



PHYTOCHEMICAL AND PHARMACOLOGICAL REVIEW OF LAUNAEA PROCUMBENS (ROXB.)

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ABSTRACT

Launaea procumbens (Roxb.) is a widely distributed herb throughout the India. The leaves are used as local traditional medicine. Most of all parts of plant of *Launaea procumbens* (Roxb.) are used in traditional medicine. The family of *Launaea procumbens* (Roxb.) is Asteraceae and is widely used as a traditional Indian medicine. The common name of plant *Launaea procumbens* (Roxb.) is Pathari, as well as Guljivha. Various phytoconstituents are present in plant which contains proteins, alkaloids, tannins, phenolic compound, steroid reducing sugar and saponin glycosides, while glycosides are total absent. *Launaea*

procumbens (Roxb.) is a plant used in the treatment of inflammation, oxidative dysfunction in the kidney, reproductive disorders, hormonal imbalances and liver dysfunction. Leaf juice is mainly used for the treatment of rheumatism.

KEYWORDS: *Launaea procumbens* (Roxb.), Asteraceae, Phytochemical profile, Traditional uses, Pharmacological activities.

INTRODUCTION

Medicinal plants have great importance for individual in their health. Most of the medicinal plants are used as food plants as well as for nutritional purpose.^[1] *Launaea procumbens* (Roxb.) is a plant belonging to the family Asteraceae and is commonly known as Pathari or Guljivha. They are widely distributed in Egypt, Arabia, Iraq, Iran, Afganistan, Pakistan and India.^[2] *Launaea procumbens* (Roxb.) is a glabrous herb, with tuft of roots at the nodes.

Leaves are mostly radical, entire or glabrous, lower leaves obovate-oblong, pinnatifid, with rounded or very obtuse segments, spinulose on the margins with white cartilaginous teeth, cauline leaves distant, few sessile, narrowly oblong. Heads are 1.2-1.9 cm in length, cylindrical, solitary or a few together along the branches, shortly pedicelled, facicled. Supported by leaves or naked. Involve bracts all with broad white membranous margins; the outer very short, ovate, acute. Stamens five, basifixed syngeneceous, introse. Ovule single on the basal placentation, unilocular, bicarpellary, style terminal, stigma bifid.^[3]

The plant shows the presence of phytoconstituents like protein, alkaloids, tannins, phenolic compound, steroid, reducing sugar and saponin glycosides while glycosides are totally absent. The plant *Launaea procumbens* (Roxb.) is diuretic, soporific, tonic and used as fodder for goats. In Bombay, it is given to buffaloes to promote the secretion of the milk. Leaves of the plant are consumed in times of scarcity considered useful as a sand binder. They are locally used in curries; the juice is applied in rheumatic affections. Plant excluding root has insecticidal activity. It is also used in the treatment of rheumatism, inflammation and oxidative dysfunction in the kidney,^[4] reproductive disorder,^[5] hormonal imbalances^[6] and liver dysfunction^[7] Nutritional analysis has shown that it is composed of synergic acid, 2-methyl-resercinol, salicylic acid, vanillic acid and gallic acid,^[8] which have antioxidant, anticancer, neuroprotective and cardioprotective effect.^[3] Some of the folk uses as, leaves are employed in fever, toxemia, cancer and swellings. Paste of leaves is applied on rheumatism, boils and swellings. The whole plant except the root, is given to treat kidney stone and body heat, juice extracted from leaves is given in the jaundice. Whole plant made into ash with metal is supposed to be more efficacious for jaundice.^[9]

Plant profile:

***Launaea procumbens* (Roxb.):**

Name of the plant: *Launaea procumbens* (Roxb.)

Common name: Pathari

English name of the plant: Creeping *Launaea*

Sanskrit name of the plant: Guljivha

Biological Source of Plant: It contains fresh leaves or stem of *Launaea procumbens* (Roxb.) belonging to the family *asteraceae*.



Figure: Plant of *launaea procumbens* (Roxb.).

