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A Brief Overview onTridax procumbens

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ABSTRACT: The utilization of medicinal herbs has been a comprehensive practice in treating various diseases over an extended period. Nature has bestowed a rich source of plant wealth with diverse medicinal values. While the essential properties of some medicinal plants have been known for a long time, a considerable number of them remain unexplored. Investigating the uses and conducting experimental studies are crucial steps in describing the curative properties of these plants. Tridax procumbens, a medicinal herb commonly known as "coat buttons," has been employed in medicine since times immemorial. Its historical usage underscores its significance and potential in traditional and possibly modern therapeutic applications.Tridax procumbens emerges as a highly promising species known for producing secondary metabolites with a wide array of reported medicinal uses, including anti-anemic, anti-inflammatory, anti-diabetic, and anesthetic properties. Its significance is deeply rooted in a long history of traditional use by various communities. The focus of this study is to comprehensively review the scientific literature pertaining to the medicinal properties, biological activities, and phytochemical components of T. procumbens, a notable member of the Asteraceae family. The aim is to provide a thorough understanding of the potential therapeutic benefits, biological effects, and chemical constituents associated with this plant species.

Keywords: Tridax procumbens PhytochemicalsAnticancer activity Antibacterial activity Wound healing activity

I. INTRODUCTION:

Tridax procumbens, commonly known as "coat buttons," is a perennial plant belonging to the Asteraceae family. Originally native to Central and South America, it has been recognized and utilized since ancient times. The plant has found a place in Ayurveda, a traditional system of medicine in India. Various products, including oils, teas, and skin poultices, have been derived from this species.Tridax procumbens exhibits diverse pharmacological properties, encompassing a range of benefits such as immunomodulatory, antioxidant, anti-hepatotoxic, analgesic, antidiabetic, anti-inflammatory, antifungal, and antimicrobial activities.

The multifaceted nature of its pharmacological attributes highlights the potential therapeutic significance of this plant in various traditional and modern medicinal applications.The Tridax Procumbens The medicinal plant linn, sometimes referred to as coat button, kansari in Hindi, or Ghamara in the local vernacular, is a member of the Asteraceae or Compositae family, along with Tridax procumbens and T. balbisioides. An herb with therapeutic properties The other species in the genus are called Trilobata, or Tridax procumbens, meaning Coat Button in Hindi. This plant is mostly utilized in the traditional Indian method. It is an annual or perennial weed from Central America and found throughout in India especially in Maharashtra, Madhya Pradesh and Chhattisgarh regions as weed.

Tridax procumbens' whole aerial portion has therapeutic use. The leaves are particularly notable for their wound healing, insecticidal, antisecretory, and hypotensive properties. Additionally, the seeds are employed to control bleeding. The plant demonstrates a wide range of pharmacological characteristics, such as antioxidant, anti-hepatotoxic, immunomodulatory, analgesic, antidiabetic, anti-inflammatory, antifungal, and antibacterial actions.

This species has a rich historical background in Ayurveda in India, where it has been utilized since ancient times. Oils, teas, and skin poultices are just a few of the products made from Tridax procumbens. The efficacy of the species is likely attributed to its plant defense mechanism, which involves the presence of secondary metabolites such as flavonoids, alkaloids, tannins, carotenoids, and saponins. Scientific screening has validated the presence of these bioactive compounds, contributing to the plant's diverse medicinal uses and therapeutic potential.

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Taxonomic Classification
Kingdom: Plantae
Subkingdom: Tracheobionta
Division: Spermatophyta
Subdivision: Magnoliophyta
Class: Magnoliopsida
Subclass: Asteridae
Order: Asterales
Family: Asteraceae
Genus: Tridax
Species: Procumbens
Botanical Name: Tridax procumbens
Synonym
Bengali: Tridhara/Bishlya Karani
Hindi: Khal muriya
Sanskrit: Jayanti Veda
English: Coat buttons, Tridax Daisy, Mexican Daisy
Oriya: Bishalya Karani
Marathi: Gaddi Chemanthi
Tamil: Vettukaya thalai, Thatha
Telugu: Gayapu aku/Palaka aku[1]
Plant Morphology:
Plant Morphology Physical Characteristics:
Appearance: Tridax procumbens is a perennial herb with a creeping stem that can extend from 8 to 30 inches (20-75 cm) in length.

