

# Pharmacognostic And Phytochemical Investigation Of *Tridax Procumbens* Linn..

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**Abstract:** *Tridax procumbens* Linn. Is a species of flowering plant. It is a best known as widespread weed and pest plant in India, It is native to tropical America, Africa, Asia & Australia. In english this plant called as 'coat button'. This species produced variety of secondary metabolites such as flavonoids, alkaloids, tannins, Saponins, and shows the various pharmacological activities like wound healing, antidiabetic, anti-inflammatory, hepatoprotective, antimicrobial, immunomodulator against both gram positive and gram negative bacteria. The leaf juices possess antiseptic, insecticidal, parasiticidal properties. The aim of these review gives the information about phytochemicals study of *tridax procumbens* linn. And also show the importance of more studies to understand the potential of this plant species which having secondary metabolite for medicinal and preservative treatment.

**Keywords:** TRIDAX PROCUMBENES, Phytochemical, Wound healing , Secondary Metabolites, Pharmacological Actives.

## Introduction

The local name of *Tridax procumbens* is 'GHAMARA'. It consist of dried whole part of plant of *Tridax procumbens* Linn. belonging to family Asteraceae.

## Synonym [1]

Marathi - Gaddi chemanthi

Hindi - Ghamara, Tal muriya

English - coat button

Sanskrit – Jayanti veda

Oriya - dagdi pala

## Taxonomical classification

Kingdom – plantae

Subkingdom-Tracheobinota

Division-Magnoliophyta [2]

Class -Magnolipsida

Subclass -Asteridae

Clade – Angiosperms[1]

Order - Asterales

Clade -Eudicots[3]

Family - Asteraceae

Tribe - Heliantheae

Genus -*Tridax* [2]

Species-*T. procumbens*

Bionomial name-*Tridax procumbens*[1 ]

## Cultivation, Collection, Processing for market-

- *Tridax Procumbens* Linn is native of tropical America and naturalized in tropical Africa, Asia, Australia and India.[4]
- This wild herb is distributed throughout India. •*Tridax. Procumbens* Commonly called as Coat button.[2]
- It is a semi prostrate, annual, creeper herb. And found in tropical and subtropical areas of the world growing mainly during the rainy season.[1]
- Coat buttons are found in roadsides, waste grounds, railroads, dykes, riverbanks, and meadows and dunes.[7]

## Morphological features –

- It is a common weed grows in open places, coarse textured soils of tropical regions, sunny dry localities, fields, waste areas.

## Leaves-

leaf is a green colour and having characteristic odour and acrid taste.[4] Leaves are 3-6 cm long and 1-4cm wide, shape was simple, opposite, ovate. Leaf surface is rough with irregular toothed margin, acute apex.[6]



Fig.(1) Leaves

• **Stem**- decumbent, producing roots at the ends, upto 50cm tall stems clothed in pale hairs.[7]

