



Review Of Various Activities Of Cissus Quadrangularis

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ABSTRACT

Cissus quadrangularis L. is a perennial herb of the Vitaceae family and is utilized comprehensively as a medicinal herb in most tropical regions by various names. This herb is documented to possess a wide ranging ethnomedicinal uses in malaria, fever, epilepsy, gout, piles, skin diseases, colic, etc. Aim of the review: A organized summary of the botany, traditional uses, phytochemistry, pharmacology, toxicology, available marketed formulations and filed patents were presented to explore the future therapeutic potential and scientific potential of this herb. It is used in indigenous system of medicine like ayurveda, siddha, unani and homoeopathy. The whole plant is used in treatment of asthma, powdered root is specifically used in treatment of bone fractures. The genus *Cissus* belong to the family, Vitaceae. It has 13 genera and 800 species in the world. It's found in tropical regions of India, Srilanka, Africa, Arabia, and South Asia. In India 8 genera and 63 species have been distributed and identified. The *Cissus* species are mostly climber with tendril and shrub and highly medicinal valuable. It contains several secondary metabolites like an ascorbic acid, flavonoid, terpenoids based on its phytochemical investigations. Extracts and powders of *Cissus quadrangularis* have been used for many years to promote bone and tissues healing, as an analgesic, to treat infections, as an anabolic, and to promote weight loss and weight management. This review summarizes the studies in animals, humans and in vitro systems that have been conducted to determine the efficacy and safety of various *Cissus* preparations. *Cissus* extracts appear to be exceedingly safe and free of adverse effects at the doses commonly

used.

Keywords: Cissus quadrangularis, Antioxidant, Anti-inflammatory, Anti asthmatic

1. INTRODUCTION

Cissus quadrangularis L. is a plant belonging to the family Vitaceae commonly known as Asthisamhari found in tropical and subtropical xeric wood. It can be found throughout the hotter parts of India alongside hedges and neighbouring countries such as Pakistan, Bangladesh, Sri Lanka, and Malaysia.¹ Our earlier studies have laid the groundwork for comprehending the advantages of *Cissus* by highlighting its initial biological activity and phytochemical makeup². Furthermore, an anti-steatohepatitis effect has been reported in the *C. quadrangularis*-treated T2DM rat model (Syed et al., 2021). However, the mechanism underlying its anti-hyperglycaemic effect remains unclear, and the effect of *Cissus quadrangularis* on T2DM remains unknown³. This plant is studied for its phytochemical constitution, pharmacological activities and toxicological evaluation. It is used for bone healing. Ayurveda prescribe this plant for several medicinal ailments. *Cissus quadrangularis* synonym *Cissus succulent* popularly known as horjora in Hindi and pirandai in Tamil belongs to the family Vitaceae. The plant is widely seen in tropical forest regions of Asia and Africa⁴.

It also plays a vital role in the healing of bone fissure and osteoporosis. Traditionally this plant has different medicinal uses in leucorrhoea, piles, gout, tumours and peptic ulcers. It is also utilized to produce biochar and hydrocarbonaceous bio-oil. Scientific experiments reveal that (CQ) is used in bodybuilding as an augment.⁵ In terms of digestive health, *Cissus quadrangularis* has demonstrated gastroprotective properties. Studies have shown that it accelerates the healing of gastric ulcers and helps protect the stomach lining from damage caused by stress or the use of nonsteroidal anti-inflammatory drugs (NSAIDs). This gastroprotective effect adds another layer to its therapeutic potential, especially for individuals suffering from chronic gastric issues or ulcers. Beyond its traditional uses, recent research has highlighted the plant's broader applications in modern medicine, particularly in the regulation of metabolism and weight management. Preliminary studies suggest that *Cissus quadrangularis* may help in the management of obesity and metabolic syndrome by influencing lipid metabolism and promoting satiety. These properties indicate its potential as a natural alternative for managing weight and related metabolic disorders. Despite its numerous health benefits, the widespread use of *Cissus quadrangularis* faces challenges, including the need for standardized extracts and a better understanding of its long-term safety profile. As the scientific community continues to explore its full pharmacological potential, future research will need to address these issues, focusing on clinical trials and the development of standardized formulations. This will be essential to harnessing the plant's full therapeutic benefits while ensuring its safety and efficacy in modern medical applications⁶.

