# **Review on Tridax Procumbens**

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# Abstract

Tridax procumbens Linn. is a wild plant in the Compositae (Asteraceae) family that is generally known as 'Ghamra' and means "coat buttons" in English. Pharmacological actions include hypotensive, antimicrobial, antidiabetic, repellent, wound healing, anti-inflammatory, hepatoprotective, and immunomodulatory effects. Pharmacopoeia criteria such as physical constant and leaf constant are derived from pharmacogenetic investigations. Alkaloids, carotenoids, flavonoids, fumaric acid, beta-sitosterol, saponins, and tannins were found in the phytochemical screening. It contains a lot of oleanolic acid. Its blossom has been shown to contain luteolin, glucoluteolin, quercetin, and isoquercetin. Each part of the plant has numerous phytoconstituents which have diverse pharmacological activities.

Keywords: Tridax Procumbens, Compositae, Asteraceae, Alkaloids, wound healing.

# **Introduction:**

Linnaeus published T. procumbens in 1753, which was the first publication of Tridax species. T. Procumbens, generally known as 'Ghamra,' is a wild plant in the Asteraceae family [1]. The plant is native to tropical America but has spread to tropical Africa, Asia, and Australia as a weed.[2]. It may be found in Maharashtra, Madhya Pradesh, Gujarat, Odisha, and other Indian states. Roadsides, waste grounds, dikes, railroads, riverbanks, meadows, and dunes all have coat buttons [3]. It has traditionally been used to treat bronchial catarrh, dysentery, malaria, stomachache,



Figure 1

diarrhoea, hypertension, and bleeding from cuts, bruises, and wounds, as well as to keep hair from falling out [4].

#### Methodology:

A literature search of T. procumbens was conducted using Science Direct, Google Scholar, PubMed, sci hub, Research Gates, Wikipedia, by applying keywords like chemical constituent's, Pharmacognostic features, pharmacological uses and Marketed formulations etc. Chem draws pro 12.0 was used to draw chemical structures.



Figure 2

#### **Pharmacognosy:**

Solitary, long stalked, yellow composite, heterogamous, bisexual flowers with white blooming heads and extremely hairy, coarsely serrated, petislate, ovate or lanceolate leaves are often seen roots at nodes [6].

Daisies-like yellow-centered white or yellow blooms with three-toothed ray florets bloom on the plant. The leaves are serrated and arrowhead-shaped in form. Its fruit is a rigid achene with stiff hairs on one end and a plume-like white pappus on the other. Scales or pappus are used to symbolise the calyx. The plant is invasive in part because it produces a large number of achenes (up to 1500 per plant), each of which can catch the wind in its pappus and travel a considerable distance. This weed can be found in tropical and subtropical climes in fields, meadows, croplands, disturbed areas, lawns, and roadside areas

Synonym: Hindi: Khal muriya, Tal muriya, Ghamra Sanskrit: Jayanti Veda English: Coat buttons, Tridax Daisy, Wild daisy Oriya: Dagadi pala Marathi: Gaddi chemanthi Tamil: Vettukaya thalai, Thatha Telugu: Gayapu aku, Gaddi chamanthy or Palaka aku [7]

Tridax procumbens Linn. is a weed that may be found all throughout India. Tropical America is the plant's original habitat, but it's also naturalised in tropical Africa, Asia, and Australia. Locals termed it "Ghamara," which translates to "coat buttons" in English, and some Ayurvedic practitioners prescribe it for "Bhringraj" to promote hair development.

Classification	Scientific Name	Biological Name		
Kingdom	Plantae	Plants		
Sub kingdom	Tracheobionta	Vascular plants		
Division	Spermatophyta	-		
Subdivision	Magnoliophyta	Flowering plants		

<b>Table 1: Scientific and</b>	<b>Biological</b>	classification o	of Tridax	procumbens	[8].

Class	Magnoliopsida	Dicotyledons
Subclass	Asteridae	-
Order	Asterales	-
Family	Asteraceae	Aster family
Genus	Tridax L	Tridax
Species	Tridax procumbens L	coat buttons

#### Morphological description:

T. procumbens is a little green color plant having perennial. It's a straggling plant that grows to be approximately 12- 24 cm long, with a few leaves that are 6-8 cm long and very long thin solitary peduncles. The spreading stems and copious seed production are responsible for its wide distribution and role as a weed [3][5]. Simple, opposite, exstipulate, lanceolate to ovate, 3-7 cm long irregularly serrated margin, base wedge shaped, short petiole, hairy on both sides' leaves are simple, opposite, exstipulate, lanceolate to ovate, 3-7 cm long irregularly serrated margin, base wedge shaped, short petiole [9][10]. Stem is 30-50cm tall, branching, sparsely hairy, and roots at nodes [11]. Flowers have white or yellow petals with a yellow centre that resemble daisies. A ring of short, strap-shaped ray florets encircles many, tubular disc florets. Cypsela fruit matures to a dark brown or black colour and is ringed by fluffy bristles [11]. Fruits (achene) are 1.6–2 mm long, with pappus bristles that are plumose, thin, and 5–6 mm long, and have fine spreading hairs. Seedlings No features are available [8].

