



A Review Of Pharmacological Activities Of Ghav Pala / Dagdi Pala/ *Tridax Procumbens*

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Abstract:

Tridax procumbens is a very good as well as successful species it produces secondary metabolites it's concluded to have a multiple variety of medicinal uses including among others, anti-diabetic, anti-inflammatory, anti-parkinson's and anesthetic properties. This species has an ancient history of traditional use by various societies. This research aimed to review the knowledge-based literature regarding the medicinal properties, biological activity and phytochemical components of *Tridax procumbens*, belonging to the Asteraceae family that is found in central and southern America. A wide literature review was done with the help of EDS Metadatabase MedLine (PubMed), web of Science, Academic Search Premier, Scielo, DOAJ Directory of Open Access Journals, JSTOR, and other inception to find information relevant to the medicinal uses of *Tridax procumbens*. Around 130 studies were found that contained information about *Tridax procumbens*.

Some information was not added because of the relevance to this study, ending with a total of 111 relevant citations reported. This review shows the importance of more studies to understand the potential of *Tridax procumbens*' secondary metabolites for medicinal or caring treatment, making it a good ethnobotanical resource. This review provides important information of this species and indicates that this species could be an efficient, useful and affordable potent treatment for some ailments.

Keywords:

Tridax daisy, Antioxidant, Wound healing, Mosquitocidal, Nanoparticles, Wastewater treatment.

Introduction:

Tridax daisy is a universally expanded hispid, stiff hairs procumbent herbaceous plant, usually found as a wild plant. *Tridax* daisy is perpetual in nature with flowering-fruitlet throughout the year it is often rooting at nodes with desolate lonely high in stature yellow composite, heterogamous, bisexual flowers with white flowering heads and very hairy, coarsely toothed, petislate Whole aerial part medicinally, leaves possess wound healing, insecticidal, antisecretory and hypotensive action while seeds are used to control bleeding Also has various pharmacological properties including but not limited to: immunomodulatory, anti-oxidant, anti-hepatotoxic, analgesic, antidiabetic, anti-inflammatory, antifungal, and antimicrobial activities. Since ancient times, this species has been used

in Ayurveda in India utility of the species is most likely due to the plant defense mechanism, secondary metabolites such as flavonoid, alkaloids, tannins, carotenoids, and saponins which have been scientifically screened.¹

Hyperuricemia is an abnormally high level of uric acid in the blood. Normal uric acid levels are 2.4-6.0mg/dL for women and 3.4-7.0 mg/dL for men. High levels of uric acid in the blood stimulate gout, a type of inflammatory arthritis caused by the deposition of monosodium urate crystals in the synovial fluid, and other tissues. . It plays an important role in causing hyperuricemia and gout.²

Taxonomical Classification:

Kingdom: Plantae-Plants

Subkingdom:Tracheobionta-Vascular Plants

Division: Spermatophyta

Subdivision: Magnoliophyta–Flowering plants

Class :Magnoliopsida–Dicotyledons

Subclass :Asteridae

Order :Asterales

Family:Asteraceae–Aster family

Genus:Tridax L.–Tridax

Species:*Tridax procumbens* L.–Coat buttons³

Synonyms:

Balbisiana elongata Wild,Balbisia pedunculata Ortega , Chrysanthemum procumbens (L.) Tridax procumbens var, canescens⁴

Common name

English Coat-button
Coat Buttons
Mexican daisy

Hindi Akal Kohadi
Khal-muriya
Tal-muriya

Irula Mookuthi poo

Railpoo

Kannada

Gabbusanner savanthi

Sanna Gida

Malayalam Kumminnippacha

Kurikootticheera

Muriyampachila

Odiyancheera

Rail Poochedi

Sani Poovu

Thehuthi

Other Bhamburda

Coat Buttons

Dagdi Pala

Tamil Kinathu Poondu

Seruppadi Thalai

Seruppadi Thazhai

Vettukkaaya-thalai

Telugu Gaddi Chamanthi ⁵

Botanical Description:

Appearance-

Tridax Daisy is a perennial herb that grows along the ground and can reach from 8-30 inches(20-75 cm) long.

Foliage-

The leaves of Tridax daisy are opposite, pinnate, oblong to ovate, and 1-2 inches (2.5-5 cm) long with cuneate bases, coarsely serrate margins, and acute apexes.

