

A Review Study of Various Pharmacological Activity of *Tridax Procumbens* Linn Plant.

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Abstract

Tridax procumbens Linn. Belongs to family Compositae is a weed found throughout India. The plant is native of tropical America and naturalized in tropical Africa, Asia, and Australia. Local people known it as “Ghamara”, in English popularly called ‘coat buttons’ and is dispensed for “Bhringraj” by some of the practitioners of Ayurveda. The phytochemical screening revealed the presence of alkaloids, carotenoids, flavonoids (catechins and flavones), fumaric acid, fl-sitosterol, saponins and tannins. It is richly endowed with carotenoids, saponins, oleanolic acid and ions like sodium, potassium and calcium. Luteolin, glucoluteolin, quercetin and isoquercetin have been reported from its flowers. It has known for its number of pharmacological activities like hepatoprotective activity, antiinflammatory, wound healing, antidiabetic activity, hypotensive effect, immunomodulating property, bronchial catarrh, dysentery, diarrhoea and to prevent falling of hair promotes the growth of hair, and antimicrobial activity against both gram-positive and gram-negative bacteria. The leaf juice possesses antiseptic, insecticidal and parasitocidal properties, as a remedy against conjunctivitis and is used also to check haemorrhage from cuts, bruises and wounds insect repellent. It is also used as bioadsorbent for chromium (VI). This review focus on folk occurrence and the wide pharmacological activities of weed *Tridax*.

Keywords: *Tridax procumbens*, pharmacological.

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I. Introduction

Tridax procumbens Linn. (*Tridax*) family Compositae commonly known as ‘Ghamra’ and in English popularly called ‘coat buttons or tridax daisy’ because of appearance of flowers has been extensively used in Ayurvedic system of medicine for various ailments and is dispensed for “Bhringraj” by some of the practitioners of Ayurveda which is well known medicine for liver disorders or hepato-protective nature besides gastritis and heart burn.¹ The plant is native of tropical America, Africa, Asia, Australia and India. It is a wild herb available throughout India. Coat buttons is also found along roadsides, waste grounds, railroads, riverbanks, meadows. Its widespread distribution and importance as a weed are due to its spreading stems and abundant seed production.² *Tridax* is a weak straggling herb about 12- 24cm long with few leaves 6-8cm long and very long slender solitary peduncles a foot long and more. Leaf is simple, opposite, ex-stipulate, ovate, acute, inflorescence capitulum. *Tridax* has two types of flowers ray-florets and disk-florets, fruit is cypsela.³ It is best known as a widespread weed and pest plant. Traditionally, *Tridax* has been in use in India for wound healing, as anticoagulant, antifungal and insect repellent. It was concluded that Glibenclamide and the *Tridax* flower extract showed anti-diabetic properties.¹²

CHEMICAL CONSTITUENTS

A new flavonoid procumbetin, isolated from the aerial parts of *Tridax* has been characterised as 3,6-dimethoxy-5,7,2',3',4'-pentahydroxyflavone on the basis of spectroscopic techniques. *Tridax* Flavonoids Plant, commonly used as anticoagulant, hair tonic, antifungal and insect repellent, diarrhoea, dysentery and wound healing. Isolated constituents alkyl esters, sterols, pentacyclic triterpenes, fatty acids and polysaccharides. New isolated constituent 3,6-Dimethoxy-5,7,2',3',4'-pentahydroxyflavone 7- O-β- D-glucopyranoside, named procumbetin Z yield: 0.016% on dried basis¹. The phytochemical screening revealed the presence of alkaloids, carotenoids, flavonoids like catechins and flavones. The proximate profile shows that the plant is rich in sodium, potassium and calcium. Leaf of *Tridax* mainly contains crude proteins 26%, crude fiber 17% soluble carbohydrates 39% calcium oxide 5%, Luteolin, glucoluteolin, quercetin and isoquercetin have been reported from its flowers. Whereas the fumaric acid, sitosterol and tannin has also been reported in the plant. Oleanolic acid was obtained in good amounts from *Tridax* and found to be a potential antidiabetic agent when tested against aglucosidase.¹³

PHARMACOLOGICAL ACTIVITIES

Analgesic and anti-inflammatory activity

An analgesic are the drug bringing about insensibility to pain without loss of consciousness.² Lyophilized extract of Tridax was found to be potent analgesic. Tridax has marked beneficial effects against centrally, peripherally and inflammatory pain models. This protective action may be attributed towards the presence of flavanoid and sterols.³

