

Tridax Procumbens Linn.: A Review of Pharmacognostical, Phytochemical, and Pharmacological Properties

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ABSTRACT

In India, *Tridax procumbens* Linn. Grows wild and is considered a weed. The plant originated in tropical America and has since spread to Australia, Asia, and tropical Africa. Some Ayurvedic practitioners prescribe it for “Bhringraj,” which promotes hair development. Pharmacopoeial standards, such as the physical constant and leaf constant, are provided by the pharmacognostical research. The results of the phytochemical screening included fumaric acid, alkaloids, carotenoids, flavonoids, β -sitosterol, saponins, and tannins. It is abundant in oleanolic acid, carotenoids, saponins, and ions such as calcium, potassium, and sodium. From its blooms, luteolin, quercetin, and isoquercetin have been identified. Numerous pharmacological properties, including hepatoprotective activity, anti-inflammatory, and wound healing, have been reported for it. Antibacterial activity against both gram-positive and gram-negative bacteria, antidiabetic activity, hypotensive impact, immunomodulating property, anticancer activity, antioxidant activity, bronchial catarrh, dysentery, diarrhoea, and to prevent hair loss. The leaf juice’s antibacterial, insecticidal, and parasitocidal qualities make it a useful treatment for conjunctivitis as well as an insect repellent for cuts, bruises, and wounds. This review focusses on the widespread prevalence of the weed *Tridax procumbens*, as well as its diverse phytochemical and pharmacological properties.

Keywords: leaf constant, antioxidant, anticancer, *Tridax procumbens*, weed

INTRODUCTION

The *Tridax* family, or *Tridax procumbens* Linn., is introduced. Compositae, also referred to as “Ghamra” and, in English, “coat buttons” due to their flower-like appearance, is widely used in the Ayurvedic medical system for a variety of ailments. Some Ayurvedic practitioners also prescribe it for “Bhringraj,” a well-known treatment for liver disorders. While *Tridax procumbens* L. (Asteraceae) was once described as a plant that invaded many crops, it has long been used in many African, South Asian, and Southeast Asian countries as a traditional drink to treat liver disorders, diarrhoea, dysentery, and bronchial catarrh (2, 3). Starting in tropical America, the plant has spread to tropical Africa, Asia, Australia, and India. It’s Along riverbanks, knolls, rises, railroads, barriers, roadsides, and squander grounds, coat buttons can moreover be

found. Its spreading branches and bountiful seed generation are the most causes of its endless conveyance and centrality as a weed.

Plants Profile

Tridax Procumbens Scientific classification of *Tridax procumbens*:

Kingdom: Plantae.

Division: Spermatophyta. Subdivision: Angiospermae.

Class: Dicotyledonae.

Subclass: Cotyloideae

Order: Asterales.

Family: Asteraceae.

Botanical Name: *Tridax procumbens* Linn.

Synonyms for coat buttons include Gaddi Chemanthi, Ghajadvu, Mexican daisy, *Tridax* daisy, and *Tridhara*.

Table 1: Vernacular names for *Tridax Procumbens*

Language	Names
English	Coat Buttons and <i>Tridax</i> Daisy
Hindi	Ghamra

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Sanskrit	Jayanti Veda
Marathi	Dagdi pala
Telugu	Gaddi Chemanthi
Tamil	Thata poodu
Malayalam	Chiravanak
Spanish	Cadilp Chisaca
French	Herbe Caille
Chinese	Kotobukigiku (6)



Morphological features:

Tridax procumbens is a perennial plant with a creeping stalk and opposing, pinnate, rectangular to oblong leaves. It features yellow disc blooms that bloom in the spring, together with white rays. The plant's regenerated stem measures 4–12 inches in length and 40.6 inches in width. Fruits are rectangular,

dark brown to black, and feature an adjustable calyx bristle head. The tropical native *Tridax procumbens* is listed as a pernicious weed by the federal government. It spreads to crops, waste land, roadsides, and fallow areas. Despite its South American and Mexican origins, this invasive weed is now found all over the world.





Appearance: *Tridax procumbens* is an annual climber basil that grows partially as a prostrate. Its stalks reach a height of 30 to 50 cm, are split, thinly hirsute, and are embedded at bulges.

