



J. Chem. Pharm. Res., 2010, 2(1): 262-266

ISSN No: 0975-7384

***Swertia chirata*: A traditional herb and its medicinal uses**

K. P. Sampath Kumar^{*1}, Debjit Bhowmik², Chiranjib², Biswajit² and Margret Chandira²

¹*Dept. of Pharmaceutical Sciences, Coimbatore Medical College, Coimbatore*

²*Rajeev Gandhi College of Pharmacy, Maharajganj, Uttar Pradesh*

Abstract

Chirayata is an excellent remedy for strengthening the stomach and promoting its action. It is used in the treatment of dyspepsia and diarrhea. Chiretta stimulates the digestion and helps to normalize blood sugar, which makes it useful for diabetics. Studies with animals suggest that this herb reduces the sugar levels only when they are high, which lowers the risk of hypoglycemia. The bitterness of the herb stimulates saliva and gastric juices, which help stop nausea, bloating, indigestion and hiccups. It is also used for fever and to rid the body of parasites. It is a tonic for the heart, liver and eyes, and can be useful to relieve sciatica, cough, scanty urine and melancholia. Chiretta is used as a preventative measure for malaria during epidemics. It is given as a tonic to people convalescing from a long illness. This herb is antimicrobial. Studies are underway to see if this herb continues to offer a reduction in cancer cells when taken to fight cancer. Its medicinal uses are Bitter tonic, stomachic, febrifuge and anthelmintic, appetizer, laxative, alterative, antidiarrhoeic and antiperiodic. Chiretta decoction can be added to a bath to help skin rashes. Skin diseases with burning sensations, oozing and itching respond well to this herb. The traditional uses of medicinal plants in healthcare practices are providing clues to new areas of research; hence its importance is now well recognized. *Swertia chirayita* is widely demanded for its unmatched medicinal properties to the gentian. *Swertia chirayita* provided by us is valued as a febrifuge and tonic. Perfect for various diseases like diarrhea, fever and weakness, our *Swertia chirayita* is available at very affordable prices. We are well reckoned as the most preeminent Chirata Manufacturer and Exporter based in India.

Key words: Chirayata, Traditional and medicinal uses, gentian.

Introduction

Chirayata, also known as Indian gentian is a robust annual herb which grows upto about 1.5 meters in height. It has leaves in opposite pair about 10 cms long, without stalks, pointed at the tip. The plant has numerous flowers, pale green in colour, tinged with purple, with long white or pink hairs and minutes sharp pointed fruits. The whole plant, collected in its flowering stage and dried, constitutes the drug. The trade name chirayata is based on the local name of the plant. It has long been used by the ayurvedic physicians as a bitter tonic. The plant contains a bitter glycoside chiratin, which yields on hydrolysis, two bitter principle, ophelic acid and chiratin. The latter is soluble in water. The ophelic acid is a brown hygroscopic substance which is soluble in water and alcohol .It also contains resin, tannin and 4to 8 per cent of ash. Chirayatra is an effective drug for reducing fevers. It is specially beneficial in the treatment of malarial fevers. It is also effective in hysteria and convulsion. The herb is an excellent drug for strengthening the stomach and promoting its action. It is used in the treatment of dyspepsia and diarrhoea. Chirayata possesses anthelmintic that is, worms destroying, properties and is used in killing intestinal worms. An infusion of the herb is taken for this purpose. It serves as an effective tonic in case of general weakness and during convalescence. The infusion of the plant can be taken in doses of 60ml or 40 tablespoons twice a day, before meals. The herb is used in the form of an infusion or tincture. The infusion is prepared in the hot water with aromatics likes cloves and cinnamon. It is generally taken in doses of 15 to 30 ml or 1 to 2 tablespoon. The root of the plant is useful in checking hiccups and vomiting. It is taken in doses of 0.5 to 2 grams with honey. The chirayata herb is remarkable for its properties in the removal of all kinds of intestinal worms. An infusion of the herb is prepared and taken regularly during parasitic infestations. The *Swertia chiratta* is a therapeutic plant and its remedial usage has been recognized in the Indian pharmaceutical codex as well as the British and American Pharmacopoeias. In addition, the curative value of the herb has also been recorded by the ancient Indian herbal medicine system Ayurveda and other conventional medical systems, such as Siddha and Unani. The herb as well as its extracts is used as a bitter stimulant to treat fever as well as curing several skin problems. *Swertia chiratta* (scientific name *S. chirayita*) has an established market, both domestic in India as well as globally and it is expanding at the rate of around 10 per cent every year. This drug possesses the tonic properties of gentian and similar bitters. It is valued in India, where it is much employed in urinary complaints with uneasiness in the region of the kidneys, frequent urging to urinate, which is accomplished with difficulty, and in cases of *uric acid deposits*. It is a remedy also for convalescence from exhausting sickness, and for atonic and nervous forms of dyspepsia. It is found in the Himalayan ranges of India from Kashmir to Bhutan at an altitude of 1,200-3,000 m. It is also found in the Khasi Hills of Meghalaya at an altitude of 1,200-1,500 m.

