important.



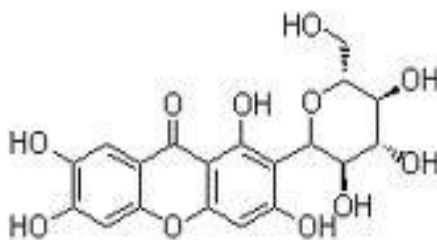
VI. Chemical Constituents

Swertia chirata has a large number of chemical constituents estimating more than twenty polyhydroxylated xanthenes and some of these are swertimarin, swerchirin, mangiferin, decussatin and isobellidifolin; a dimeric xanthone and chiratanin has also been segregated (Bhattacharya *et al.*, 1976). Important photo chemicals like Amarogentin and Swerchirin have been investigated for drug reinforcement (Brahmachari *et al.*, 2004). The bitterness, antihelmintic, hypoglycemic and antipyretic properties are attributed to amarogentin (most bitter compound isolated till date), swerchirin, swertiamarin and other active principles of the herb.

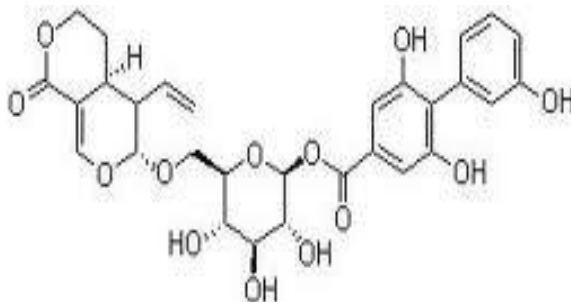
Swerchirin:



Mangiferin:



Chiratanin:



VII. Significance

Swertia Chirata is known for its medicinal and pharmaceutical importance. It is a filthy provenance of alkaloids and flavonoids, most of them having ample scale exercise. Their roots have considerable antipyretic and analgesic effects and a high rise therapeutic clue. It is having a large number of chemical constituents estimating more than twenty polyhydroxylated xanthenes and some of these are swertinin, swerchirin, mangiferin, decussatin and isobellidifolin; a dimeric xanthone and chiratanin has also been segregated (Bhattacharya *et al.*, 1976). Important photo chemicals like Amarogentin and Swerchirin have been investigated for drug reinforcement (Brahamchari *et al.*, 2004).

VIII. Medicinal Properties

Among the different species of the genus, *Swertiachirata* is considered the most important for its medicinal properties. *S.chirata* is used as antipyretic, anthelmintic, antiperiodic, cathartic and in asthma and leucorrhoea in Ayurveda and as harsh, analeptic, stomachic, mitigates inflammation, relaxing to pregnant uterus and never ending fevers (Kirtikar and Basu, 1984). It is a remedy for ulcers, gastrointestinal diseases, skin diseases, cough, hiccup, liver and Kidney diseases, Neurological disorders, and urogenital tract disorders. Also used as purifier of Breast milk, and as a laxative and carminative (Garg 1965 and Sharma 1986). The bitterness, antihelmintic, hypoglycemic and antipyretic. Chirata is a valuable bitter tonic. It is laxative and an appetizer. It also corrects the disordered process of nutrition and restores the normal function of the system. The herb is an excellent drug for strengthening the stomach and promoting its action. It is used in the treatment of dyspepsia and diarrhea.

7.1 Antipyretic: Chirata is an effective drug for reducing fevers. It is especially beneficial in the treatment of malarial fevers. It is also effective in hysteria and convulsion.

7.2 Antihelmintic: Worms destroying, properties and is used in killing intestinal worms. An infusion of the herb is taken for this purpose. The herb *S.chirata* possesses digestive, hepatic (conditions pertaining to the liver) and tonic properties. In fact, this bitter herb promotes digestion, particularly of fats, and aid in regulating blood sugar levels. At the same time, the herb is an effective medication for leishmaniasis - a parasitic disease usually found in tropical regions.

IX. Conclusion

Bioactive constituents extracted from *Chirata* have got a number of beneficial medicinal effects for different kinds of ailments, with no side effects

X. Recent Research

K. P. Sampath Kumar et al. at 2010 studied the medicinal properties of *Swertiachirata* and were found that it is useful in medication for weak stomach, particularly when it results in indigestion, bloating and nausea. In addition, this bitter tonic is also said to be effective in protecting the liver. *Chirata* is a valuable bitter tonic.

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