Lychnis coronaria Linn. A review

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ABSTRACT

Lychnis coronaria has been used for centuries for curing various ailments in the form of extracts and has been reported to possess potent pharmacological actions against leprosy, diarrhoea, lungs, liver and also as a remedy for beri-beri etc. Different chemical constituents from the plant such as ecdysterone 22-O-β-D-glucopyranoside, stigmast-5-ene-3-one, taraxerol, α-tocopherol and dehydrodiconiferyl alcohol-4-O-β-D-glucopyranoside, epoxyactinidionoside and many others have been isolated from the plant. The present article reviews the pharmacological and phytochemical work done on the plant. © 2008 Trade Science Inc. - INDIA

KEYWORDS

Lychnis coronaria; Liver disorders; α-Tocopherol; Beri-beri; Epoxyactinidionoside.

INTRODUCTION

The genus Lychnis is distributed in the north temperate and arctic zones and the mountains of South America. About 15 species are found in India. Lychnis coronaria is a herb and grows abundantly in Kashmir at Gadsar road and dry places, Dachigam Rahk, below Gulmarg and wooded hill side at 8000 ft. It is also commonly known as “Rose champion” or “Mullein pink” [1-2]. It is a white wooly herb, 30 to 75 cm high, with spathulate to oblanceolate leaves. Purplish flowers on long stalk, calyx 2 to 2.5 cm long conical, inerced. Teeth twisted to the left. Petals 2.5 cm long and more red purple, broadly, inversely heart shaped, with stiff 2 toothed scales at the claw. Capsule almost stalkless, included in the calyx, consisting of five values. Seeds are many, doubly convex, striate and warten[3-4].

The literature survey reveals that various parts of L. coronaria have been used as a folklore medicine for curing various ailments like disease of leprosy, diarrhoea, lungs and liver and also as a remedy for Beri-beri. Decoction of the roots has been used in Spain for liver and lung complaints, and for inflamation of the lymph glands and the mesentery[1]. The plant extract was found to possess anti-inflammatory properties[5]. Hot aqueous extract from the ariel parts of the plant has been used for the treatment of hemorrhoids[6].

The various chemical constituents isolated from the plant are tricin 7-O-glucopyranoside, (+)-isoscoparin, epoxyactinidionoside, 20R-hydroxyecdysone, ecdysterone, polyponding B, ecdysterone 22-O-β-D-glucopyranoside, stigmast-5-ene-3-one, taraxerol, α-tocopherol and dehydrodiconiferyl alcohol-4-O-β-D-glucopyranoside. The present review on Lychnis coronaria gives an account of its chemical and pharmacological investigations done so far by different authors.

Pharmacological investigations

According to the ayurvedic text Lychnis coronaria has been reported to be used against various biological activities such inflammations, skin disease, liver disor-
ders, haemorrhoids and many more diseases. Further pharmacological studies regarding these activities have been undertaken by various workers which are given below:

**Anti-inflammatory activity**

Anti-inflammatory activity has been carried out to study the effect of plant extract of *Lychnis coronaria* L. on inflammatory swellings of the hind paws of white rats\(^5\).

**Wound healing property**

*Lychnis coronaria* L. plant extract was found to be useful in the treatment of experimental cut wounds in white rats\(^8\).

**Hemorrhoid treatment**

Hot aqueous extract from the aerial parts of *Lychnis coronaria* has been used for the treatment of hemorrhoids. The drug, prepared is patented under Patent no. RO91250, it contains dry matter 25, saponins 3.875, free sugars 4.667 and flavones 0.13 weight/volume\(^6\).

**Phytochemical studies**

Extensive studies have been carried out on *Lychnis coronaria*. Various chemical constituents isolated from the plant are as follows:

Three compounds have been isolated from the leaves of *L.* coronaria butanol extract. These compound were obtained after separation by thin-layer and 2-dimensional paper chromatography. The three compounds were identified as pinitol (1), isoscoparin (2) and feruloyl glucose by spectral data, hydrolysis, and acetylation. The last two substances were isolated from the plant for the first time\(^8\).

The presence of two glycosyl flavones has been detected by spectral and chemical methods. The structure of glycosyl flavones that have been detected are O-\(\alpha\)-L-rhamnosly derivative (3) and \(\beta\)-D-glucopranosyl flavone (4)\(^9\).

The presence of 2-methyl butyl amine in *Lychnis coronaria* was reported for the first time using chromatographic technique\(^10\).

Eleven compounds have also been isolated from ethanolic extract tricin 7-O-glucopyranoside (5), (+)-isoscoparin, epoxyactinidioside (6), 2OR-hydroxyecdysone, ecdysterone (7), polypodying B (8),

ecdysterone 22-O-\(\beta\)-D-glucopyranoside (9), stigmast-5-ene-3-one, taraxerol (10), \(\alpha\)-tocopherol and dehydro diconiferyl alcohol-4-O-\(\beta\)-D-glucopyranoside (11)\(^11\).

A detailed study was carried out on the analysis of anthocyanidins and anthocyanins in flower petals of *Lychnis senno* and its related species in Caryophyllaceae. Petal anthocyanidins were analyzed by high-performance liquid chromatography (HPLC) in *Lychnis senno*, a traditional ornamental plant conserved in Japan, and its related species. However, the colour of flower of *L.coronaria*, was vivid reddish purple (JHS 9207), and the relative level of peonidin in petals was much higher than yanindin\(^12\).

Qualitative analysis of alcoholic extract of *Lychnis coronaria* leaves yielded coumarins, saponins and tannins. Coumarins and saponins were obtained in the chloroform and butanol extracts and tannins were separated by polyamide sorbent. Coumarins were separated into 7 fractions on Kieselgel G, the saponins into 3 fractions on cellulose paste, and tannins into 3 fractions on silica gel HF 254. By acid hydrolysis with HCl and paper chromatography glucose was found in saponins and tannins\(^13\).

The presence of free lysine, arginine, aspartic acid, alanine, proline, tyrosine, valine, serine, glycine, cysteine and glutamic acid, was detected by paper chromatography. Glucose, galactose, mannose, xylose, arabinose and uronic acids were also found\(^14\).

**CONCLUSION**

The literature survey revealed that *L. coronaria* is an important medicinal plant with diverse pharmacological spectrum. Besides having the above mentioned pharmacological properties, further evaluation needs to be carried out in order to explore the folklore claim as it has been used in the treatment of leprosy, hepatic and lung ailments.

**Chemical constituents of *Lychnis coronaria***

![Chemical structures of Pinitol (1) and Isoscoparin (2)](image-url)
R=H O-oct-L-rhamnosyl glycosyl flavone (3)
R=β-D-glucopyranosyl glycosyl flavone (4)

Tricin 7-O-glucopyranoside (5)

Epoxyactinidionoside (6)

Ecdysterone (7)

Polypodine B (8)

Ecdysterone-22-O-β-D-glucopyranoside (9)

Taraxerol (10)

Dehydrodiconiferyl alcohol 4-O-beta-D-glucopyranoside (11)
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