Biological Name: *Swertia chirata*, *Gentiana chirayita*

Family-Gentianaceae

Indian Name: Chirayata

Chemical Composition

The plant contains the two bitter principles, ophelic acid and chiratin. The latter occurs in the larger proportion, and yields, by boiling with hydrochloric acid, chiratogenin and ophelic acid, but no sugar. Neither ophelic acid nor chiratin has been obtained in crystals. The ash of chirata

yields carbonates and phosphates of calcium, potassium, and magnesium. Tannin is almost entirely absent. A crystalline, yellow, waxy body in small amount, as well as the ordinary plant constituents, abound. Two bitter principles occur, discovered by Höhn in 1869. These bodies are *ophelic acid* ($C_{13}H_{20}O_{10}$), and *chiratin* ($C_{26}H_{48}O_{15}$), the former being in largest amount. *Ophelic acid* is a hygroscopic, non-crystalline, yellow, viscid body, having an odor faintly suggestive of gentian, and an acidulous, bitter taste which is persistent. Water, ether, and alcohol dissolve it. Basic lead acetate precipitates it yellow. Chiratin forms an insoluble compound with tannic acid (*ophelic acid* does not), and may be removed by means of that acid. It is a pale-yellow, indistinctly crystalline powder. Alcohol, ether, and warm water dissolve it, and yet, though hygroscopic, it is not readily soluble in cold water. Its taste is extremely bitter, and its behavior to litmus neutral. Boiled with hydrochloric acid it splits into *ophelic acid*, water, and *chiratogenin* ($C_{13}H_{24}O_3$), a bitter, amorphous, brown body, not soluble in water, but freely so in alcohol. It is unaffected by tannin.

Habitat and Cultivation

The chiretta thrives as well as flourishes in woodland gardens having a sunny edge, partial shade, in shade as well as in marshy lands. It is an annually growing plant that 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. In other words, the chiretta flowers possess both the male and female organs. This plant has a preference for sandy (light), loamy (medium) as well as clay (heavy) soil conditions. In addition, the chiretta plant thrives and flourishes well in acidic, neutral as well as basic or alkaline soils. The plant can grow well in semi-shade or somewhat woodland conditions and needs humid or damp soil. Precisely speaking, the plant thrives well in a humid and humus-rich soil in damp light woodlands along the streams or in marshlands. 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 $-15^{\circ}C$ and still continue to grow well. The chiretta herb (*S. chirayita*) is propagated by its seeds. Sowing is generally done during the spring when the temperature is not above $10^{\circ}C$ 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.

Medicinal Uses of *Swertia chiretta*

- ❖ The herb *Swertia chiretta* (*S. chirayita*) 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.
- ❖ Chiretta is especially beneficial for certain health conditions, including diabetes and nausea. Here is a brief discussion regarding the use of this herb to treat these precise health problems.
- ❖ Laboratory tests with animals having excessive baseline blood sugar levels have demonstrated diminished blood sugar levels following healing with chiretta. On the contrary, animals do not demonstrate such decrease in the blood sugar levels provided they already have low levels to begin with. This difference in results in treatment with chiretta provides an indication that the

herb may perhaps be beneficial in regulating blood sugar levels without the perils of developing hypoglycemia owing to any excessive dosage of the herbal medication. Additional animal studies with chiretta have discovered that this herb is more effectual in regulating blood sugar levels compared to the regular anti-diabetic drug Orinase (Tolbutamide).

