



***Launaea pinnatifida* : Controversial Drug: A Review on Its Pharmacological and Traditional Uses**

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ABSTRACT

*The plant is a valuable herb and is very well known for its Ayurveda and traditional point of view which is benefits for human health. The plant has been used in treatment of diuretic, hepatoprotective, jaundice, blood purifier, antioxidant and many other diseases. Preliminary phytochemical study revealed that the present of alkaloids, saponin, flavonoids, terpinoids and tannin. Triterpenoid saponins along with the compound glutenol and hopenol-B were isolated from methanolic extract of *Launaea pinnatifida* and have reported potential against antifungal, antimicrobial, antioxidant, hepatoprotective and antidiabetic activity. Antilipidemic activity in which serum markers in alloxan-induced diabetic rats concerned with the isolated compound and ethanolic extract of *L. Pinnatifida* leaves exhibited significant varying difference on serum marker in experimental model. Antidiabetic activity were analysed for streptozotocin-induced mice showed significant reduction in blood glucose level and the persistence in lowering effect till the end of study and compared with respect to control. Furthermore scientific and systematic evaluation on phytoconstituents of plant is required for standardizing the generation of data that support its traditional claim. This review deliberates about phytochemical composition as well as recent research finding the beneficiary on human health which includes anti-inflammatory, antimicrobial, antioxidant property, antidiabetic and hepatoprotective.*

Keywords: *Launaea pinnatifida*, Antimicrobial, Antioxidant, Anti-inflammatory, Hepatoprotective.

INTRODUCTION

The plant belongs to the family Asteraceae (Cheriti et al., 2012 & Khare, 2007). The plant is used as traditional medicine because of its herbal remedy for treating various ailments. As per Ayurveda literature the plant belongs to controversial drug Vaidya (2010) as the plant

is of medicinal value but scientifically it's unexplored. In Indian classical system of medicine its belongs to the class of controversial because of mistaken morphological and botanical identity (Dhami et al., 2015, Makwana et al., 2019, Thomas et al., 2020 & Talele et al., 2017).

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Preliminary phytochemical study revealed that the present of alkaloids, saponin, flavonoids, terpenoids and tannin (Santosh, 2010). However systematic and scientific evaluation is required as the plant contain bioactive compounds which are useful for various pharmacological studies. The whole plant is effective in treating joints, arthritis, rheumatoid, and gout problems. Decoction of leaf is also used in treating skin related disease and also used by fisherman to cure skin injury caused by fish spikes (He et al., 2019). This plant is fed to buffaloes to increase milk production due to galatagogue (Khare, 2007). This plant is given to feeding mothers mainly in lehya preparation due to galactagogue (Vaidya, 2010). According to traditional use the plant is given as a lactagogue and also as a soporific children (Salih, 2013, Yusriya, 2011 & Chunekar, 1999). More Scientific evidence is required for proving its traditional use. Through the literature study there is less work on screening of bioactive compound which helps the data in supporting the traditional use of the plant. Historically, it has been used to treat joints, arthritis, rheumatoid, and gout problems. The aim of the study was to deliberate the potential health benefits of *L. Pinnatifida* with respect to its phytochemical composition and physiological benefits.

Pharmacological Activities

The plant show various pharmacological activities with crude extract of leaf and root of *Launaea pinnatifida* against antimicrobial, antioxidant anti-inflammatory, analgesic.

Antimicrobial activity

Plant possesses antimicrobial activity against gram positive and negative bacteria and result found to be significant against test microbes.

Antifungal activity

A triterpenoid saponin glutenol, hopenol-B from methanolic extract of seed of *Launaea pinnatifida* showed significant maximum inhibition concentration against test microbes (Yadava, 2019).

The ethanolic extract and aqueous extract of plant were assessed for antimicrobial activity and the result of both the extract of *L. Pinaatifida* showed maximum zone of

inhibition against *S. aureus*, *S. typhi*, *P. aeruginosa*, *B. subtilis* when compared with standard ciprofloxacin. *L. pinnatifida* leaves extract were assessed for antifungal activity, both ethanolic and aqueous extract exhibited maximum zone of inhibition against *A. niger*, *A. flavus*, *A. terreus* cladosporium and *penicillium notatum* when compared with standard griseofulvin (Santosh, 2010).

Antipyretic activity

Ethanolic extract of *Launaea pinnatifida* showed antipyretic effect by reduction in the temperature of 36.68^oc with respect to the standard drug Acetyl salicylic acid 35.89^oc (Raju, 2014).