Foliage: Tridax procumbens has opposing, pinnate leaves that are oblong to ovate and are 1-2 inches (2.5–5 cm) in length. They are cuneate at the bases, with sharp apexes and coarsely serrated edges.
Flowers: White rays and yellow disk flowers, measuring 0.4–0.6 inches (1–1.5 cm) in width, are featured on a 4–12 inch (10–30 cm) long stalk in Tridax procumbens blooms. Flowering typically occurs in spring, resembling a daisy. The tubular flower features three-toothed ray florets and a yellow center. It can have white or yellow blooms. The inflorescence is a capitulum, featuring two types of flowers: ray florets and disc florets with basal placement. Certain flowers have lengthy, penduncled crowns with three lobes. The feathery pappus of the black, narrowly obconical, 2.0–2.5 mm long achenes is present. The black, narrowly obconical, 2.0–2.5 mm long achenes with a feathery pappus.



Fruits: The fruits are achenes, dark brown to black in color, oblong, and 0.08 inches (2 mm) long. Each achene has a head of pappus bristles ranging from 0.12-0.24 inches (3-6 mm) long. The fruit is a stiff-haired, rigid achene with a feathery texture and a white pappus that resembles a plume at one end. The plant's invasiveness is attributed to its prolific achene production, and the wind disperses each achene over a considerable distance.

Seeds: Tridax procumbens seeds germinate at higher temperatures (35/25 and 30/20) in the presence of 58 to 78% light. The germination process is highly sensitive to salt concentration and water stress. The chromosome numbers are 36 (diploid) and 18 (haploid) in gametes. The plant reproduces through spreading stems and seed production.
Calyx: Either scales or pappus are used to symbolize the calyx.

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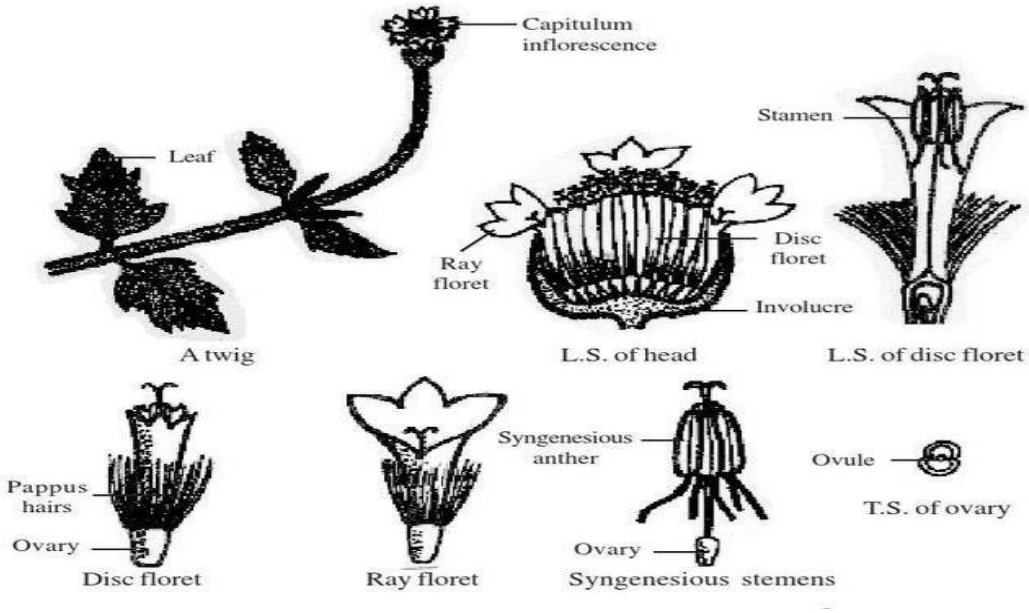
Leaves: The leaves are irregularly toothed and typically arrowhead-shaped. They are simple, ovate, opposite, exstipulate, and lanceolate, measuring 3-7 cm. The leaves have a wedge-shaped base, are shortly petioled, and exhibit hairiness on both surfaces .

Stem and Root: Stems are cylindrical, hispid, and covered with multi-cellular hairs measuring mm. At the root's base, there is tuberculation, creating a strong taproot system. The plant's stem is ascending with a height ranging from 30 to 50 cm, it is branched, sparsely hairy, and has the ability to root at nodes.