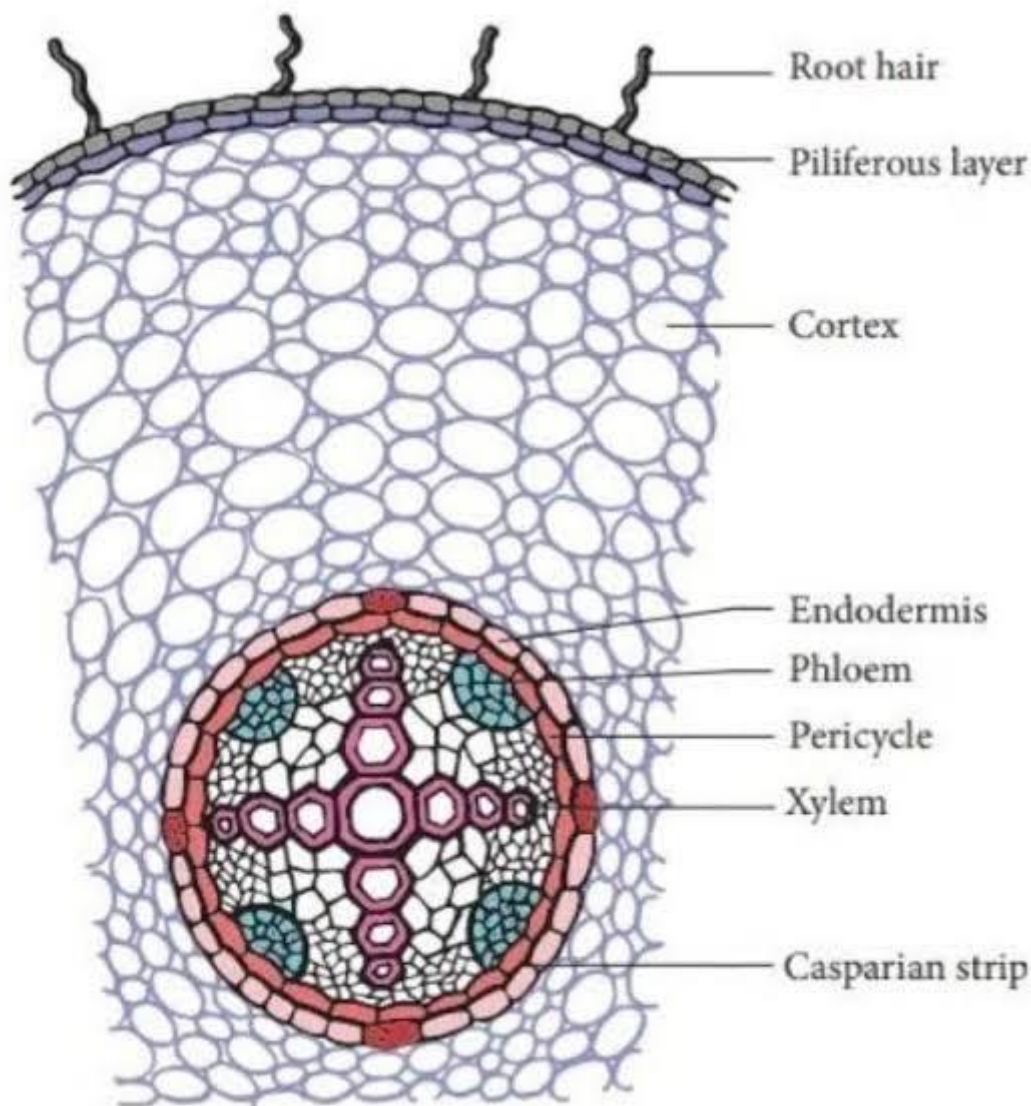


Fig.(2) Stem



• **Flowers**- flowers are small, tubular, whitish-yellow with hairs.[8] they are about 1-1.5cm and held on a 10-30cm long stalk. Flowering occurs in spring.  
Flower is tubular, yellow cantered white or yellow with three toothed ray florets.[5]

- **Corolla-** is yellow in colour. It is a semi prostrate, annual, creeper herb.[9]
- **Fruit-** fruit is a hard covered with stiff hairs and having a feathery, plume like white pappus at one end[10]



#### Microscopic or Histological studies -

**Fig. Transverse section of dicot stem of *Tridax procumbens***

- **Petiole-** The petiole was kidney shaped towards distal end (petiole) and crescent shaped towards the laminal side[11]
- Single layered epidermis covered with cuticle and interrupted by simple, multicellular, 3-5 celled trichomes. Hypodermis 1-2 celled collenchymatous.[3]
- **Leaf-** T.S. leaf is dorsiventral, epidermis single layered on both the surfaces and covered with thick cuticle. [11] T.S. passing through the mid rib region shows slight depression on ventral side and slightly protuberated on dorsal side.[12] Trichomes are simple, multicelled (3-6 celled) and more in number on dorsal side.[11] The basal cells of the Trichome are swollen and Trichome looks like claw[3]. Meristele consists of single centrally located collateral vascular bundle surrounded by some parenchymatous cells filled with dark content.[11]
- T.S. passing through the laminar region shows single layered palisade cells just below the epidermis followed by 5-7 celled mesophyll parenchyma mostly devoid of inter cellular spaces.[14]

#### Chemical constituents:

- The proximate profile included moisture, carbohydrate, crude protein, crude fat[4] Crude fibre, calcium, sodium, potassium.[13]
- $\beta$ - sitosterol -3- $\beta$ -D-xylopyranoside, Quercetin, Dexamethasone, Luteolin, Glucolutin, alkaloids, carotenoids, Flavonoids, (catechins, flavones) and tannins. It is richly endowed with carotenoids, saponin.[3] The Phytochemical screenings revealed the presence of alkaloids, carotenoids, Flavonoids, (catechins, flavones), saponin and tannins.[14]
- Earlier researches reported presence of dexamethasone, Luteolin, glucoluteolin, beta sitosterol and quercetin. Linolenic acid was also reported in the aerial parts.[13]

#### Priliminary Phytochemical screenings:

The individual extract was subjected to the qualitative Phytochemical screening for the presence of some chemical constituents. Test were performed for Alkaloids, saponins, Flavonoid, tannins, cardiac glucosides.[18]