Analgesic activity

Analgesic effect was performed with hot plate method of ethanolic extract of *L. pinnatifida* leaves showed significant antinonceptive effect in the latency period and the result found to be better analgesic effect when compared with standard pentazocin (Raju, 2014 & Pullaiah, 2006).

Neuropharmacological effect

Neuropharmacological effect was studied by using locomotor activity, marble burying activity of ethanolic extract of leaves showed reduction in locomotor activity compared with control whereas burrowing is one of instinct behaviour of animals under stimulative condition upon treated with ethanolic extract showed significant decrease in burrowing activity was witnessed when compared with standard (Raju, 2014).

Anti-inflammatory effect

Ethanolic extract of leaves has reported anti-inflammatory effect by carrageenan-induced hind paw enema model in rats. The result exhibited maximum inhibition compared with standard drug indomethacin (Raju, 2014).

Antioxidant activity

The study was carried out with various antioxidant property include Reducing power, hydroxyl scavenging assay the result showed highest reducing power and also significant inhibition in hydroxyl radical activity. There is remarkable antioxidant activity with ethanolic extract and ethyl acetate shows promising antioxidant activity compared with standard

(Nagalapur, 2010). The extract showed concentration-dependent DPPH discolouration assay with scavenging activity with methanolic extract of *L. Pinnatifida* leaves and showed highest percentage scavenging of DPPH radicals. Ferric reducing assay increased with increased concentration of extract and showed highest percentage in radical scavenging activity and found to be better antioxidant property with respect to standard reference ascorbic acid (He, 2019 & Jan, 2013).

Hepatoprotective activity

L. Pinnatifida leaves extract showed hepatoprotective effect. The study was investigated with compound isolated from *L. pinnatifida* on Hep G2 cell line. The treatment of Hep G2 Cells with paracetom significantly decrease the percentage cell viability compared with control. Pretreatment with methanolic extract of leaves with similar concentration significantly protected Hep G2 cell death induced by paracetamol. The isolated compound of *L. pinnatifida* also showed marked hepatoprotective effect compared with standard drug silymarin. Many studies suggested that coumarin compounds are strong antioxidant potential and has the potency to reduce free radical formation and also leads scavenging free reactive radical (Palabiyik, 2016, Pokharkar, 2007 & Himanshu Makwana, 2021).

Antilipidemic activity

Antilipidemic activity was analysed for lipid profile and result found significant decrease in total cholesterol, low density level, triglycerides and no such difference was found in high density lipoprotein compared with control group. Serum markers in alloxan-induced diabetics rats concerned the isolated compound and ethanolic extract of *L. Pinnatifida* leaves exhibited significant varying difference on serum marker in experimental model. It also showed reduction level in alkaline phosphatase, Serum glutamic oxaloacetic transaminase, Serum glutamic pyruvic transaminase and increase in serum protein compared with standard and also changes in body weight and food consumption

were observed in both treated and controlled diabetic rats upto 21 days (Santosh Kumar, 2021).

Antidiabetic activity

Hypoglycemic study were performed by oral acute toxicity upon continuous monitoring and observation for 72 hrs study revealed both ethanolic and isolated compound of *L. Pinnatifida* leaves exhibit lowering effect which was significant from 1st hr and maintained consistence till the end of study. Ethanolic extract and isolated compound of *Launaea pinnatifida* leaves showed reduction in blood glucose (Yusriya et al., 2011). Antidiabetic effect of ethanolic extract and isolated compound of *L.Pinnatifida* leaves were analysed for streptozotocin-induced mice showed significant reduction in blood glucose level and the persistence in lowering effect was maintained till the course of the study and result found to be significant controlled and regulated blood sugar level when compared with control (Yusriya et al., 2011).

CONCLUSION

As per Ayurvedic literature the plant belongs to controversial drug as the plant is of medicinal value but scientifically it's unexplored. Scientific evidence showed significant treatment against various pharmacological activities with ethanolic, methanolic, aqueous and ethyl acetate extracts. As per the literature review there is less information on its isolation, purification and characterization of bioactive compound. More research on isolation is necessary for supporting its traditional claims. As reviewed in this study the plant exhibits a significant potential against antioxidant, anti-inflammatory, antidiabetic and hepatoprotective activity. More Pharmacological activities to be conducted for its validation and support for its traditional uses.

CONFLICT OF INTERESTS

Declared None

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