Flowers: The plant's blossoms are similar to daisies. Every flower is tubular, with a yellow center and petals that are either white or yellow and have three-toothed ray florets on them. The inflorescence is in the form of a capitulum, encompassing two types of flowers: ray florets and disc florets with basal placement. Occasionally, the flowers may be three-lobed and display long, penduncled heads. The black, narrowly obconical achenes are between two and three millimeters long, and they have a fluffy pappus on top. The plant produces fruit and flowers all year round. [2][3]



Botanical Description

The plant normally has branches and grows to a height of 20 to 60 cm. The leaves are 4-8 cm long, simple, opposite, and stipulate. The inflorescence is approximately 12-32 cm, oval-shaped, supported by a peduncle, and comprises both ray florets and disc florets. The flowers resemble daisies, showcasing yellow-centered white or yellow petals. The inflorescence contains numerous tubular disc florets encircled by a ring of short, strap-shaped ray florets. The fruit is a cypsela, maturing to a black or brown color and surrounded by feathery bristles [4]. The stem is cylindrical and covered with hairs of about 1 mm, and the plant features a taproot system [5]. The registered chromosome count in Tridax is 36 (2n) [6]. The plant experiences growth primarily during the monsoon season, relying on abundant water for its development and sustenance.

Chemical Constituents of Tridax procumbens

The utilization of plants as sources of therapeutic agents serves various goals, including the extraction of bioactive compounds for direct use as drugs, the production of bioactive compounds for pharmacological purposes, or employing the entire plant or specific parts as herbal remedies[5]. Tridax procumbens stands out with a high moisture content, measuring 88.30% in the stem and 90.05% in the leaves, along with a total ash content of 11.8%. It boasts significant levels of essential nutrients such as crude protein (37.44% in the stem and 34.57% in the leaves), crude lipid (0.85% in the stem and 6.03% in the leaves), total carbohydrate content (41.03% in the stem and 51.26% in the leaves), and crude fiber content (16.41% in the stem and 6.13% in the leaves). The total metabolizable energy is

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noteworthy, measuring 321.54 kcal/100 g in the stem and 397.59 kcal/100 g in the leaves. Iron, copper, manganese, sodium (50.44 mg/kg), zinc, and trace minerals including magnesium (3.56 mg/kg), phosphorus, potassium (31.92 mg/kg), selenium (0.20 mg/kg), and calcium (20.96 mg/kg) are all abundant in Tridax procumbens. [8] .

Numerous phytochemicals, including alkaloids, steroids, carotenoids, flavonoids (catechins and flavones), saponins, and tannins, are present in the plant's aqueous extract. Flavonoids (centaureidin and centaurein) and bergenin are detected by organic solvent extraction using ethyl acetate. Furthermore, secondary metabolites found in the plant encompass fatty acid derivatives, sterols, lipid constituents, luteolin, glucoluteolin, quercetin, isoquercetin, and fumaric acid. This diverse array of compounds highlights the potential medicinal significance of Tridax procumbens

Prelimnary phytochemical investigation

Tests for carbohydrate

a)Molisch's test: After adding a few drops of Molisch's solution to two milliliters of the extract's aqueous solution, a tiny amount of concentrated sulfuric acid was allowed to drip down the test tube's side, forming a layer without being shaken. A purple hue on the interface was seen, which is suggestive of a positive glucose level.

b)**Solubility:**A few drops of water and compound is mixed to check their solubility

c)**Iodine test:** Suspension or solution of polysaccharides in which 1-2 drops of iodine were added to check if starch and glycogen is presnt

Tests for proteins

a)**Biuret Test:** To 1ml of extract, equal volume of 5% NaOH solution and copper sulphate solution added. A blue colour indicates the presence of proteins.

b)**Millon test:** Add 1 milliliter of Millon's reagent to 1 milliliter of sample, then heat for 3 minutes.Add 1% sodium nitrate after that.Tyrosin is present when a red color forms.

c)**Xanthoproteic test:** Heat 3 milliliters of sample (1 milliliter of concentrated nitric acid) for 3 minutes. Then cooled and added 0.5 ml of NaOH. Reddish orange colour indicates the presence of aromatic amino acids

Test for steroids

a) Salkowski's test: Carefully combining concentrated sulfuric acid with the second half of the solution above created a lower layer of acid, and the interface was checked for a reddish-brown color that would indicate a steroid ring.

