

A Review on Wound Healing Properties of Coat Buttons

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Abstract: Nature has been a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from natural resources. Herbs are natural remedies for the disease with higher safety profile and efficacy. India is gifted with varieties of large number of medicinal herbs because of variety of climatic conditions and seasons favorable for growth of many species of plants. *Tridaxprocumbens* L is a highly valuable drug and is one of the essential ingredients in the most of the compound preparations included in Ayurvedic literature. Leaf extracts can be used to treat infectious skin diseases in folk medicines. Antioxidant properties have also been found in this plant. This review focus on folk occurrence and the wide pharmacological activities like hepatoprotective activity, antiinflammatory, wound healing, antidiabetic activity, hypotensive effect, immunomodulating property, bronchial catarrh, dysentery, diarrhea and to prevent falling of hair, promotes the growth of hair, and antimicrobial activity against both gram-positive and gram-negative bacteria *Tridaxprocumbens*.

Keywords: Herbs, *Tridaxprocumbens* (coat buttons), pharmacological activities, microscopy, leaf juice

1. Introduction

Tridaxprocumbens Linn. commonly known as 'Ghamra' and in English popularly called 'coat buttons' because of appearance of flowers which 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.

Botanical name: *Tridaxprocumbens*

Common name:

Marathi: Kambermodi, jakhamjudi, tantani.

Hindi: Ghamra

English: coat buttons, tridax daisy

Sanskrit: jayantiveda

Classification

Kingdom: Plantae

Subkingdom: Tracheobionta

Division: Magnoliophyta

Class: Magnoliopsida

Subclass: Asteridae

Order: Asterales

Family: Asteraceae

Genus: *Tridax*

Species: *procumbens*

Biological source: it is obtained from fresh leaves juice of *tridaxprocumbens*.

Parts used: whole plant(leaf, stem, flower, root etc)



Geographical source: The plant is native of tropical America and naturalized in tropical Africa, Asia, Australia and India. It is a wild herb distributed throughout India.

Description: A spreading annual herb grows up to 20 cm in height. Leaves: simple, opposite, serrate or dentate, acute, fleshy and pubescent. Flowers: daisylike yellow-centered white or yellow flowers with three-toothed ray. Fruits: hard achene covered with stiff hairs and having a feathery white pappus at one end. Seeds: numerous, small with tuft of silky hairs on one side for wind dispersal. Flowers and fruits appears throughout the year. Coat buttons are found along roadsides, waste grounds, dikes, railroads, riverbanks,

meadows, and dunes. Its widespread distribution and importance as a weed are due to its spreading stems and abundant seed production.

Morphology

Table 1: Macroscopy of *Tridaxprocumbens* Linn.

Part of Plant	Morphology of leaves	Observation
Leaf	Colour	green
	odour	characteristic
	Taste	acid
	size	3-7cm long, 1-5cm wide
	shape	Lanceolate to ovate

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	texture	short
	Fracture	easy
	apex	acute
	margin	Irregularly toothed
	Arrangement	opposite
	Appearance	Rough and scabrous
	petiole	short
Stem	Colour	Green
	Odour	Characteristic
	Taste	Acrid
	Size	23-46cm
	Shape	Cylindrical
	Texture	Smooth
	Fracture	soft
Root	Colour	Brown
	Odour	Characteristic
	Taste	Acrid
	Size	15-32cm
	Shape	Tortuous
	Texture	Rough
	fracture	soft

layered epidermis was covered with cuticle and interrupted by simple, multicellular, 3-5 celled trichomes. Hypodermis was 1-2 celled and collenchymatous. Ground tissue parenchymatous, vascular bundles 5, the size of the vascular bundles varies from centre to margin *i.e.* large to small. These were centripetal *i.e.* xylem surrounded by the phloem (**Table 2**).

Root

Dicot type of root was present in *Tridaxprocumbens* and it consisted of 2-3 layered cellscork, 8-12 layered cells epidermis, xylem, phloem, medullary rays (**Table 2**).

Leaf

Transverse section (T.S.) of leaf showed dorsiventral, epidermis single layered on both the surfaces and covered with thick cuticle. T.S. passing through the mid rib region showed slight depression on ventral side and slightly protuberated on dorsal side. Trichomes were of covering type which are simple, multicelled (3-6 celled) and more in number on dorsal side. The basal cells of the trichomes were swollen and trichomes looked like claw. Meristeel consists of single centrally located collateral vascular bundle surrounded by some parenchymatous cells filled with dark content. T.S. passing through the laminar region shows single layered palisade cells just below the epidermis followed by 5-7 celled mesophylls, parenchyma mostly devoid of intercellular spaces (**Table 2**).