Flowers-

Tridax daisy flowers have white rays and yellow disk flowers. They are about 0.4-0.6 inches (1-1.5 cm) wide, and held on a 4-12 inches (10-30 cm) long stalk. Flowering occurs in spring.



Fig-1 The plant flower of *Tridax procumbens*.

Fruit

Fruits are achenes that are dark brown to black in colour, oblong, and 0.08 inches (2 mm) long, each with a head of pappus bristles that vary from 0.12-0.24 inches (3-6 mm) long



Fig- 2 The plant of fruit *Tridax procumbens*.

Stem and root

Stems are cylindrical, hispid, covered with multi-cellular hairs of mm; tuberculation at the base root is a strong taproot system. The plant stem is ascending 30-50 cm height,



branched, sparsely hairy, rooting at nodes.

Fig : 3 stem and root of *tridax procumbens*⁶

Ecological threats

Tridax procumbens is listed as a federal noxious weed. It's more tropical Sides, crops, fallows and fallows Prefers coarse textured soil. It invades the land of the road Hai Mexico and South Native to America, but has become an invasive problem worldwide.⁷

Morphological characteristic:

Biological source:: *Tridax procumbens*, commonly known as coat buttons] or tridax daisy Belonging to family asteraceae⁸

Tridax procumben linn



Fig no : 4 *Tridax procumben linn*

Chemical constituents: *Tridax procumbens* is a plant used majorly in Indian traditional medicine. This is rich in alkaloids, steroids, carotenoids, flavonoids, fatty acids, phytosterols, tannins and minerals.⁹

Table no :1

Aerial part 3,6-dimethoxy-5,7,2,3,4,-pentahydroxyflavone-o-D-opyranoside(flavonoids procumbenetin)

Leaf glycoside 5,7,4'-trihydroxy-6,3'-dimethoxy-flavon 5e-O- α -L-rhamnopyranoside

Flowers β -sitosterol-3-O- β -D-xylopyranoside (steroidal saponin)¹⁰

Macroscopic characters of leaf, flow stem and root.

Leaf:Leaves are 3-6 cm long and 1-4 cm wide, lanceolate to ovate shaped, hairy, opposite, often deeply lobed with irregularly toothed margin and an acute apex. Flowers were of two types, disc flowers, the corolla narrow-campanulate, 8 mm long, bright yellow and hairy at the top, with spreading pappus of plumose hairs. Ray flowers 5 or 6, female, with narrow corolla tube and brown ligulate limb, white or pale yellow, flowering and fruiting throughout the year. The Stem was herbaceous, cylindrical, decumbent and branched. *Tridax procumbens* having a tap root system .¹¹

Table no :2

Plant part Morphology of leaves Observations

Leaf Colour Odour

Taste

Size

Shape

Texture

Fracture

Apex

Arrangements

Appreace

Stem Colour Odour

Taste

Size

Shape

Texture

Fracture

Green

Characteristics

Acrid

3-7cm long 1-5cm wide Ovate

Short

Easy

Acute

Opposite

Rough



Green

Characteristics

Acrid

23-46cm

Cylindrical

Smooth

Soft

Root Colour Odour

Taste

Size

Shape

Texture

Fracture

Brown

Characteristics Acrid

15-32cm

Tortuous

Rough Soft



Traditional uses: *Tridax daisy* has been extensively utilized in the Ayurvedic system of medication and is well-accepted medicine for a liver disorder. It's been found to possess significant medicinal properties against malaria, dysentery, diarrhea, bronchial catarrh, blood pressure, hair fall, stomach ache, headache and hair fall. It also has wound healing properties and checks hemorrhage from cuts

and bruises. Antiseptic, insecticidal and parasiticidal properties were reported in flowers and leaves. The plant also possesses immunomodulatory, antidiabetic, antihepatotoxic and antioxidant, anti-inflammatory, analgesic activity .

Preparation of leaves extract:

The leaves of *Tridax procumbens* were dried at room temperature and dried leaves were crushed to coarse powder.

Extraction yield and preliminary phytochemical screening:

The extraction process was done by the help of Soxhlet method and the percentage yield was found to be 2.02 %. The ethanolic extract of *Tridax procumbens*(L.) EETP leaves was screened for various chemical tests as per the reported methods and was found to contain carbohydrates, flavonoids, proteins, oils, glycosides (anthraquinone), amino acids, steroids and tannins.

