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THE HEALING POWER OF TRIDAX PROCUMBENS (JAYANTI VEDA) EXPLORING ITS POTENTIAL IN WOUND MANAGEMENT

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ABSTRACT

Triax Procumbens, known by ayurveda Jayanti Veda, also known as Jivanti or Leptadenia reticulata, is a plant highly valued in Ayurveda**.** Tridax procumbens (Jayanti Veda) belongs to the Asteraceae family and is an Ayurvedic herb of Asia with a history of traditional use. Tridax procumbens have been used since ancient times to treat wounds and skin diseases, and leaf extract promotes blood coagulation. It possesses antileishmanial, antioxidants, anticancer, immunomodulatory agent, insecticidal, anthelmintic cardiovascular, antiseptic, antimicrobial, and insecticidal properties. **Purpose of Article:** This review article aims to collate past and present updated information on traditional uses, morphology, chemical constituents and pharmacological activities, miscellaneous activities, and relevant patents of this plant, thereby providing useful data for researchers and pharmaceuticals and introducing wound healing properties of the herb.

Keywords: Tridax procumbens, Wound Healing, Blood coagulation, Anticancer, Antiseptic

INTRODUCTION

Tridax procumbens, commonly known as coat button or Mexican daisy, is a flowering plant that has been widely recognized for its medicinal properties. For centuries, it has been utilized in traditional medicine systems, such as Ayurveda and traditional African medicine, to treat various ailments. One of the notable benefits of Tridax procumbens lies in its potential to promote wound healing. The Sanskrit Name of Triax Procumbens is Jayanti Veda, also known as Jivanti or Leptadenia reticulata. It is a plant highly valued in Ayurveda, the traditional system of medicine in India. Ayurveda recognizes the medicinal properties of numerous plants, and Jayanti Veda holds a special place among them due to its wide range of therapeutic benefits. [01] Wound healing is a complex biological process that involves a series of events aimed at repairing damaged tissues and restoring the structural integrity of the skin. Impaired wound healing can result in chronic wounds, infections, and other complications. Therefore, the search for natural remedies to enhance wound healing has gained significant attention in recent years. Tridax procumbens possesses several bioactive compounds, including flavonoids, alkaloids, triterpenes, and phenolic acids, which contribute to its therapeutic properties. These compounds have exhibited various pharmacological activities, including anti-inflammatory, antimicrobial, and antioxidant effects, all of which are crucial for effective wound healing. The anti-inflammatory properties of Tridax procumbens help reduce inflammation at the wound site, preventing excessive immune responses that can impede the healing process. By controlling inflammation, this plant aids in the initiation of subsequent wound healing stages, such as cell migration, proliferation, and tissue remodeling. [02]

Tridax procumbens demonstrates significant antimicrobial activity against a wide range of bacteria, including both gram-positive and gram-negative strains. By inhibiting the growth of pathogenic microorganisms, it reduces the risk of infection at the wound site, thereby facilitating optimal wound healing conditions. Furthermore, the antioxidant compounds found in Tridax procumbens scavenge harmful free radicals, which are known to impair the healing process. By neutralizing these free radicals, the plant promotes a favorable cellular environment for tissue regeneration and accelerates wound closure. Overall, Tridax procumbens holds immense potential as a natural remedy for wound healing. Its anti-inflammatory, antimicrobial, and antioxidant properties work synergistically to enhance the various stages of the wound healing process. As ongoing research continues to shed light on the mechanisms behind its therapeutic effects, Tridax procumbens may offer a promising alternative or complementary approach to conventional wound care treatments.

AIM OF STUDY

The aim of studying Tridax procumbens is to investigate its medicinal properties and potential therapeutic applications. Researchers explore its chemical constituents, pharmacological effects, and traditional uses to better understand its health benefits and determine its potential as a natural remedy for wound Healing.

MATERIALS AND METHODS

Scientific classification [03]

- Kingdom: Plantae
- Clade: Tracheophytes
- Clade: Angiosperms
- Clade: Eudicots
- Clade: Asterids
- Order: Asterales
- Family: Asteraceae
- Genus: Tridax
- Species: T. procumbens
- Binomial name-Tridax procumbens L.

Image 1 - Jayanti Veda Plant

Image 1 – Jayanti Veda Plant

Synonyms

- English - Coat-button, Coat Buttons, Mexican daisy
- Hindi - Akal Kohadi, Khal-muriya, Tal-muriya
- Marathi - kambarmodi, Jakhamjudi & tantani
- Irula - Mukuthi poo. Railpoo
- Kannada- Gabbusanner savanthi, Sanna Gida
- Malayalam- Kumminnippacha. Kurikootticheera. Muriyampachila, Odiyancheera, Railpoochedi, Sanipoovu, Thelkuthi
- Tamil- Kenathuppoondu, Seruppa-dithalai, Seruppadithazhai, Vettukkaaya-thalai
- Telugu - Gaddichamanthi

Distribution:

The plant is native to tropical America and naturalized in tropical Africa, Asia, Australia, and India.[04] Tridax is present throughout India (Andhra Pradesh, Maharashtra, Madhya Pradesh, and Chhattisgarh [05] and is employed as indigenous folklore medicine for a variety of ailments. It is widely distributed throughout Indo-Pak region [06]. The plant bears daisy-like yellow-centered white or yellow flowers with three-toothed ray florets. The leaves are toothed and generally arrowhead-shaped. Calyx is represented by scales or reduced to pappus. Its fruit is a hard achene covered with stiff hairs and has a feathery, plumelike white pappus at one end. The plant is invasive in part because it produces so many of these achenes, up to 1500 per plant, and each achene can catch the wind in its pappus and be carried some distance. This plant can be found in fields, meadows, croplands, disturbed areas, lawns, and roadsides in areas with tropical or semi-tropical climates.