Botanical description

Launaea procumbens (Roxb.) is a glabrous herb, with tuft of roots at the nodes. Leaves are mostly radical, entire or glabrous, lower leaves obovate-oblong, pinnatifid, with rounded or very obtuse segments, spinulose on the margins with white cartilaginous teeth, cauline leaves distant, few sessile, narrowly oblong. Heads are 1.2-1.9 cm in length, cylindrical, solitary or a few together along the branches, shortly pedicelled, facicled. Supported by leaves or naked. Involve bracts all with broad white membranous margins; the outer very short, ovate, acute. Stamens five, basifixed syngeneacious, introse. Ovule single on the basal placentation, unilocular, bicarpellary, style terminal, stigma bifid.^[3]

Taxonomical Description:^[10]

Kingdom: Plantae

Phylum: Tracheophyta

Class: Magnoliopsida

Order: Asterales

Family: Asteraceae

Genus: *Launaea*

Species: *Launaea procumbens* (Roxb.)

Geographical location

They are widely distributed in Egypt, Arabia, Iraq, Iran, Afganistan, Pakistan and India.^[2] It is distributed in different regions of India and common throughout the Maharashtra.^[10]

Habitat

Frequently occurs in moist and sandy soil, cultivated fields, gardens, forest and waste places.^[11]

Morphology:

Launaea procumbens (Roxb.) is a herb. It has different parts which has different morphological characters. Parts of plant consist of root, stem, flower, leaves, fruits. The whole plant secretes a yellow juice.

Leaves: Rosette leaves spatulate, 5-7 × 2-3 cm, sinuate-dentate to variously pinnately lobed, tapering into a narrow base, margin white cartilaginous denticulate; lateral lobes 3 or 4 pairs, elliptic to triangular, apex rounded to obtuse; terminal lobe lanceolate to elliptic, apex obtuse. Stem leaves smaller, base often clasping, otherwise similar to rosette leaves.

Stem: 5-30 cm, divaricately branched, puberulent or glabrous, with few leaves or leafless.^[11]

Flower: Yellow flowers in heads which are solitary or a few together along the branches.

Fruit: Achenes truncate at both ends, strongly 4-ribbed.^[12]

Phytochemistry

The *Launaea procumbens* (Roxb.) plant contains different phytoconstituents like protein, alkaloids, tannins, phenolic compound, steroid, reducing sugar and saponin glycoside while glycosides are totally absent.^[3] The leaves contain propanoic acid anhydride, valeric acid, 2-pyrrolidine acetic acid, phthalan, 5-(Hydroxy methyl)-2-(dimethoxy methyl) furan, vanillin, methyl β-1-Arabino pyranoside, 1,6-anhydro- β-D-Glucopyranose.^[13]

Pharmacological activities**1) Cytotoxic activity:**

The cytotoxicity study were carried out for four different fractions n-Hexane, ethyl acetate, water and n-Butanol prepared from the methanolic extract of *L.procumbens*. Ethyl acetate extract of leaves were reported for cytotoxic activity performed by 96 well culture plates in triplicates. Ethyl acetate fraction was found active against cervix (HeLa), leukemia (K562) and breast (MCF-7) cancer cell lines with IC₅₀ value of 42, 56.70 and 64μg/ml, respectively. Cytotoxic activity was found in hexane extract against leukemia (K562) cell lines with IC₅₀ of 69.10μg/ml.^[14]

2) Hepatoprotective activity:

Chloroform extract of aerial parts of *Launaea procumbens* reported for hepatoprotective activity against the hepatotoxicity induced by CCl₄ in rats, possibly through the antioxidant effects of flavanoids present in chloroform extract.^[15]

3) Antiuro lithatic activity:

The methanolic extract of leaves of *Launaea procumbens* (Roxb.) were reported for the antiuro lithatic activity performed by the ethylene glycol- induced renal calculi in rat model. Methanolic extract may prevent calcium oxalate crystal deposition in the kidney by oreventing hyperoxaluria-induced peroxidative damage to the renal tubular membrane surface, which in turn can prevent calcium oxalate crystal attachment and subsequent development of kidney stones.^[16]

4) Antibacterial activity:

Methanolic extract of leaves of *Launaea procumbens* (Roxb.) were reported for the antibacterial activity. The antibacterial activity was measured by the agar well diffusion method and determined by the Minimum Inhibition Concentration against five pathogenic strains of bacteria.^[17]

5) Antitumour activity:

The antitumour activity of various six fractions of *Launaea procumbens* were studied using the potato disk bioassay technique. Three concentrations of all these six fractions were used for characterization of antitumour activity. Among these fractions, methanolic fraction exhibited significant inhibition of crown gall tumors caused by *Agrobacterium tumefaciens* followed by butanolic fraction.^[18]

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