Test for cardiac glycosides

Three droplets of a strong lead acetate solution were mixed with two milliliters (2 mL) of the extract's aqueous solution. This was well combined and then filtered. In a separating funnel, 5 mL of chloroform was agitated with the filtrate. In a little evaporating dish, the chloroform layer was evaporated until it was completely dry. The residue was placed on top of 2 milliliters of concentrated sulfuric acid in a test tube after being dissolved in glacial acetic acid with a hint of ferric chloride.The presence of cardiac glycosides was seen in the bluish-green coloration of the top layer and the reddish-brown coloration of the interface between the two layers.

Test for alkaloids

A gram (1 g) of the extract was extracted using 15 mL of chloroform after being dissolved in 5 mL of 10% ammonia solution. After the chloroform component was completely evaporated, the remainder was dissolved in 15 milliliters of diluted sulfuric acid. The general alkaloid test utilized one-quarter of the solution, with the remaining solution going toward other assays.

a) Ferric chloride test: A few drops of a 10% ferric chloride solution (light yellow) were added to two milliliters (2 mL) of the extract's aqueous solution. Gallic tannins were suggested by the presence of a blackish blue color, whereas catechol tannins were indicated by the presence of a greenish-blackish color.

To test for flavonoids, mix 1 ml of methanolic extract with 132 magnesium turnings and a few drops of concentrated hydrochloric acid. The formation of a mangeta or pink color showed the presence of flavonoids.[9]

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Phytoconstituents		Tridex [leaves]	
		Ethanol extract	Aqueous extract
1	Tannins	+	-
2	Phenol	+	-
3	Steroids	+	-
4	Glycosides	+	+
5	Alkaloids	+	-
6	Flavonoids	+	-
7	Saponins	+	-

phytochemical constituents present in Tridax procumbens [10]

Phytochemical Screening:

Flavonoids:

Flavonoids are present in various plant organs, as reported by Jhariya et al. (2015)[11]. These compounds have demonstrated utility in diverse applications, including serving as anticoagulants, hair tonics, antifungal agents, and addressing issues such as bronchial catarrh, diarrhea, dysentery, and wound healing (Ali et al., 2001)[12]. Tridax, a plant containing procumbenetin and other flavonoids, appears to mitigate the deposition of calcium and oxalate in the kidneys. Moreover, these secondary metabolites show promise in the regeneration of damaged beta cells in the pancreas (Petchi et al., 2013)[13]. An evaluation of T. procumbens' aqueous extract on diabetic rats suggests that flavonoids are responsible for the hypoglycemic effect seen, and that ascorbic acid's high concentration provides protection against oxidative stress. Furthermore, the extract's flavonoids could be a factor in the VLDL cholesterol levels that have been shown to drop (Ikewuchi, 2012). [14]

Tannins:

Tannins, which are water-soluble polyphenols occurring naturally in plants, exhibit antimicrobial, anti-carcinogenic, and anti-mutagenic properties, possibly due to their antioxidant capabilities, as noted by Chung et al. (1998)[15]. The presence of tannins in T. procumbens has been reported by various researchers, including Kumar et al. (2012)[16] and Edeoga et al. (2005)[17]. Analyses using acetone-water or chloroform-water have confirmed the existence of tannins in the leaf extracts of T. procumbens, as outlined in Table 3 by Sawant and Godghate (2013)[18]. In addition, Ikewuchi (2012)[19] has reported that tannins are present in T. procumbens buds and pedicles.

Alkaloids:

Alkaloids, a class of nitrogenous organic compounds derived from plants, exert significant physiological effects on humans. In the case of T. procumbens, Kumar et al. (2012)[16] have reported the presence of certain alkaloids. A phytochemical screening analysis using aqueous leaf extraction revealed the existence of thirty-nine alkaloids, with Akuamidine constituting the majority (73.91%) and Voacangine comprising 22.33% . Alongside alkaloids, the extract also contained sterols and tannins. The alkaloids derived from the pedicle and buds of T. procumbens demonstrated antimicrobial activity against Proteus mirabilis and Candida albicans, with the alkaloids from buds exhibiting activity against E. coli and Trichophyton mentagrophytes. The total alkaloid content was measured at 32.25mg/gdw in the pedicles and 92.66mg/gdw in the buds (Jindal and Kumar, 2012)[20]. The presence of these alkaloids underscores the considerable potential of this plant.