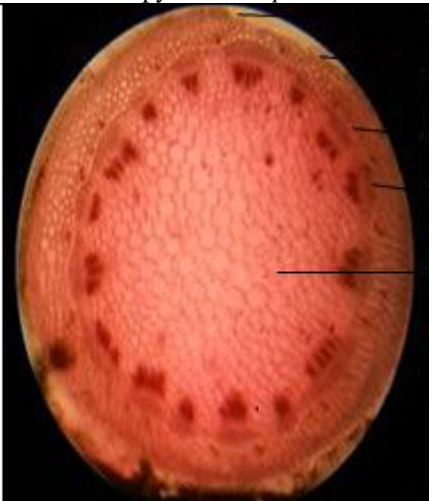
Microscopy

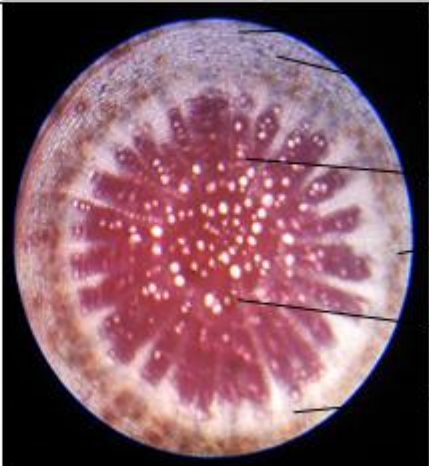
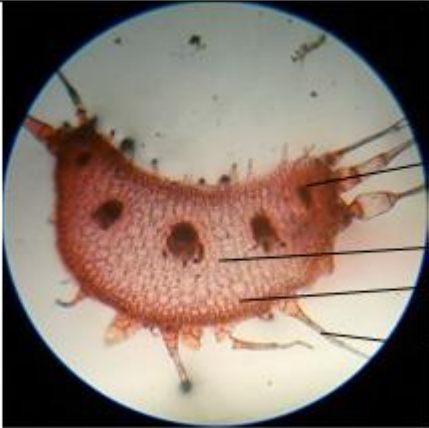
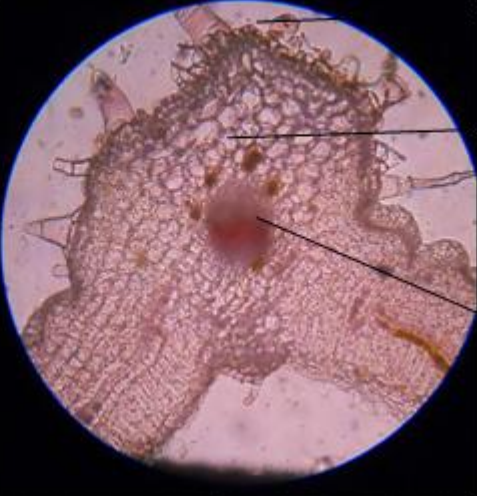
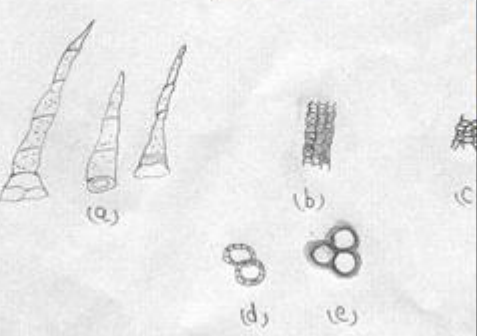
Microscopic studies were carried out by preparing thin sections of leaf, stem, and petiole. The thin sections were collected in watch glass and bleached with bleaching agent along with little boiling. Thin sections were further washed with water, stained with safranin and mounted in glycerin for observation.

Petiole

The petiole was found to be kidney shape towards the distal end and crescent shaped towards the laminal side. Single

Table 2: Microscopy of *Tridaxprocumbens*

1.	stem	
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2.	root		<ul style="list-style-type: none"> → Cork → Epidermis → Xylem → Phloem → Pith → Medullary rays
3.	Petiole		<ul style="list-style-type: none"> → Epidermis → Xylem → Phloem → Trichomes
4.	T.S of leaf		<ul style="list-style-type: none"> → Trichome → Spongy Parenchyma → Vascular bundle
5.	Powder microscopy ↓ ↓ ↓		<ul style="list-style-type: none"> a) Simple trichomes b) Spinal vascular bundle c) Trichome base d) Stone cell e) Stone cell

Method of preparation/extraction:

The aerial parts of the plant (leaf, flower and stem) were shade dried for five days. The plant material were finely ground and dried powder (25 g) of each part were extracted

sequentially using soxhlet extractor with 250 ml of hexane, petroleum ether, chloroform and methanol separately in order to extract non-polar and polar compounds [10]. The crude extracts were then filtered through Whatman No. 1

filter paper and concentrated in vacuum at 40 °C using a rotary evaporator. The concentrated extracts were subsequently dried aseptically at room temperature.

Or

Simple method for wound healing

Collect the fresh leaves of tridax daisy.