Hypotensive activity

The cardiovascular effect of aqueous extract from the leaf of Tridax was investigated on anaesthetized Sprague-Dawley rat. Extract caused greater decrease in the mean arterial blood pressure at higher dose than at lower dose also higher dose leads to significant reduction in heart rate where as lower dose did not cause any changes in heart rate. It means that a leaf of Tridax has hypotensive effect.¹⁴

Antioxidant activity

Antioxidants may be defined as compounds that inhibit or delay the oxidation of other molecules by inhibiting the initiation or propagation of oxidizing chain reactions⁴. Tridax plant extracts were evaluated for in vitro antioxidant activities i.e DPPH (1, 1- diphenyl, 2- picryl hydrazyl) method is for evaluation of in vitro antioxidant activity based on reaction between antioxidant with nitrogen centered free radical. The Ethyl acetate and n-Butanol fractions from methanolic extract have shown significant activity which is comparable to the activity of Ascorbic acid.⁵

Antibacterial activity

The herb Tridax growing commonly in tropical countries, having antibacterial properties activity was associated only with the ethanolic extract and seen only against *Pseudomonas aeruginosa* strains. Multi drug resistant nosocomial strains of *Pseudomonas* isolated from ventilator associated pneumonia, urinary tract infection as well as blood stream infection showed significant sensitivity to Tridax extracts. Our study reviewed the efficacy of Tridax as an anti pseudomonal agent and its value as a source of formulations for treatment of nosocomial infections caused by *Pseudomonas aeruginosa*.⁶

Antidiabetic activity

Dried aqueous, alcoholic, and petroleum ether (60- 80°C) extracts of leaves of Tridax is subjected for hypoglycaemic activity in Wistar rats (150-200 g). Blood sugar level determined using digital glucometer. Experimental studies reveals that the aqueous and alcoholic extracts from Tridax leaves (200 mg/kg) orally administered for 7 days produced a significant decrease in the blood glucose level in the model of alloxan-induced diabetes in rats. Petroleum extract exhibits very weak anti-diabetic activity. It also proves the traditional claim with regard to Tridax for its anti-diabetic activity.⁷

Antimalarial activity

The aqueous and ethanolic extracts of tridax have antiplasmodial activity against chloroquine- resistant *P. falciparum* parasites. The extracts have considerably low toxicities to human RBCs. These results end support to claims of herbalists that decoctions are useful medicines. These notwithstanding, more comprehensive animal toxicity studies need to be carried out on the plants, especially since humans are currently using them to treat malaria.⁸

Anticancer activity

Tridax is a semi prostrate annual or short lived perennial herb. The phytochemicals in dried leaves has been investigated. Tridax compounds were tested for cytotoxicity against human lung cancer by MTT assay. The compound of Rf value 0.66 showed 90% reduced cell viability. NMR, MS and IR spectra revealed the compound as Lupeol. The anticancer potential of the Lupeol against human lung cancer has been evaluated by colonogenic survival determination, cell cycle control, Cell based assay for inhibition of COX-2 activity and DNA fragmentation analysis, an amount of 320 µg/ml concentration of Lupeol compound exhibited potential anticancer property.⁹

Antifungal activity

Tridax Disc diffusion assay was performed against two pathogenic fungal strains *Aspergillus flavus* and *Aspergillus niger*. Minimum inhibitory concentrations (MIC), minimum fungicidal concentrations (MFC) and total activity were also evaluated for determination of antifungal potential of each active extract. The flavonoid extracts showed remarkable activity against *A. niger* whereas alkaloid extracts were found inactive against both the test fungi. Excellent antifungal potential was recorded for free flavonoid of stem and bound

flavonoid of stem and flower *A. niger*.¹⁰

Immunomodulatory Activity

Ethanol insoluble fraction of aqueous extract of *Tridax* has been immunomodulatory activity. It increases the phagocytic index, leukocyte count and splenic antibody secreting cells. The immunomodulatory activity of Ethanolic extracts of leaves of *Tridax* have been also studied in Albino rats with *Pseudomonas aeruginosa*, which has ability to inhibit the proliferation of this microorganism.¹¹

II. Conclusion

Tridax procumbens Linn. is widely distributed weed found everywhere in India, America, Tropical Africa, Asia and Australia. All plant parts have noble pharmacological activities. The reviewed work includes study of pharmacological activities like hepatoprotective effect, immunomodulating property, wound healing activity, antidiabetic, hypotensive effect, antimicrobial, insect repellent activity, anti-inflammatory and antioxidant, bronchial catarrh, dysentery, diarrhea. The plant also used as hair growth promoter. This plant is used as bioadsorbent for removal of harmful Cr (VI) from the industrial waste water.

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