Flower: *Tridax procumbens* flowers have yellow disk flowers and white rays. They are approximately 0.4-0.6 inches (1-1.5 cm) long, and the stalks are tubular in shape with hairs that have a capitulum inflorescence (8,9,10). There are two kinds of flower: disc florets with basal planation and ray florets (9).

Fruit: Fruit is a firm achene with stiff hairs and a feathery, plum-like white pappus at one end that helps spread by air (8,9). Gamete (haploid) (11) Spreading stem and seed production are the methods used to prolong (8).

Calyx: Scales or a smaller pappus represent it.

Leaves: Greeneries are simple ovate, opposing, lanceolate, and have short petioles on both surfaces. They are also unevenly jagged and typically arrow summit shaped. 2.7 Stem and Root: The base of the stem is a robust taproot system, while the stem is cylindrical, haploid, and covered in multicellular hair measuring mm. The stem has branches, grows 30 to 50 cm tall, and has sparsely hairy roots at nodes.

Chemical composition

At 88.30 percent in the stem and 90.05 percent in the leaf, *Tridax procumbens* has a high moisture content. With 37.54% dry weight (4.38%) in the stem and 34.57% dry weight (3.44% wet weight) in the leaf, it is high in protein. Overall, the stem has 0.85% dry weight (0.1% wet weight) and 41.03 percent dry

weight (4.80% wet weight) of lipid and carbohydrates, whereas the leaf has 6.03% dry weight (0.6% wet weight) and 51.26% dry weight (5.10 wet weight) of these substances, respectively. The stem has 16.41% dry weight (1.92% wet weight) of crude fibre, while the leaf contains 6.13% dry weight (0.61% wet weight). The metabolisable vigar for steam is approximately 321.54 Kcal in dry weight (37.62 Kcal in wet weight) for 100 g of *Tridax Procumbens*. (12) In addition, four recognised chemicals were isolated from the plant parts: betulinic corrosive, esculetin, puerarin, and oleanolic corrosive (13). *Tridax procumbens* is predicted to have a general chlorophyll content of 1.424 ± 0.017 mg/g tissue and a general carotenoids content of 0.724 ± 0.007 mg/g tissue (14). Alkaloids, hydroxycinnamates, flavonoids, tannins, and phytosterols are all present in excess in the plant (15). Alkaloids, carotenoids, flavonoids (catechins and flavones), and tannins were found via phytochemical screening. It is abundant in saponins and carotenoids. The plant is high in calcium, potassium, and sodium, according to the proximate profile. (16) When tested against aglucosidase, oleanolic acid, which was derived in good concentrations from *Tridax*, was discovered to have potential anti-diabetic properties. (17) The presence of several key active chemical components was discovered. However, there is a lack of toxicological expertise, and further study on this plant is stated to be necessary. (18) In addition to 35% crude protein, 6% crude fibre, 51% total carbs, and 6% crude fat, *Tridax procumbens* Linn leaves also contain phytotoxic chemicals linked to its capacity for invasiveness and weeding. Fifteen compounds, including α -pinene, 1,3,6-octatriene, camphene, β -pinene, sabinene, phellandrene, limonene, β -ocimene, Trans- β -ocimene, Transcaryophyllene, γ -elimene,

spathulenol, Torreyol, and Aromadendrene, are found in the leaves of *Tridax procumbens*. (19)

Ayurvedic Properties (20):

Guna: Guru, Snigdha;

Rasa: Kashaya, Amla, Tikta Seeta : Virya

Medicinal uses:

1.Wound healing: Because of the plant's anti-inflammatory and antibacterial qualities, its leaves and stems have been used to treat cuts, bruises, and wounds. (21)

2.Fever reduction: Because of its antipyretic qualities, *Tridax procumbens* has been used to treat fever, especially in youngsters. (22)

3.Pain relief: In diseases including rheumatism and arthritis, the plant's preparations have been utilised to lessen inflammation and relieve pain. (23)

4.Antibacterial and antifungal properties: *Tridax procumbens* is efficient against a variety of pathogens due to its demonstrated antibacterial and antifungal qualities. (24)