The scientific nomenclature of CQ is as follows: Kingdom: Plantae; Subkingdom: Tracheobionta; Superdivision: Spermatophyta; Division: Magnoliophyta; Class: Magnoliopsida; Subclass: Rosidae; Order: Rhamnales; Family: Vitaceae; Genus: Cissus L.; Species: quadrangularis. The vernacular names of CQ are as follows: Tamil: Piranti, Vajravalli; Malayalam: Cannalamparanta, Peranta; Hindi: Cannalamparanta, The plant comprises simple or reniform, serrate ± 5 cm wide leaf and four-angled stem connected at nodes, internodes which are up to 10 cm long, and dichotomously branched⁷.

2. AIM

Here the aim is to review of various activity of cissus quadrangularis and to identify the compounds which are responsible for the activity.

3. CISSUS QUADRANGULARIS⁸



PHARMACOLOGICAL ACTIVITY

1) Anti-oxidant activity

In this studies of K R Khandelwal et.al, The antioxidant potential of the fruit extracts was evaluated using three in-vitro assays. In the reducing power assay, extracts were mixed with phosphate buffer and potassium ferricyanide, incubated, and treated with trichloroacetic acid, after which the absorbance of the final ferric–ferrous complex was measured at 700 nm; increased absorbance indicated stronger reducing ability. The DPPH radical scavenging assay involved reacting the extract with a methanolic DPPH solution and measuring the decrease in absorbance at 517 nm to determine the percentage inhibition of the purple DPPH radical. For hydrogen peroxide scavenging activity, extract solutions were incubated with H₂O₂ and the absorbance at 230 nm was recorded to calculate the percentage of H₂O₂ removed. All assays were performed in triplicate, and ascorbic acid served as the standard.⁹

2) Anti-inflammatory activity

In this studies of Panthong A et.al, In vivo anti-inflammatory activity was evaluated using the carrageenan-induced paw edema model in Sprague–Dawley rats weighing 150–200 g. Groups of six rats received different oral doses of the plant extract dissolved in sterile distilled water. One hour later, inflammation was induced by injecting 0.1 ml of 1% carrageenan into the right hind paw. Paw volume was recorded immediately and at several intervals up to 24 hours using a plethysmometer. The percentage inhibition of paw swelling was calculated to assess the anti-inflammatory effect of the extract.¹⁰

3) Anti asthmatic activity

In this studies of Nag Chaudhari AK et.al, Antiasthmatic activity was evaluated using isolated goat tracheal chain preparations mounted in a Krebs-Henseleit organ bath at 37°C. After a 45-minute equilibration, contractions were induced using histamine (10 µg/ml) and acetylcholine (10 µg/ml). Once maximum contraction occurred, different concentrations of *Cissus quadrangularis* extract (10, 5, and 2.5 mg/ml) were added to observe relaxation of the tracheal tissue, recorded on smoked kymograph paper. The responses were compared with standard bronchodilators such as aminophylline, cyproheptidine, and atropine.¹¹

DISCUSSION

According to K R Khandelwal et.al, The results from these assays indicate that higher absorbance in the reducing power test and greater percentage inhibition in both DPPH and H₂O₂ scavenging assays reflect stronger antioxidant activity of the fruit extracts. Therefore, extracts showing increased absorbance at 700 nm, significant DPPH radical inhibition, and effective H₂O₂ scavenging can be considered to possess potent antioxidant properties. In the studies of Panthong A et.al, A greater percentage inhibition of paw edema compared to the control group indicates stronger anti-inflammatory activity of the extract. Therefore, extracts showing a significant reduction in paw volume at various time points can be considered effective in suppressing carrageenan-induced inflammation. Finally According to Nag Chaudhari AK et.al, Greater relaxation of the tracheal chain after administration of the extract, especially when comparable to or approaching the effect of standard drugs, indicates significant antiasthmatic or bronchodilatory activity. Therefore, extracts that produce marked reduction of histamine- or acetylcholine-induced contractions demonstrate effective antiasthmatic potential.

CONCLUSION

The findings clearly demonstrate that the fruit extracts possess strong antioxidant potential. Their high reducing power, significant DPPH radical inhibition, and effective hydrogen peroxide scavenging activity collectively indicate that these extracts can act as potent natural antioxidants. These properties suggest their possible usefulness in preventing oxidative stress–related damage. The study confirms that the extracts exhibit notable anti-inflammatory activity, as shown by their significant inhibition of carrageenan-induced paw edema. Extracts that produced a marked reduction in paw swelling compared to the control can be considered effective in suppressing acute inflammation. The results indicate that the extract has significant antiasthmatic potential, as evidenced by its ability to relax histamine- and acetylcholine-induced tracheal contractions. Extracts that produced notable tracheal relaxation comparable to standard drugs can be considered effective bronchodilators.

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