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## 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- $\beta$ -D-glucopyranoside, stigmast-5-ene-3-one, taraxerol,  $\alpha$ -tocopherol and dehydrodiconiferyl alcohol-4-O- $\beta$ -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;  
 $\alpha$ -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"<sup>[1-2]</sup>. It is a white wooly herb, 30 to 75cm high, with spatulate to oblong-lanceolate leaves. Purplish, flowers on long stalk, calyx 2 to 2.5cm long conical, inerved. Teeth twisted to the left. Petals 2.5cm 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 warted<sup>[2-4]</sup>.

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 infraction of the lymph glands and the mesentry<sup>[1]</sup>. The plant extract was found to possess anti-inflammatory properties<sup>[5]</sup>. Hot aqueous extract from the aerial parts of the plant has been used for the treatment of hemorrhoids<sup>[6]</sup>.

The various chemical constituents isolated from the plant are tricin 7-O-glucopyranoside, (+)-isoscoparin, epoxyactinidionoside, 20R-hydroxyecdysone, ecdysterone, polypoding B, ecdysterone 22-O- $\beta$ -D-glucopyranoside, stigmast-5-ene-3-one, taraxerol,  $\alpha$ -tocopherol and dehydrodiconiferyl alcohol-4-O- $\beta$ -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 as inflammations, skin disease, liver disor-

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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<sup>[5]</sup>.

### Wound healing property

*Lychnis coronaria* L. plant extract was found to be useful in the treatment of experimental cut wounds in white rats<sup>[8]</sup>.

### 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<sup>[6]</sup>.

### 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<sup>[8]</sup>.

The presence of two glycosylflavones has been detected by spectral and chemical methods. The structure of glycosyl flavones that have been detected are O- $\alpha$ -L-rhamnosyl derivative (**3**) and  $\beta$ -D-glucopyranosyl flavone (**4**)<sup>[9]</sup>.

The presence of 2-methyl butyl amine in *Lychnis coronaria* was reported for the first time using chromatographic technique<sup>[10]</sup>.

Eleven compounds have also been isolated from ethanolic extract triclin 7-O-glucopyranoside (**5**), (+)-isoscoparin, epoxyactinidionoside (**6**), 20R-hydroxyecdysone, ecdysterone (**7**), polypoding B (**8**),

ecdysterone 22-O- $\beta$ -D-glucopyranoside (**9**), stigmast-5-ene-3-one, taraxerol (**10**),  $\alpha$ -tocopherol and dehydrodiconiferyl alcohol-4-O- $\beta$ -D-glucopyranoside (**11**)<sup>[11]</sup>.

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 yanidin<sup>[12]</sup>.

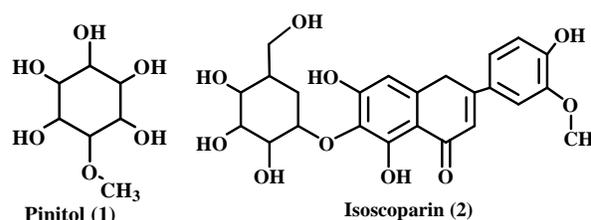
Qualitative analysis of alcoholic extract of *Lychnis coronaria* leaves yielded coumarins, saponins and tannins. Coumarins and saponins were obtained in the chloroform and butanol extracts and tannins were separated by polyamide sorbent. Coumarins were separated into 7 fractions on Kieselgel G, the saponins 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<sup>[13]</sup>.

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<sup>[14]</sup>.

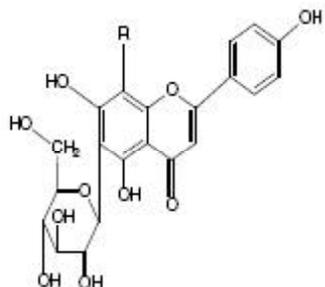
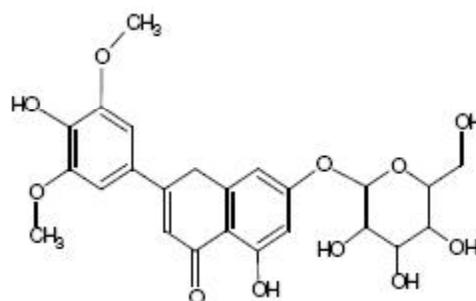
## CONCLUSION

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.