5.Antioxidant properties: It has been shown that the plant's extracts have antioxidant qualities that can aid in preventing oxidative stress and cell damage. (25)

6.Anti-inflammatory qualities: *Tridax procumbens*' anti-inflammatory qualities have been used to treat inflammatory diseases like dermatitis, acne, and eczema. (26)

7.Anticancer properties: *Tridax procumbens* may have anticancer effects, according to certain studies, although further research is required to establish this. (27)

Pharmacological Activity

Both Antioxidant and hepatitis properties: In male albino rats, the effects of an ethanolic extract of *Tridax procumbens* on liver damage caused by paracetamol (acetaminophen) were assessed. Hepatic damage caused by paracetamol (2gm/kg body weight) has been demonstrated by decreased Catalase and Superoxide Dismutase activities in liver tissue, a marked increase in the activity of aspartate aminotransferase, serum alkaline phosphatase,

alanine aminotransferase, and enhanced lipid peroxidation. Due to paracetamol-induced liver injury, there was a marked decrease in total serum protein, hepatic glutathione, and glycogen levels, as well as an increase in serum bilirubin. Following seven days of oral treatment of different doses (100, 200, 300, and 400 mg/kg body weight) of *Tridax procumbens* ethanolic extract, these changed parameters returned to normal values. This demonstrates *Tridax procumbens*' hepatoprotective and antioxidant effectiveness against liver damage-induced by paracetamol. (28)

ImmunomodulatoryEffect The immunomodulatory activity of Swiss male albino mice was investigated using the insoluble ethanolic fraction of *Tridax procumbens* Linn (TPEIF) aqueous extract. Leukocyte count, phagocytic index, and splenic antibody-secreting cells all significantly increased following intraperitoneal TPEIF injection. The humoral immune response was also activated, as evidenced by an increase in the haemagglutination antibody titer. An elevated type IV (delayed) hypersensitivity reaction was described together with prominent information for cellular immune system activation. Moreover, TPEIF promotes the humoral and cell-mediated immune systems. As a result, it facilitates the development of a stronger antibody response to specific clinical antigens. (29)

Anti-diabetic Activity: Activity that prevents diabetes According to history, the Indians were aware of diabetes mellitus as early as the prehistoric era. Another word for diabetes is madhumeha, a condition in which a patient has sweet urine and sugary bodily fluids such as perspiration, mucus, urine blood, etc. Since ancient times, a variety of plants have been used topically to reduce blood glucose levels, either as whole or in liquid form. In the rat model of alloxan-induced diabetes, *Tridax* leaf aqueous and alcoholic extract significantly reduced blood glucose levels. (30)

Antimicrobials activity: the activity of antimicrobials Tropical nations are home to the herb *Tridax procumbens*, which has antibacterial qualities. According to this review, this action was only linked to the ethanolic extract and was only noticeably seen against strains of *Pseudomonas aeruginosa*. Numerous isolates from bloodstream infections,

urinary tract infections, and ventilator-associated pneumonia have demonstrated a high sensitivity to *Pseudomonas Tridax* extricates, a safe nosocomial species. Our analysis shows *Tridax*'s effectiveness as a *Pseudomonas* specialised antagonist and its worth as a source of recommendations for the management of nosocomial infections brought on by *Pseudomonas aeruginosa*. (31-33)

CONCLUSION:

Tridax procumbens Linn. is a valuable medicinal herb, according to the review? This is further supported by phytochemical, pharmacological, and conventional medical systems. Every section and phytochemical and pathological analysis reveal the location and origins of phytomolecules. According to a thorough assessment of the literature, *Tridax procumbens* Linn has demonstrated numerous noteworthy antimicrobial activities. A small number of chemical compounds that have been identified have both antibacterial and wound-healing qualities. *Tridax procumbens* exhibits the presence of several valuable components, including polysaccharides, sterols, terpenoid, bithiophene, flavone glycoside, and lipids. The herb is also used as a hair growth stimulant and to stop hair loss. A common weed found in India, America, tropical Africa, Asia, and Australia is *Tridax procumbens* Linn. Numerous studies on dissimilarity have been presented

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