#### Geographical distribution:

The plant produces daisy-like white or yellow blooms with three-toothed ray florets that have yellow Centre's. The leaves often have an arrowhead form and are toothed. Its fruit is a hard achene with stiff hairs covering it, and one end of the achene has a feathery, plume-like white pappus. Scales or a pappus-only representation of the calyx Up to 1500 of these achenes can be produced by a single plant, and each one has the potential to catch the wind in its pappus and travel some distance, which contributes to the plant's invasiveness. In regions with tropical or semi-tropical temperatures, this plant can be found in fields, meadows, croplands, disturbed areas, lawns, and roadsides [8][12][13][14].

#### **Chemical constituents:**

Alkaloids, carotenoids, flavonoids (catechins and flavones), and tannins were all found throughout the phytochemical screening. Carotenoids and saponins are abundant in it. The plant is high in sodium, potassium, and calcium, according to the proximate profile [4]. Luteolin, glucoluteolin, quercetin, and isoquercetin have been identified from its flower. The leaf of Tridax mostly includes croud proteins (26%), crude fibre (17%), soluble carbohydrates (39%), and calcium oxide (5%) [2][4][8][15][16]. When tested against aglucosidase, oleanolic acid, which was produced in good quantities from Tridax, was discovered to be a promising antidiabetic drug [17][18].



beta- sitosterol oleanolic acid Chemical Constituents of Tridax Procumbens

#### **Extraction of plant material:**

To make a coarse powder, the dried leaves were pulverised. 500 mg of powder were successively extracted using aqueous extract and ethanol as the solvents. Using a Soxhlet apparatus, the extraction method was performed for 36 hours.

#### Uses of tridax plant (functions reported)

Significant anti-inflammatory, hepatoprotective, wound-healing, anti-diabetic, and antibacterial activity against gram-positive and gram-negative bacteria are all properties of Tridax [8][19][20]. The leaf juice is used to stop the bleeding from cuts, bruises, and wounds and has antibacterial, insecticidal, and parasiticidal characteristics. Its leaves are also used as an insect repellent, to cure bronchial catarrh, dysentery, and diarrhoea, as well as to stop hair from coming out [2][5][8][21]. Oddly, it also has a hypotensive impact and strong immunomodulatory abilities [2][8]. The leaves of the plant are used as a treatment for conjunctivitis by traditional healers and the local populations in the tropical zone and West Africa sub-region of the world [8].

#### **Traditional uses**

Antiviral, Anti-Oxidant Antibiotic Efficacies, Wound Healing Activity, Insecticidal and Anti-Inflammatory Activity [22].

#### Pharmacological uses

Both gram-positive and gram-negative bacteria are susceptible to its antimicrobial effects. Anti-coagulant Anti-inflammatory insecticidal, antiseptic Parasiticidal, Hepatoprotective, wound recovery to assess bleeding from wounds, bruises, and cuts hypertensive behavior Diabetic prevention to stop hair from falling out and encourage hair growth. diarrhoea and dysentery Conjunctivitis prevention Immunomodulatory quality Activity that wards off insects [2].

#### **Medicinal uses**

Antiviral, Anti-Oxidant Efficacies of antibiotics both gram-positive and gram-negative bacteria are susceptible to its antimicrobial effects. Anti-coagulant Anti-inflammatory Antiseptic, being insecticidal, Parasiticidal, Hepatoprotective, wound recovery to assess bleeding from wounds, bruises, and cuts hypertensive behaviour Diabetic prevention to stop hair from falling out and encourage hair growth. diarrhoea and dysentery Conjunctivitis prevention Immunomodulatory quality Activity that wards off insects [2][8].

#### Pharmacological activities:

Extracts of T. procumbens are extensively studied for their therapeutic potential, like antibacterial, antifungal, wound healing, immunomodulatory antioxidant, anticancer, hemostatic, larvicidal, anticoagulating activities, etc.