Identification Tests	Test	Observation
<b>Alkaloids</b>		
<b>Wagner test:</b>	Filtrate was treated with Wagner's reagent; formation of brown reddish precipitate indicates presence of alkaloids.	++
<b>Hager's test:</b>	Filtrate was treated with Hager's reagent, presence of alkaloids confirmed by the yellow colored precipitate. 5 ml extract was mixed with 20 ml of distilled water then agitated in graduated cylinder for 15 min formation of foam indicates Saponin.	++
<b>Saponin :</b>	a) 2ml extract was added to 1% lead acetate a yellowish precipitate indicates the presence of tannins. b) 4ml extract was treated with 4 ml FeCl <sub>3</sub> formation of green colour indicates that presence of condensed tannin.	++
<b>Tannin :</b>	3 ml of extract were 10 % NH <sub>4</sub> OH solution development of yellow Fluorescence indicates positive test. 2 ml extract were treated with Zn dust and conc.HCl development of red colour indicates presence of Flavonoid. Extract was treated with 10 % NaOH solution, formation of Intense yellow colour indicates presence of Flavonoid.	++
<b>Flavonoid :</b>		
<b>a) NH<sub>4</sub>OH test :</b>	Plant extract treated with 2 ml glacial acetic acid containing a drop of FeCl <sub>3</sub> . A brown colour ring indicates the presence of positive test.	
<b>b) Zn test :</b>		++
<b>c) Alkaline reagent test :</b>		
<b>Cardial Glycosides</b>		++
<b>Keller-Killani Test:</b>		

#### •Pharmacological Activities of TRIDAX PROCUMBENES LINN. -

The great variety of secondary metabolites which is present in Tridax procumben which shows the various Potential pharmacological properties such as wound healing, antidibetic, anti-cancer, antifungal, immunomodulatory , antioxidants etc.

#### Antimicrobial Activity:

Petroleum, ether and ethanolic extracts of leaves of T.procumbens which shows the antibacterial activity against faecali.[15] The n-hexane extract of flowers of the Tridax shows activity against E coli and the ethyl acetate extract of flowers which is active against the Bacillus cereus.The Arial part extract which shows the activity against Staphylococcus aureus and mycobacterium smegmatis were the aqueous extract do not shows any antimicrobial activity.[16] The Flavonoids extract shows remarkable activity against Aspergillus niger.The highest activity shows in the salmonella typhi and least activity on Ecoli.[13]

#### Anti-hepatotoxic or hepatoprotective activity :

The aerial parts of Tridax p. Shows the hepatoprotective activity.The plant extract which can improve the activity of liver antioxidant defense system and the alcoholic extract of this species has hepatoprotective action which is useful in liver regeneration.[15]

#### Wound healing activity:

The whole plant extract of Tridax procumben shows greatest pro healing activity. The ethanolic and aqueous extract of the whole plant were also evaluate for the wound healing activity. The topical application of ethanolic extract of plant shows the higher tensile strength than the aqueous extract. This species of Tridax procumben Linn.may become useful for healing of wound.[13] For the wound healing activity the increased lysyl oxidase activity induced by the preparation has been suggested. Not only lysyl oxidase increases but also nucleic acid and Protein content in the granulation tissue, as a result of increase in glucosaminoglycan content.[13] Tridax procumben causes increased in thymus weight and adrenal weight, hence these observation suggest that Tridax p.exerts a direct prohealing effect along with the indirect antihealing influences probably mediated through release of adrenal steroids.[16]

**Anti-cancerous activity:**

The Cancer is the malignant or multifactorial disease. Recently has the anti-cancer activity of *Tridax procumbens* been researched. Very weak anti-cancer activity was observed with the aqueous extract. The acetone extract of *T. procumbens* showed an 82.28% activity against cancerous cells. [15] For the cytotoxicity against human lung cancer *T. procumbens* were tested by MTT assay. [13] The assay was based on the capacity of mitochondrial enzymes of viable cells to reduce the yellow soluble salt MTT [3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl tetrazolium bromide] [13] to purple blue insoluble formazan predicted which was spectrophotometrically quantified at 570 nm, the result of analysis shows the crude flower extract has the anti-cancer activity. [17]

**Antidiabetic properties:**

The *Tridax procumbens* has antidiabetic properties. In the conventional system, the Glibenclamide drug which is used to treat diabetes mellitus type 2 as compared to this system the study shows that the extract had antidiabetic activity. The extract also shows a positive effect against hyperlipidaemia which is associated with diabetes mellitus. [15] Alpha amylase and alpha glucosidase are responsible for the hydrolysis of poly and oligosaccharides into monomers or cleavage of bonds between sugars and non-carbohydrate aglycone. [17] All these studies demonstrate the great pharmacological potential of *Tridax procumbens* against diabetes. Flavonoids present in the plant which regenerate the beta cells in the pancreas and the saponin inhibits glucose transport by inhibiting (s-GLUT) sodium glucose-co-transport -1 in the intestine. The ethanolic extract of the whole plant of *Tridax procumbens* also shows anti-hyperlipidemic /antidiabetic activities against streptozotocin-induced diabetes in rats. [15]

**Conclusion:-**

From this investigation we can conclude that this species produces a variety of secondary metabolites and shows pharmacological activities.

The chemical constituent from this plant can be used in the preparation of different kinds of formulations which can be used to cure and treat diseases as mentioned in this investigation.

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