

Expert Herbal Reality Resource

Gotu Kola

Names

Botanical Name *Centella asiatica* (L) Urb

Family: Apiaceae

Common names: Indian pennywort, hydrocotyle (Eng), Asiatische Sumpfpfennigkraut (Ger), kula kudi (Hindi), mandukaparni (Sanskrit)



Description

Gotu kola, a member of the celery family, is a slender herbaceous creeper found across India, Sri Lanka, China, South Africa and South America and favours moist habitats at altitudes of up to 2500m. The plant has diffuse underground parts: its rhizomes are covered in root hairs and produce an intricate network of stolons. The stems are very slender and often red in colour and produce kidney shaped leaves in rosettes up to 5cm in diameter at each stem node. The flowers are a delicate pale violet or pink. The plant has a smell similar to that of tobacco.

Constituents

- **Triterpene saponins:** (pentacyclic ursane type – ‘centellosides’), mainly asiaticoside and madecassoside and their corresponding sapogenins asiatic and madecassic acids.
- **Essential oil:** including myrcene, farnesene, germacrene, caryophyllene and pinene
- **Flavonoids**
- **Polyacetylenes**

Pentacyclic triterpenoids are widely distributed in many medicinal plants, such as licorice, green tea, hawthorn as well as gotu kola; some have shown apparent effects on glucose absorption, insulin secretion, diabetic vascular dysfunction, retinopathy and nephropathy, all features of diabetes or prediabetic conditions.ⁱ

Asiatic acid is anti-inflammatory with antihypertensive, neuroprotective, cardioprotective, antimicrobial, and antitumour activities in preclinical studies.ⁱⁱ

Traditional use

Gotu kola has been one of the most popular remedies in Ayurvedic medicine as a powerful healer. It balances all three *doshas* and benefits the skin and *bhrajaka pitta* through its ability to hasten wound healing and reduce scars.

For mental and nervous conditions it is used where there is *pitta/vata* aggravation. As it protects the brain by nourishing *majjadhātu* and also benefits *sadhaka pitta* it is used for a wide range of neurological applications.

Traditional actions

Traditional Ayurvedic characteristics are

Rasa (taste) Bitter, astringent, sweet.

Virya (action) Cooling.
Vipaka (post-digestive effect) Sweet.
Guna (quality) Dry, light.
Dosha effect Balances *vata*, *pitta* and *kapha*, reduces excessive *kapha* and *pitta*
Dhatu (tissue) Plasma, blood, muscle, fat, bone, nerve.
Srota (channel) Nervous, circulatory, digestive.

Traditional Ayurvedic uses are

Medhya Intellect promoting.
Raktapittahara Prevents bleeding from high *pitta*.
Raktashodhana Purifies the blood.
Kushtaghna Alleviates skin diseases.
Rasayana Rejuvenates life and *pitta*.
Vayasthapana Anti-ageing.
Hridaya Heart tonic.
Nidrajnana Promotes sleep.

What practitioners say

Nervous system: Gotu kola improves concentration, intelligence, memory and alertness. It is relaxing can be applied in conditions of stress, insomnia and emotional turbulence. Beyond that it can be useful in managing behavioural and developmental imbalances such as spectrum disorders and ADHD. It combines these with its healing effects, with apparent benefits in reducing neuroinflammatory activity, and is an important remedy to be used in dementia, chronic fatigue syndromes and the after-effects of stroke.

Skin: Gotu kola is a specific herb for inflammatory skin conditions such as eczema, urticaria and acne.

Joints: Gotu Kola is traditionally used for arthritis, gout and joint inflammation.

Evidence

Much of the clinical trial evidence relates to a standardised extract of gotu kola known as 'total triterpenic fraction' (TTF), made up of 40% asiaticoside, 30% asiatic acid and 30% madecassic acid with doses at 60 to 180 mg/day. At up to 8% in the plant these levels of triterpenes are likely to be met with the recommended daily doses of whole herb.

Various studies have shown that gotu kola extracts have a protective effect against various neurological diseases, including Alzheimer's disease, Parkinson's disease, learning and memory enhancement, neurotoxicity and other mental illnesses such as depression and anxiety, and epilepsy.ⁱⁱⁱ

Preliminary clinical studies have shown an effect in reducing anxious responses in healthy subjects.^{iv} There have also been an uncontrolled clinical trial showing benefit in generalised anxiety disorder^{vi} and improving cognitive performance.^{vii}



A systematic review has concluded that gotu kola tripenoids have potential therapeutic effects in cardiovascular problems, and to have anti-atherosclerotic, antihypertensive, antihyperlipidemic, antidiabetic and anti-inflammatory activities.^{viii} An Italian research group had in earlier additional studies demonstrated benefits of gotu kola triterpenoids on the microcirculatory consequences of long-distance flights,^{ix} of diabetes,^x and venous hypertension (linked to deep-vein thrombosis and associated chronic venous congestion eg. in the legs).^{xi,xii,xiii} A systematic review of this evidence showed that *Centella asiatica* significantly improved microcirculatory parameters such as transcutaneous partial pressure of CO₂ and O₂, rate of ankle swelling and venoarteriolar response. and that patients treated showed significant improvement in CVI signs such as leg heaviness, pain and oedema.^{xiv}



One intriguing clue to the action of gotu kola was provided by a placebo-controlled study that demonstrated an effect of the triterpenoid fraction of gotu kola on the stabilisation of potentially thrombotic atheromatous plaques (detectable at the forking of the femoral artery). This suggests that elements within gotu kola could modulate collagen synthesis.^{xv}

There is clinical trial evidence of benefit in healing diabetic ulcers when applied topically.^{xvi} Such healing activity may also be systemic: one study has demonstrated that oral doses of gotu kola reduced the amount of loose endothelial (blood vessel wall) cells associated with phlebitis.^{xvii}

Safety

Gotu kola is one of the most commonly used green leafy vegetables Sri Lanka and southern India consumed in the preparation of juice, drink, and other food products.

Dosage

3–30g/day dried or fresh herb, as infusion or powder.

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