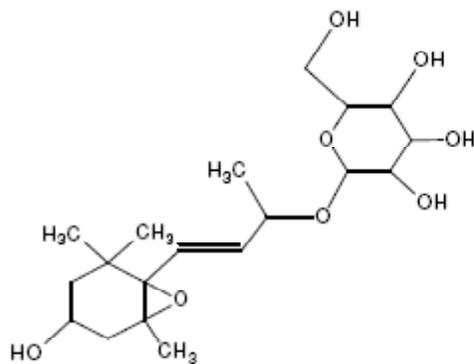
### Chemical constituents of *Lychnis coronaria*



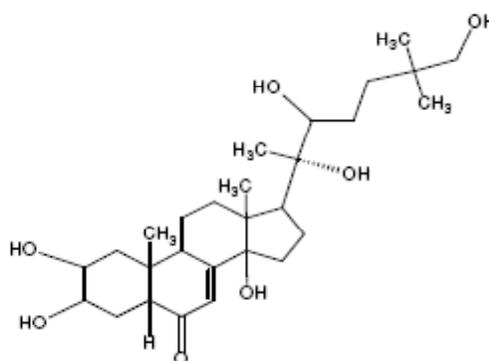
# Review

R=H O- $\alpha$ -L-rhamnosyl glycosyl flavone (3)R= $\beta$ -D-glucopyranosyl glycosyl flavone (4)

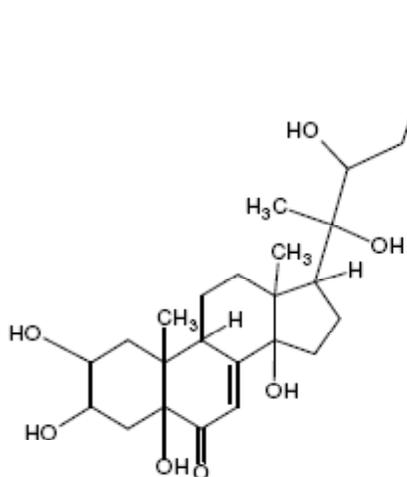
Tricin 7-O-glucopyranoside (5)



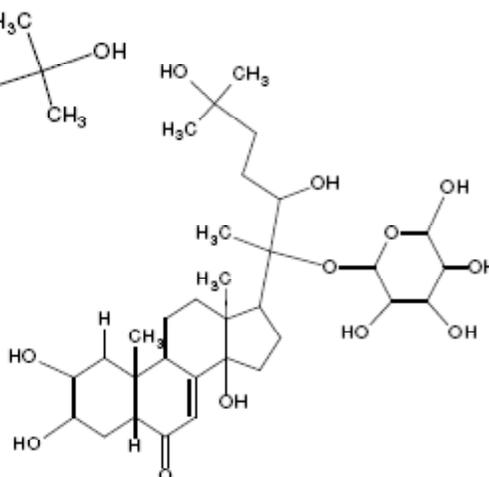
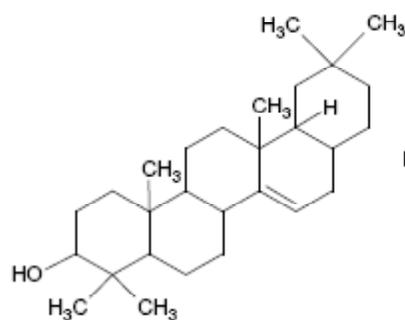
Epoxyactinidionoside (6)



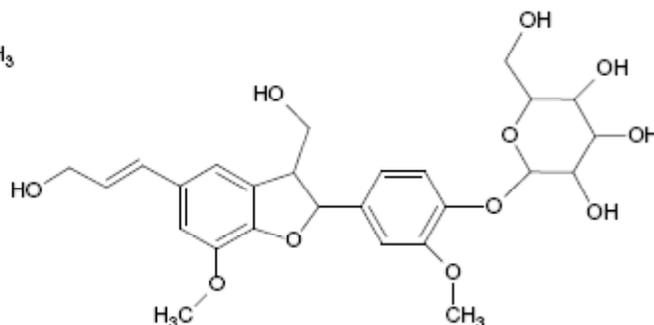
Ecdysterone (7)



Polygodine B (8)

Ecdysterone-22-O- $\beta$ -D-glucopyranoside (9)

Taraxerol (10)

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

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