

Phytochemical and pharmacological review on *Cissampelospareira*

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Abstract

According to a world health organization survey, about 75-80% of the world's population relies on non-conventional medicine, mainly of herbal source, in their primary health care. In the past few decades, a massive amount of scientific information published for various medicinal plants. *Cissampelospareira* is a plant whose various parts are commonly used in various ailments. There is vast anecdotal information about the biological activity *C.pareira* which includes anti-cancerous, anti-fertility, anti-asthmatic, anti-diabetic, analgesic, hepatoprotective and anti-inflammatory type of activities. The leaf of *C. pareira* contains various phytoconstituents including alkaloids, terpenoids and flavonoids. The present review comprises the phytochemical, ethnopharmacological and pharmacological reports of *C.pareira*.

Keywords: *Cissampelospareira*, Hepatoprotective, Anti-fertility, Anti-asthmatic analgesic and anti-inflammatory activities.

Introduction

Cissampelos Linn Manispermaceae family is perennial climbing herbs with small greenish-yellow flowers. The genus *Cissampelos*, of which thirty to forty species are distributed in the tropical and subtropical region including Rajasthan, Himachal Pradesh, Bihar.⁽¹⁾

C.pareira is a medicinal plant which traditionally used for treatment of many diseases like inflammation, pain, haemorrhage, gastrotoxicity, cancer, diarrhoea, diabetes, cardiotoxicity, sores and used in hepatoprotective.^(1,2)



Fig.1: Climbing herb of *Cissampelospareira*
Common Names of *C. pareira*⁽¹⁾

Sassamese	: Tubukilota
Bengali	: Venivel
Hindi	: Bhatvel, Padh
Kannada	: Parera Beru
Khasi	: Jyrmi Salla
Malayalam	: Malathaanti, Paataththaali
Rajasthani	: Kalipar
Others	: Abuta, Barbasco, Sulara,

Ice Vine, Velvet Leaf

Taxonomy of *C.pareira*⁽¹⁾

Kingdom	: Plantae
Phylum	: Tracheophyta
Class	: Magnoliopsida
Order	: Ranunculales
Family	: Menispermaceae
Genus	: <i>Cissampelos</i> L.
Species	: <i>Cissampelospareira</i> L

Extractions has been performed on dried leaves of *Cissampelospareira* using various solvents such as water, Ethanol, Methanol, Petroleum Ether and Chloroform (in order of increasing polarity of the solvents). Thereupon, phytochemical screening was carried out on the various extracts to identify the phytoconstituents. Such studies have revealed the presence of Alkaloids (hayatine, hayatinine), Flavonoids, Steroid tri-terpenoids, Saponins, Tannins & some essential oils etc.

Various pharmacological activities of *C. Pareira*: Traditionally *C. Pareira* is a tropical medicinal plant which is claimed for treatment of various ailments. Therefore many scientific studies have been performed for validations the traditional claims. The following pharmacological activities have been scientifically performed to validate their traditional claims.

Anti-diabetic activity: The aqueous extract of leaves of *C.pareira* showed anti-diabetic activity. The dose of *C.Pareira* extract 250 mg/kg and 500 mg/kg body were given in male albino mice over the period of 14 days. Random blood glucose level and body weight were observed periodically in this study. Liver glycogen level and other biochemical parameters were also determined in the study.⁽³⁾

Anti-anxiety activity: The 70% hydroethanolic extract of leaves of *C.pareira* showed that it contains alkaloids, flavanoids, terpenoids and steroids. The extract showed significant anti-anxiety activity in Elevated Plus Maze test (EPM), Light Dark (Land D) model, and Forced Swim test (FS) for rats.^(8,14)

Anti-nociceptive and anti-arthritic activities: The 50% aqueous ethanolic extract of *C.pareira* roots at the dose levels of 100–400 mg/kg, once daily for three days exhibited significant ($P < 0.001$) resistance against mechanical pain after 30 min in analgesimeter induced pain in mice.⁽⁴⁾

Anti-fertility activity: The leaf extract of *C.pareira* administered orally, altered the estrous cycle pattern in female mice. The extract prolonged the length of estrous cycle with significant increase in the duration of diestrus stage and reduced significantly the number of litters in albino mice. The analysis of the principal hormones involved in estrous cycle regulation showed that the plant extract altered gonadotropin release (LH, FSH and prolactin) and estradiol secretion.⁽⁵⁾

Antioxidant activity: The 50% ethanol extract of roots of *C.pareira* were found to contain a large amount of polyphenols (1, 1-diphenyl-2-picrylhydrazyl) and it exhibit potent antioxidant ability in vitro and in vivo.⁽⁶⁾

Anti-asthmatic activity: The aqueous fraction of the ethanolic extract from the leaves of *C.pareira* exerts an immunomodulatory activity in different animal models of asthma. This study shows the aqueous fraction of *C.pareira* increase the levels of anti-inflammatory cytokines, a decrease in the production of antigen-specific immunoglobulin, a decrease in mucus production and deposition in the airways.⁽¹⁰⁾

Anti-cancer activity: The *C.pareira* contain stropone-isoquinoline alkaloid, named pareitropone, which showed potent cytotoxic activity. A new alkaloid, cissampareine where is obtained from *C.pareira* have reproducible inhibitory activity against human carcinoma of the nasopharynx carried in cell culture.⁽⁹⁾

Anti-inflammatory activity: The 50% ethanolic extract of roots of *C.pareira* show anti-inflammatory activity in acute, subacute and chronic models of inflammation in rats.⁽⁷⁾

Anti-ulceractivity: The *C.pareira* contain flavonoid Qurectein which showed anti-ulcer property against 100% ethanol, aspirin, cold resistant stress and pylorus ligation induced acute gastric ulcer in rats at doses of 25-100 mg/kg.⁽¹⁰⁾

Hepatoprotective activity: The hydroalcoholic extract of roots of *C.pareira* showed the presence of higher

concentration alkaloids (bebeerines, hayatidin, hayatinin, hayatin) and flavonoids which showed the hepatoprotective activity against CCl_4 induced hepatotoxicity in rats.⁽¹¹⁾

Antileukemic activity: The *C.pareira* contain tropoisoquinoline alkaloids, pareirubins A and B showed antileukemic activity.⁽¹²⁾

Conclusion

The aforementioned studies make it clear that *C.pareira* is a commonly available plant having multifarious medicinal properties. Much of the medicinal uses of *C.pareira* traditional and anecdotal, but most of these medicinal properties have been backed up with scientific studies and stringent laboratory tests. However, some of its medicinal powers, like its hepatoprotective activity of leaves, still remain to be evaluated and it is high time that such studies are carried out in hope of finding better drugs to cure and control liver diseases.

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