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. Tridax procumbens 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 Tridax procumbens.

Keywords: Herbs, Tridax procumbens (coat buttons), pharmacological activities, microscopy, leaf juice

1. Introduction

Tridax procumbens 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: Tridax procumbens

Common name:
Marathi: Kambermodi, jakhamjudi, tantani.
Hindi: Ghamra
English: coat buttons, tridax daisy
Sanskrit: jayantiveda

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: daisy-like yellow-centered white or yellow flowers with three-toothed ray. Fruits: hard achenes 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 appear 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.

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)

Table 1: Macroscopy of Tridax procumbens Linn.

<table>
<thead>
<tr>
<th>Part of Plant</th>
<th>Morphology of leaves</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf</td>
<td>Colour</td>
<td>green</td>
</tr>
<tr>
<td></td>
<td>odour</td>
<td>characteristic</td>
</tr>
<tr>
<td></td>
<td>Taste</td>
<td>acrid</td>
</tr>
<tr>
<td></td>
<td>size</td>
<td>3-7 cm long, 1-5 cm wide</td>
</tr>
<tr>
<td></td>
<td>shape</td>
<td>Lanceolate to ovate</td>
</tr>
</tbody>
</table>
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 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 Tridexprocumbensand it consisted of 2-3 layered cells, cork, 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 size. 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 parenchymatouscells 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).

<table>
<thead>
<tr>
<th>Stem</th>
<th>Petiole</th>
<th>Root</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Green</td>
<td>Brown</td>
</tr>
<tr>
<td>Odour</td>
<td>Characteristic</td>
<td>Characteristic</td>
</tr>
<tr>
<td>Taste</td>
<td>Acrid</td>
<td>Acrid</td>
</tr>
<tr>
<td>Size</td>
<td>23-46cm</td>
<td>15-32cm</td>
</tr>
<tr>
<td>Shape</td>
<td>Cylindrical</td>
<td>Tortuous</td>
</tr>
<tr>
<td>Texture</td>
<td>Smooth</td>
<td>Rough</td>
</tr>
<tr>
<td>Fracture</td>
<td>Soft</td>
<td>Soft</td>
</tr>
</tbody>
</table>

Table 2: Microscopy of Tridexprocumbens
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 grider and filter it

Now extraction is Ready to apply on wound.

**Chemical constituents**

Iodine.

Leaves juice: dexamethasone. Isolation of methyl 14-oxoacetadecanoate, methyl 14-oxononacosanoate, 3-methylnonadecylenzene, heptacosanylcyclohexane carboxylate. Arachidic, behenic, fauric, 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 (Enterobacteria aerogenes) bacteria using the agar well diffusion method. The nhexane 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 alloxaninduceddiabetes 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 affects 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-Dawleyrat. The aqueous extract has ability to cause significant dose dependant 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 stephensii* mosquito cages. All essential oils were exhibits relatively high repellencyeffect. 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, diarrheaa 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.

References


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