#### 1. Antimicrobial Activity:

Tridax as a whole plant has been noted for its antibacterial efficacy against numerous bacterial species. To extract juice, a complete plant is squeezed between the palms of the hands. To treat cuts and wounds, fresh plant juice is applied twice daily for three to four days. Only Pseudomonas aeruginosa was resistant to the antibacterial effects of the Tridax whole plant extract. The antibacterial activity was evaluated using the disc diffusion technique. Bacillus subtilis, Staphylococcus aureus, Escherichia coli, and Pseudomonas aeruginosa, four different bacterial strains, were used in the test [2][21].

## 2. Wound Healing Activity:

Epidermal and dermal cells, the extracellular matrix, controlled angiogenesis, and plasmaderived proteins interact in a complicated way during wound healing, and this interaction is regulated by a variety of cytokines and growth factors [23]. Tridax counteracted dexamethasone's anti-epithelialization and tensile strength-depressing effects without compromising the drug's anticontraction and antigranulation effects. Although less effectively than whole plant extract, aqueous extract was still efficient in raising lysyl oxidase. In a dead space wound healing model, it has also been demonstrated that an extract from the plant's leaves improves wound healing in both healthy and immunocompromised (steroid treated) rats. The plant's granulation tissue has more protein and nucleic acids than just lysyl oxidase, perhaps due to an increase in glycosamino glycan content [13][24].

## 3. Hepatoprotective activity:

On acute hepatitis brought on by a single dosage of carbon tetrachloride in rats, the ethanolic extract of arial portions of T. procumbens and its chloroform soluble and insoluble fractions were examined. Hepatic injury models, both acute and chronic, were investigated while morphological, metabolic, histological, and biochemical parameters were recorded. The antihepatotoxic properties of T. procumbens support its use in liver disease. Hepatoprotective efficacy was only present in the ethanolic extract and chloroform insoluble fraction [6][25].

## 4. Anti-diabetic:

Activity According to history, the Indians were aware of diabetes mellitus as early as prehistoric times. A patient with madhumeha, another name for diabetes, displays sweetness everywhere over their body, including in their perspiration, mucus, urine, blood, and other bodily fluids. Different plants have been used practically for decreasing blood sugar levels as such or in juice form since ancient times. In a rat model of alloxan-induced diabetes, aqueous and alcoholic extract of Tridax leaves shown a substantial reduction in blood glucose levels [2][15][26].

## 5. Immunomodulatory Activity:

When albino rats are given Pseudomonas aeruginosa, ethanol extracts from Tridax leaves exert immunomodulatory effects and also suppress the growth of the same bacteria [27][28]. Additionally, it has been shown that the ethanol insoluble fraction of the aqueous Tridax extract significantly increased the phagocytic index, leukocyte 58 count, and splenic antibody-secreting cells. Along with an increase in the titer of hemagglutination antibodies, stimulation of the humoral immune response was also noted. Additionally, research shows that Tridax affects the immune system's cellular and humoral components [28].

#### 6. Repellency Activity:

In a different investigation, Tridaxprocumbens Linn leaves were used to steam distil essential oils. They were further tested for their topical repellency effect 61 reasonably strong repellency effect (> 300 minutes at 6% concentration), and it was determined that tridax are promising as repellents at 6% concentration against an Stephensi [29].

# 7. Anti-inflammatory and Antioxidant Activity:

Tridax also reported for its anti-inflammatory and anti-oxidant activity when DPPD (2, 2 - diphenyl-1-picrylhydrazyl hydrate) and HET – CAM (Hen's egg chorioallanthoic membrane) assay were done [8][23].

# 8. Antidiorrheal/Antisecretory activity:

Alcohol, hexane, chloroform, butanol and aqueous extract of different parts of 31 indigenous medicinal plants of India were screened for their antisecretory activity against E. coli. The extract of T. procumbens showed highly significant antisecretory activity [6].

## 9. Anti-Cancerous Activity:

The results of this analysis revealed the fact that flower crude extract has anticancer activity. The effect of anti-cancer activity of traditional plant Tridaxprocumbens flower crude aqueous and acetone extract was tested on prostate epithelial cancerous cells PC3 was determined by measuring cell viability by MTT assay [28].

# **CONCLUSION:**

The review summarizes various activities of the plant T. Procumbens

All the parts of the plant have various phytoconstituents which are very potent. The antimicrobial effects. Anti-coagulant Anti-inflammatory insecticidal, antiseptic Parasiticidal, Hepatoprotective, wound recovery to assess bleeding from wounds, bruises, and cuts hypertensive behavior Diabetic prevention to stop hair from falling out and encourage hair growth. diarrhoea and dysentery Conjunctivitis prevention Immunomodulatory quality Activity that wards off insects. So the plant contains luteolin, glucoluteolin, quercetin, and isoquercetin.

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