

Role of *Swertia chirayata* on Human Health

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ABSTRACT

High altitude Himalayan regions are home to the therapeutic herb *Swertia chirayata*, also referred to as “chirayatah”. The tall, erect stem, lance-shaped leaves, and tiny greenish-yellowish blooms of this herb make it easy to identify. Its distinctive physical characteristics include egg-shaped fruits with dark seeds and an orange-brown stem with yellowish pith. It has antipyretic, anti-diabetic, antioxidant, liver protection and maintenance of the GIT role. Local populations regularly used it to cure a variety of health problems due to its potent qualities. These include more complicated disorders like diabetes and high blood pressure, as well as common ones like fever, malaria and stomach difficulties.

Keywords: *Swertia chirayatah*, Himalayan Medicinal plant, Swertiamarin, Hepatoprotective herb, Traditional uses

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Introduction

Swertia chirayata (family: Gentinaceae, common name: chirayatah) is a herb that grows between 1100 to 3000 meters above sea level, native to the temperate Himalayas and Khasi hills of Meghalaya [1]. It is an annual herb with an upright stem that is about two or three feet long. The peak is a quadrangle, with a significant diagonal line at every angle, while the inner portion is cylindrical. It comprises a thick, continuous, yellowish pith and stem that is orange-brown and purplish [3]. Leaves are lances-like and 4cm long, the root is 7-8cm long, short and diminishing, the flowers are small, green-yellowish with stained of purple and white hairs [4]. The flowers have 4 joined sepals and petals that are slightly twisted and fuse at the base with long-hairs nectarines [4]. It has 4 stamens, a one-chambered ovary with ovules attached to the inner walls and 2 stigmas [4]. Fruit is egg-shaped and contains numerous dark-brown seeds [4]. Herb is widely used by local people for the treatment of pyrexia, malaria, anemia, bronchial asthma, liver disorders, gastritis, constipation, dyspepsia, skin diseases, worms, epilepsy, ulcers, scanty urine, hypertension, melancholia and certain types of mental disorders, secretion of bile, blood purification and diabetes [5].

Phytochemical Constituents:

Chirayata contains Swertiamarin, Amarogentin, Alkaloids, Flavonoids and Xanthon. Swertiamarin is responsible for many of the medicinal effects like anti-diabetic activity, anti-ulcer effect, appetite stimulator and cardioprotective role. Amarogentin acts as powerful digestive stimulant, hepato-protective and anti-oxidant activities. Alkaloids have strong pharmacological actions on the nervous, cardiovascular and immune-system. Flavonoids protect cells from oxidative damage and play an important role in preventing chronic diseases. Xanthones exhibit anti-oxidant, anti-inflammatory, anti-microbial, anti-cancer, and liver-protective activities.

Traditional uses:

In Ayurveda medical practice, *S. chirayata* is one of the oldest medicinal herb that was used for the treatment of liver disorder. In Unani system, an infusion is made in hot water with cloves and cinnamon and given in half a tablespoon. Ayurveda practitioners prescribe this in two tablespoons twice a day before meal. It detoxifies liver powerfully and boost body metabolism. It is good in reducing malarial fever. Herb provides relief from nausea and diarrhea and also strengthens the stomach [7].

Role in Human Health:

Anti-pyretic effect:

Xanthones reset body temperature by controlling Hypothalamus. Xanthones are important natural chemicals in drug. They reduce brain activity and producing a calming effect in mice and rats [7].

Anti-diabetic action:

Chirayata make muscle cells better at absorbing glucose from blood and also help to release more insulin in pancreas. It shows good efforts in producing blood [5].

Liver-protective effect:

Chirayata aids liver's natural detox process, clean it and repair damage. It also provides defense against liver cancer [7].

Anti-oxidant activity:

DNA damage can be avoided because of Chirayata strong anti-oxidant effects. It slows down anti-aging process. In addition, it reduces, risk of illnesses including cancer and heart diseases and also your risk of having stroke decreased [7].

Digestive Health:

The herb and its processes forms are beneficial for those with sensitive stomach. It can tackle nutrient problems and offer strong health support. It stimulates digestive system [7].

Cure general weakness:

When someone is weak or recovering from illness, this plant can be used to regain strength. It can be taken either as a drink or as a tincture.

To make the drink, boil the herb with spices like cinnamon or cloves, let it cool and store it [7].

Cure Skin Ailments:

Chirayata is good for skin problems. It helps treat rashes, skin infections, and skin swelling. Making a paste of the herb and applying it on the skin helps wounds and cuts heals faster. Mix the herb with water and apply it directly to the affected area [7].

Tackle urinary tract complaints:

People who have kidney-related problems can benefit from Chirayata. It helps those who feel a frequent urge to urinate. It also helps people who have difficulty or discomfort while urinating [7].

Helpful treating mental disorders:

S. chirayata can help in some mental and nervous problems. It is useful for nervous indigestion. Drinking the plant infusion twice a day can help reduce mental problems [7].

Immunomodulatory properties:

Immunomodulators are substances that change or control the immune system. For example, they can help produce antibodies or reduce overactive white blood cells.

S. chirayata helps the body stay healthy because it has these immune-boosting effects [7].

Dosage Forms:

To treat fever with tremors, make a decoction of powdered Chirayata in 2 liters of water until glass is half full. Adults are given one spoon of this decoction once daily for two days or three times a day till recovery, while children are given half a spoon daily for two days [7].

Future Prospective:

In the future, its active compounds may be used to develop new herbal or modern medicines for chronic diseases like metabolic disorders, immune problems, and long-term inflammation. It may play an important role in strengthening immunity and supporting the body against new and emerging infections. Researchers are interested in its effects on gut bacteria, which could help improve digestion, metabolism and overall health. Because of its protective actions on cells, it may be explored for brain health and stress

related conditions. Advanced techniques like nano-delivery may improve its effectiveness.

Conclusion

In conclusion, *Swertia chirayata* is a valuable Himalayan herb with distinct characteristics. It distinguished out from other mountain plants thanks to its distinctive stem structure and vibrant blossom. Beyond its outward appearance, the herb is an essential natural treatment for a variety of ailments, including respiratory and digestive problems. It still serves as a crucial component of regional traditional medicine for blood purification and the treatment of long-term illnesses like liver issues and epilepsy. All things considered, it is a vital plant for both botanical research and botanical health care.

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