Wash it with distill water

Grind it in grinder and filter it

Now extraction is Ready to apply on wound.

Chemical constituents

Iodine.

Leaves juice: dexamethasone. Isolation of methyl 14-oxooctadecanoate, methyl 14-oxononacosanoate, 3-methylnonadecylbenzene, heptacosanyl cyclohexane carboxylate. Arachidic, behenic, lauric, linoleic, linolenic, myristic, palmitic, palmitoleic and stearic acids.

Effects of extraction/activity:

Anti- hepatotoxic or Hepatoprotective Activity:

Tridaxprocumbens plants are also used to prepare a drug "Bhringraj"; which is a reputed medicine in Ayurveda for liver disorders. Even alcoholic extract of that plant is useful in Liver regeneration; which showed their hepatoprotective action. The hepatoprotective activity of aerial parts and chloroform insoluble fraction from ethanolic extract of *Tridaxprocumbens* Linn. were reported against D-Galactosamine/ Lipopolysaccharide (D-GalN/LPS) induced hepatocellular injury of liver cells.

Immunomodulatory Activity

Ethanol insoluble fraction of aqueous extract of *Tridaxprocumbens* has been reported for immunomodulatory activity. It significantly increases the phagocytic index, leukocyte count and spleenic antibody secreting cells. The immunomodulatory activity of Ethanolic extracts of leaves of *Tridaxprocumbens* Linn.

Wound Healing Activity

The process of wound healing is a complex and dynamic which has ability to restore the cellular structures and tissue layers. The Aqueous extract of whole plant of *Tridaxprocumbens* Linn. Has ability to set the normal and immune compromised wound healing in rats.

Antimicrobial or Antibacterial Activity:

The anti-bacterial activity of hexane, petroleum ether, chloroform and methanolic extracts obtained from the aerial parts (leaf, flower and stem) of *Tridaxprocumbens* and tested them against both gram positive (*Staphylococcus aureus* and *Bacillus subtilis*) and gram negative (*Enterobacter aerogenes*) bacteria using the agar well diffusion method. The hexane extract of the flowers showed activity against *E. coli*. The same extract of the

whole aerial parts was active against *Mycobacterium smegmatis*, *Escherichia coli* and *Salmonella paratyphi*. The ethylacetate extract of the flowers of *Tridaxprocumbens* was active against *Bacillus cereus* and *Klebsiella* sp. The aerial parts extract also showed activity only against *Mycobacterium smegmatis* and *Staphylococcus aureus*, while the aqueous extract showed no antimicrobial activity.

Anti-Cancerous Activity: The results of this analysis revealed the fact that flower crude extract has anti-cancer 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.

Antidiabetic Activity

The aqueous and alcoholic extract of leaves of *Tridaxprocumbens* Linn. shows significant decrease in the blood glucose level and it shows antidiabetic activity in the model of alloxan induced diabetes in rats [1]. The oral administration of acute and sub chronic doses of 50 % methanol extract of *T. procumbens* significantly reduces fasting blood glucose levels in diabetic rats. This plant material does not affect the sugar levels in normal rats.

Other Pharmacological Properties

The cardiovascular effect of aqueous extract obtained from the leaf of *Tridaxprocumbens* Linn. was investigated on anaesthetized *Sprague-Dawley* rat. The aqueous extract has ability to cause significant dose dependent decreases in the mean arterial blood pressure. The higher dose leads to significant reduction in heart rate where as lower dose did not cause any changes in the same.

The leaves of *Tridaxprocumbens* Linn. shows hypotensive effect.

In other study, essential oils were extracted by steam distillation from leaves *Tridaxprocumbens* Linn. and they were examined for its topical repellency effects against malarial parasite *Anopheles stephensi* in mosquito cages. All essential oils were exhibits relatively high repellency effect. Thus these plants are promising as repellents.

Medicinal uses:

Useful in jaundice, bronchial catarrh, diarrhoea, dysentery, inflammation, ulcers, anal fistula, and hemorrhoids. It promotes hair growth. Leaf juice can be used to cure fresh wounds, to stop bleeding. Leaf extract cures liver disorders.

2. Conclusion

Tridaxprocumbens Linn. (Compositae) is a weed found throughout India, it is native of tropical America and naturalized in tropical Africa, Asia, and Australia. This plant widely distributed and it's each and every part having noble pharmacological activities like hepatoprotective activity, antiinflammatory, wound healing, antidiabetic activity, hypotensive effect, immunomodulating property, bronchial catarrh, dysentery, diarrhea and to prevent falling of hair, promotes the growth of hair, and antimicrobial activity against both gram-positive and gram-negative bacteria *Tridaxprocumbens*. The plant product over synthetic

compound is the need in treatment of diseases. It is an important component of “Bhringraj” in Ayurveda. In future, there is tremendous scope in research for this plant.

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