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Saponins:

Saponins, identified as steroidal glycosides with noteworthy pharmacological and medicinal attributes, have been documented by Atelle et al. (1999)[21]. Research by Edeoga et al. has also verified that T. procumbens contains saponins (2005). [17] Specifically, Saxena and Albert (2005)[22] identified a steroidal saponin and pB-Sitosterol-3-O-β-D-xylopyranoside in the flowers of the species. Additionally, saponins from an ethanolic extract of T. procumbens may have antidiabetic qualities by inhibiting the sodium glucose co-transporter-1 (S-GLUT-1) in the intestines of male Wistar albino rats, according to a research by Petchi et al. (2013)[13].

Pharmacological Aspects

Tridax procumbens has a wide range of possible medicinal uses, such as the ability to heal wounds, function as an insecticidal, have antibacterial effects, antioxidant qualities, antibiotic potency, and relieve diarrhea and dysentery. The application of leaf juice is prevalent for treating fresh wounds, arresting bleeding, and serving as a hair tonic. In India, Tridax procumbens is commonly employed for wound healing, as an anticoagulant, antifungal agent, and insect repellent. Traditional folk medicine recognizes the leaf extract for its efficacy in treating infectious skin diseases. Furthermore, the plant is well-regarded for its medicinal value in addressing liver disorders, exhibiting hepatoprotective qualities, and providing relief from gastritis and heartburn. Tridax procumbens also serves as a bioabsorbent for the removal of harmful Cr (VI) from industrial wastewater.

Antibacterial Activity

Tridax procumbens demonstrates significant antibacterial activity, particularly against Pseudomonas aeruginosa, a nosocomial strain isolated from patients with ventilator-associated pneumonia. The ethanolic extract exhibited robust antibacterial effects, with an increased zone of inhibition observed at a concentration of 5 mg/ml. Comparative analysis with control antibiotics like augmentin, ciprofloxacin, cephotaxime, and ticarcillin revealed resistance, with sensitivity observed only to imipenem. This finding is statistically significant as it underscores the ethanol extract's ability to inhibit the growth of this prominent gram-negative bacterium associated with nosocomial infections.

The entire Tridax procumbens plant has antibacterial qualities, therefore the antibacterial action is not restricted to just one area of the plant. Testing against two Gram-positive (Bacillus subtilis, Staphylococcus) and two Gram-negative (Escherichia coli and Pseudomonas aeruginosa) bacteria revealed effective antibacterial activity specifically against Pseudomonas aeruginosa using the disc diffusion method.

Furthermore, different solvents, including hexane, chloroform, butanol, ethanol, and water, were used to extract antibacterial compounds from Tridax procumbens leaves. Antibiotic tests conducted with various bacteria, including Escherichia coli, Pseudomonas aeruginosa, Micrococcus sp., Staphylococcus aureus, Proteus vulgaris, Klebsiella pneumoniae, Bacillus subtilis, Citrobacter sp., and Serratia marcescens, demonstrated greater zone of inhibition for Gram-negative bacteria.

The study also assessed antibacterial activity against Staphylococcus aureus, Escherichia coli, Proteus mirabilis, and Vibrio cholerae using five different solvents: hexane, petroleum ether, chloroform, methanol, and water. The results indicated that the methanol extract contained more bioactive compounds than the hexane extract, showing activity against both gram-positive (Staphylococcus aureus and Bacillus subtilis) and gram-negative (Enterobacter aerogenes) bacteria using the Agar well diffusion method. Notably, the methanol extract demonstrated the highest activity against Salmonella typhi and Shigella flexneri and the least activity against Escherichia coli[23].

Antifungal Activity

Significant antifungal action is shown by Tridax procumbens, especially when the entire plant extract is used to combat phytopathogenic fungus like Aspergillus niger. Leaf extract tests against Fusarium oxysporum also show robust antifungal activity. Furthermore, with a substantial zone of inhibition spanning from 12 to 15 mm, the essential oil produced from Tridax procumbens has antifungal activity against three distinct fungi: Candida albicans, Candida tropicalis, and Candida parapsilosis.