Use in traditional medicine.

Traditionally, Tridax procumbens has been in use in India for wound healing and as an anticoagulant, anti-fungal, and insect repellent.[citation needed] Tridax procumbens Linn. strongly proved for its Anti-inflammatory and Analgesic activity in animal studies.[07] It is also used as a treatment for boils, blisters, and cuts by local healers in parts of India.[08]

Chemical constituents

The flavonoid procumbenetin has been isolated from the aerial parts of Tridax procumbens. Other chemical compounds isolated from the plant include alkyl esters, sterols,[09] pentacyclic triterpenes, ten fatty acids,[11], and polysaccharides.[12] Several main active chemical compounds were found to be present. But toxicological knowledge is scarce, and more research is described to be needed on this plant.[13]

Ayurvedic Properties [14]

- Rasa - Kashaya, Amla, Tikta
- Guna - Guru, Snigdha
- Virya - Seeta

Part Used- Whole plant (leaf, stem & flowers) is used to cure different ailments.

Pharmacological Activity

1. Hepatoproptective activity

Its hepatoprotective action was seen in d Galactosamine/Lipopolysaccharide (d-Gal N/LPS) induced rats. d-Gal N/LPS are hepatotoxic by their action of destroying liver cells. It selectively blocks the transcription & indirectly hepatic protein synthesis, causing endotoxin toxicity & leading to fulminant hepatitis within 8 hrs of administration.[15] The results revealed that T. procumbens could afford significant protection in the alleviation of d-Gal N/LPS-induced hepatocellular injury.

2. Immunomodulatory activity: Albino rats dosed with Pseudomonas aeruginosa, when administered with ethanolic extract of leaves of Tridax, showed stimulation of humoral immune response along with elevation in hemagglutination antibody titer. It also inhibited the proliferation of P. aeruginosa along with a significant increase in phagocytic index, leukocyte count & splenic antibody-secreting cells.[16]

3. Wound healing activity: Tridax opposed antiepithelization & tensile strength depressing effect of dexamethasone (a well-known healing suppressant agent) without affecting anticontraction & antigranulation action of dexamethasone. The aqueous extract was also effective in increasing lysyl oxidase but to a lesser degree than a whole plant extract. Further, it has been shown that the extract of leaves of T. procumbens promotes wound healing in both normal & immunocompromised (steroid-treated) rats in the dead space wound healing model. The plant increases not only lysyl oxidase but also protein & nucleic acid content in the granulation tissue, probably as a result of an increase in glycosamino glycan content.[17]

4. Antidiabetic activity: Aqueous & alcoholic extract of leaves of Tridax showed a significant decrease in the blood glucose level in the model of alloxan-induced diabetes in rats. [18]

5. Anti-inflammatory activity

The antiinflammatory action of the leaf extract of Tridax was assessed on carrageenin-induced paw edema along with the standard drug, Ibuprofen.[19] The extract increased the inhibition of oedema if treated with standard drug Ibuprofen. Water soluble powder of leaf extract was administered orally at different doses to rats. The result demonstrated that the extract possesses analgesic activity. T. procumbens dose reduced the abdominal writhing.[20] Meshram & Patel investigated that alcoholic & hydroalcoholic extracts have anti-inflammatory activity using the rat paw oedema assay & showed oedema inhibition 0.82%, 16.80%, 11.39%(24)

12. Anti-cancerous activity

The activity of T. procumbens flower crude aqueous & acetone extract was tested on prostate epithelial cancerous cells. PC3 was determined by measuring cell viability by MTT assay Experiment consists of cleavage of the soluble yellow-coloured tetrazolium salt MTT [3-4, 5- dimethylthiazole-2-yl)-2,5 diphenyl-tetrazolium bromide] to a blue-coloured formazan by the mitochondrial succinate dehydrogenase. The assay was based on the capacity of mitochondrial enzymes of viable cells to reduce the yellow soluble salt MTT to purple, blue insoluble formazan precipitate, which is then quantified Spectro photometrically at 570 nm. [21,22]

CONCLUSION

Tridax procumbens has demonstrated promising potential in wound healing based on the available scientific evidence. The plant's extract exhibits antimicrobial, anti-inflammatory, and antioxidant properties, which contribute to its therapeutic effects. The application of Tridax procumbens in various wound models has shown accelerated wound closure, reduced inflammation, and enhanced tissue regeneration. These findings suggest that Tridax procumbens can be considered a valuable natural remedy for promoting wound healing. However, further studies are needed to elucidate the underlying mechanisms, optimize dosage and formulation, and evaluate its safety and efficacy in clinical settings.

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