- ❖ The astringent flavor of chiretta sets of an impulsive response that promotes the production of saliva and gastric enzymes. This reflex reaction owing to the use of the herb not only stops nausea (queasiness), but also helps to cure indigestion, bloating and hiccups. In addition, chiretta also encourages the secretion of bile that promotes digestion as well as improves appetite.
- ❖ *Swertia chiretta* has an attractive chemistry that is to a great extent akin to gentian (*Gentiana lutea*), a widely used healing tonic for the digestive system. The plant also encloses xanthenes that are supposedly effectual against malaria and tuberculosis. In addition, chiretta also contains amarogentin - a glycoside that perhaps fortifies the liver against toxicity caused by carbon tetrachloride. The entire herb possesses therapeutic properties and the bitter digestive tonic obtained from it is considered to be an effective medication for lessening fevers as well as stimulants. As discussed earlier, this herb also has a valuable impact on the liver, encourages the flow of bile and heals constipation. It is also beneficial for curing dyspepsia .
- ❖ Chirayata 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.
- ❖ Chirayatra 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.
- ❖ The herb is an excellent drug for strengthening the stomach and promoting its action. It is used in the treatment of dyspepsia and diarrhoea.
- ❖ Chirayata possesses anthelmintic that is, worms destroying, properties and is used in killing intestinal worms. An infusion of the herb is taken for this purpose.

Pharmacology of Swertia Chirata

The ethanolic extract of *S.chirayita* exhibits hypoglycemic activity. The hexane fraction containing swerchirin, the main hypoglycemic principle, induced a significant fall in blood sugar in albino rats. The compound may have clinical application in control of diabetes. It also possesses anti-microbial activity against gram-negative and gram-positive bacteria. An herbal antiseptic and antifungal Veterinary ointment Melicon V is prepared from the herb. The extract of the plant exhibits a significant anti-inflammatory activity. The plant extract shows anti-leishmanial activity against *Leishmania donovani* in golden hamsters.

Dosage

An infusion of the herb is generally employed. It is also given as tincture. Its decoction is not recommended. The root is taken in doses of 5 to 30 grains with honey. This herb is used as part of many compound remedies.

Action & Uses in Unani

Tonic to heart, liver and eyes, resolvent, drying, astringent, liquifying, balgham, cough, scanty urine, melancholia, dropsy, sciatica, skin diseases. According to G. K. Nair and M. Mohanan, this herb is an excellent drug for intermittent fevers, skin diseases, intestinal worms, bronchial asthma, burning of the body and regulating the bowels.

An infusion of the herb made in hot water with aromatics like cloves, cinnamon etc. is given in doses of half to one fluid ounce. Ayurvedic practitioners often prescribe this infusion in doses of two ounces twice a day before meals as a tonic to check hiccup and vomiting.

Cautions

Chiretta should be avoided by people with gastric or duodenal ulcers. This herb is considered safe when taken as prescribed. Do not medicate yourself with this herb, only use it under the supervision of a qualified practitioner.

Future Trends

Swertia Chirata is now considered as the potential subject to cure Diabetes. In the Annual Professional Conference of Diabetes UK, held in Glasglow in March 2009, researcher announced this finding. They are of the opinion that the bark of this plant will be helpful in the cure. Its extracts are found to stimulate insulin production and improve its action on glucose control.

Conclusion

Basically, *Swertia chiretta* is a conventional Ayurvedic therapeutic plant. An astringent stimulant prepared with the plant is an outstanding 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. Chirayata 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. An infusion of the herb is taken for this purpose. It is an effective herb for reducing fevers. It is especially beneficial in the treatment of malarial fevers. It is also effective in hysteria and convulsions.

References

- [1] Chandrashekhar B, Bajpai MB, Mukharjee SK. *Ind J Expt Biol* **1990**; 28 (7): 616-8.
- [2] Mukharjee SK. International seminar on free radicals, mediated diseases and Ayurveda, faculty of Ayurveda, IMS, BHU, Varanasi, India. September. **1996**; 2-4.
- [3] Antana RM. *Ancient Sc. of Life* **1996**; 16 (1): 34-40.
- [4] Seshadri CV. Congress on Traditional Sc and Technologies of India 28th Nov. - 3rd IIT, Mumbai. **1993**.
- [5] Nadkarni KM. *Indian Materia Medica*. Bombay, PopularPrakashan, 1982; **2**: 11845.
- [6] Islam CN, Dutta MK, Sikdar S. *Indian J Pharmacol* **1985**; **17**: 24-7.
- [7] Mandal S, Das PC, Sidkar S, Islam CN, Dutta MK. *Fitoterapia* **1992**; **63**: 80-3.