The potential antifungal activity of the bioactive component flavonoids obtained from Tridax procumbens is evaluated against Aspergillus niger, Aspergillus flavus, Candida albicans, and Trichophyton sp. According to the findings, Candida albicans is more sensitive, which suggests

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that the plant's flavonoids may have antifungal properties.

Methanol extracts from various parts of Tridax procumbens, including leaf, stem, flower, and root, exhibit significant inhibitory activity against Candida albicans (MTCC 227 and MTCC 3017). At a dosage of 100 mg/ml, the inhibition zone spans 8 to 13 mm. While the methanol leaf extract shows Candida albicans and Candida tropicalis susceptibility, the methanol extract from the root shows antifungal action against Candida tropicalis and Candida glabrata. This evidence supports the presence of bioactive compounds in the root extract, suggesting its potential as an effective anti-candidial drug in the future.

The utilization of natural fungicidal agents, such as those found in Tridax procumbens, holds promise for reducing reliance on commercial chemical fungicides and mitigating their potential hazardous side effects. This evidence suggests that Tridax procumbens extracts may offer an effective therapeutic approach for managing Candida infections in the future[23].

Anti-Inflammatory Activity

Using carrageenin-induced paw edema, the anti-inflammatory properties of Tridax procumbens extract were assessed in conjunction with ibuprofen. The inhibition zone exhibited comparable effectiveness between the Tridax extract and ibuprofen. Notably, the Tridax extract demonstrated an increased inhibition of edema when administered in conjunction with the standard drug ibuprofen, indicating a synergistic effect. The combination of ibuprofen with the Tridax extract showed significant anti-inflammatory activity.

In another study, a water-soluble powder of Tridax leaf extract was orally administered at different doses to rats, revealing analgesic activity. Using carrageenin-induced paw edema, the anti-inflammatory properties of Tridax procumbens extract were assessed in conjunction with ibuprofen.Furthermore, the rat-paw edema test was used to assess the anti-inflammatory activities of alcoholic and hydroalcoholic extracts of Tridax procumbens. The results showed edema inhibition percentages of 10.82%, 16.80%, and 11.39%, indicating the plant's potential in reducing inflammation[23].

Antioxidant Activity

Tridax procumbens demonstrates substantial antioxidant activity, as evidenced by its high total phenol content expressed as Gallic Acid Equivalent (GAE), measuring at 12 mg/g GAE. This discovery implies a relationship between the antioxidant activity and phenolic content of medicinal herbs. This finding is corroborated by earlier research that highlights the antioxidant capacity of secondary metabolites found in plants, including flavonoids, tannins, catechins, and other phenolic substances. These bioactive substances guard against the onset of heart disease, cancer, and aging-related illnesses. Additionally, they have been reported as chemo-preventive agents, contributing to cholesterol reduction and repairing damaged cells.

The stable nitrogen-centered free radical technique, known as DPPH, was utilized to assess the Tridax procumbens extracts' in vitro antioxidant capabilities. The interaction between the antioxidant (AH) and the nitrogen-centered free radical DPPH (1,1-diphenyl, 2-picryl hydroxyl) is used to measure antioxidant activity in this approach. The n-Butanol and ethyl acetate fractions' methanol extracts showed strong antioxidant activity. Ascorbic acid and Tridax procumbens fractions were tested for their ability to scavenge free radicals utilizing the stable radical DPPH, as well as for their hydrogen donation and radical-scavenging capacity. Greater free radical scavenging activity is shown by a low absorbance of the reaction mixture. [23]

Wound Healing Properties

Numerous studies have demonstrated Tridax procumbens's capacity to aid in the intricate and dynamic process of tissue repair, particularly with regard to wound healing. Tridax procumbens entire plant extract, especially the water extract, shows potential for improving both normal and immunocompromised rat wound healing. Interestingly, without influencing contraction and granulation, Tridax reverses the known healing suppressant drug dexamethasone's inhibitory effects on epithelization and tensile strength.

The process of wound healing entails complex interactions mediated by a range of cytokines and growth factors involving plasma-derived proteins, dermal and epidermal cells, the extracellular matrix, and controlled angiogenesis. Tridax procumbens contributes to this process by increasing lysyl oxidase, protein, and nucleic acid content in the granulation tissue, possibly through an increase in glycosaminoglycan content.

In animal models, both aqueous and ethanol extracts of Tridax procumbens whole plant demonstrate wound healing properties in excision

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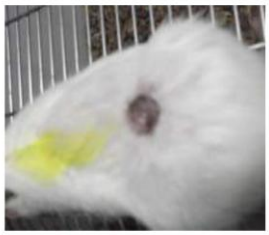
and incision wounds. In incision wounds treated with the plant extract for 14 days, wound healing capacity is measured using a tensiometer, and histopathological examination assesses reepithelization and collagen formation. Graph paper is used to analyze the changes in the wound area in excision wounds treated with plant extract for a period of 15 days. The changes are tracked every three days. Tridax procumbens exhibits a noteworthy elevation in hydroxyproline, collagen, and hexosamine levels, suggesting its efficacious role in wound healing. [23]

Wound in animal model

Wound treated with extract of *T. procumbens*

Control wound on 15thday



T. procumbens extract treated wound on 15th day

Anti-Cancer Activity

Prostate epithelial cancer cells were used to test Tridax procumbens' anti-cancer properties (PC3). Flowers of Tridax were extracted using both water and acetone. The assessment of anticancer activity was conducted through the MTT assay, which measures cell viability. In this assay, the yellow soluble salt MTT is transformed into a purple-blue insoluble Formazan precipitate. This transformation is carried out by mitochondrial succinate dehydrogenase produced by viable cells. The number of live cells is then measured at 570 nm using spectrophotometry.

According to the findings, the acetone flower extract significantly reduced the growth of cancer cells by 82.28% in just a single day. On the other hand, the anticancer activity of the water extract was very poor.According to this investigation, Tridax procumbens crude flower extract has anti-cancer activities, especially in the acetone extract against prostate epithelial cancer cells (PC3). [23]

Anti-arthritic activity

An inflammatory condition called arthritis is typified by damage to one or more joints. It has been on the rise, possibly due to factors like low fluid consumption and hectic lifestyles. The possible anti-arthritic effects of 250 mg/kg and 500 mg/kg of Tridax procumbens ethanol extract have been investigated in several research. In these investigations, the usual anti-inflammatory medication indomethacin was administered.
Significant anti-arthritic efficacy was shown by the entire plant extract of Tridax procumbens, especially in the Freud's Complete Adjuvant model. These trials' findings were similar to those of indomethacin, indicating that Tridax procumbens could be useful in reducing inflammation and the symptoms of arthritis. [24].

Anti-diabetic actions

Tridax procumbens Linn. leaf extracts in both water and alcohol have been shown to have antidiabetic effects by sharply lowering blood glucose levels. The antidiabetic activity was assessed in a model of alloxan-induced diabetes in rats. In diabetic rats, oral administration of 50% acute and subchronic dosages of Tridax procumbens methanol extract was seen to lower fasting blood glucose levels.

Notably, normal rats' blood sugar levels were unaffected by this plant material. Given its capacity to reduce blood glucose levels in experimental settings, Tridax procumbens may have a function in controlling diabetes, given its specificity in impacting diabetic rats. [24].

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Tradational uses of Tridax:

Tridax procumbens, sometimes referred to as tridax daisy or coat buttons, has a long history of traditional applications in many different parts of the world. Plants have been used for medical purposes since ancient times, and T. procumbens is no exception. It is found globally and has been employed in traditional medicine for various purposes.

T. procumbens has been used to treat hepatopathies, anemia, colds, and inflammation in Central America. It is used to treat skin infections, mucosal inflammations, diarrhea, stomach ache, and vaginitis in Guatemala. It is known for having antibacterial, antifungal, and antiviral qualities. The leaf juice is utilized to treat wounds and stop bleeding. Additionally, a study in Chiquimula, Guatemala, indicated that lactating pregnant women with anemia could alleviate their symptoms through the use of Tridax.

Additionally, the plant is used to treat diabetes, high blood pressure, and respiratory and gastrointestinal diseases. The whole plant is used in Guatemala to cure protozoal illnesses such as diarrhea, leishmaniasis, and malaria. Research indicates that aqueous extracts of T. procumbens have potent anti-plasmodial action against chloroquine-resistant P. falciparum parasites, activity against Trypanosoma brucei, as well as antibacterial and wound-healing qualities, which validate some of these traditional applications.

This material emphasizes the various traditional applications of Tridax procumbens that are found in many cultures, as well as the possible therapeutic advantages that are backed by empirical data. [25].

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