Table no:3

Sr/no	Used part	Extract Characteri Phytoche Structure solventstics/ analysis methods	Chemical Activities
1	Root	Co2 Supercritical (3s)-16,17 al dihydro extraction falcarinol(0 using co2 .41%)	Not tested
2	Leaves	Menthol H - NMR (35)-16-17- Didehydro Carbinol or Oxylin (3 m)	Antileis hemanial
3	Flower	Essential GS-MS A selinene oil (15.3%)	Not tested
4	Flower	Essential GS-MS Zerumbon oil e{4.3%}	Not tested

5	Aerial part	Menthol GS-MS 9.12 Octadecanedioic acid, ethyl ester (18.4 %)	Not tested
6	Aerial part	Menthol GS-MS 2-propyl-1-heptanol	Not tested ¹²

Pharmacological activities:

- Antibacterial activity:
- Anti-cancer activity:
- Anti diabetic activity:
- Hepatoprotective activity:
- Antifungal activity:
- Antileishmanial activity: Antiurolithiatic and antioxidant activities:
- Analgesic and Anti-inflammatory activity:
- Antimicrobial activity:
- Immunomodulatory Activity:
- Anti-ulcer activity:
- Wound healing activity
- Anti-arthritic activity:
- vasorelaxant effects:
- Antidiarrhoeal Activity:

Antibacterial activity:

Erichia coli, Klebsiella pneumoniae, types of bacteria like Salmonella typhi, Bacillus cereus, Staphylococcus aureus used for the study and NFMC, Bharathidasan

Collected from the University of Tiruchirappalli, collected microbes were maintained in nutrient agar broth and cultured in nutrient agar medium. (Hi Media(P) Ltd Mumbai) Preparation of medium Nutrient agar medium is prepared by dissolving 2.8 g of nutrient R in 100 ml of distilled water. 121 for 15 minutes solution in an autoclave at 121°C was sterilized. It was poured into a sterile Petri Dish to cool and solidify. The agar depth of the medium (4 cm) was measured. Disc diffusion method and agar is well diffusion Method Antibiotics of Plant Extracts To study actions in triads and adoption for comparison with standard antibiotics ¹³

Anti-cancer activity:

Phytochemicals of *Tridax procumbens* The aim of this study is to investigate the anticancer activity of human lung cancer targeting luteolin,

Tridax Procumbens Hemi Prostatelt is an annual or short-lived perennial herb. Recognizing the broad nature and contribution of plants in medicine has gone. Tridax procumbens dried of procumbens In

examining phytochemicals in leaves has come *Tridax procumbens* compounds against human lung cancer by MTT assay was tested for cytotoxicity. Rf 90% reduced cell viability with a compound of value 0.66 shown by NMR, MS and IR spectra disclosed the compound as Paul. human Lupol's against lung cancer Evaluation of anticancer potential clonogenic determination of survival, cell cycle control, cell-based assays for inhibition of Cox-2 activity, and DNA Fragmentation Analysis, 320 mug /ml of Lupeol compound concentrations have been determined by the indicated potentials. Anti-cancer properties¹⁴

Anti-parkinson activity:

Parkinson's disease (PD) is the second most common neurodegenerative disease characterized by the loss of dopaminergic neurons in the substantia nigra. The present study was designed to evaluate the anti-Parkinson activity of ethanolic extract of *Tridax procumbens* (EETP) leaves, family Asteraceae. improved compared to ROT treated fish. Thus, the study demonstrated that EETP treatment significantly reduced motor impairment and also protective from oxidative stress.¹⁵

Anti-rheumatic activity:

Fried's Complete Adjuvant (FCA) model using female Spray Dolly (SD). *Tridax procumbens* (Asteraceae) in mice To determine the anti-rheumatic effect of the whole plant ethanolic extract of . collected plants from different parts of Madurai district and through chemical tests Phytoconstituents were identified. Ethanol (95%) Whole plant by soxhlet extractor is used to remove Female SD rats used for anti-arthritis screening. FCA. Arthritis was induced using an *T.P* Anti-rheumatic effect of ethanolic extract of *procumbens* studied at doses of 250 and 500 mg/kg gone Comparison of results with indomethacin (10 mg/kg) with effect .¹⁶

Vasorelaxant activities:

The treatment of hypertension In traditional medicine in the southern part of Nigeria *Tridax Procumbens* is used. However, the mechanism of its antihypertensive properties remains unclear. from the mouse On the mechanical responses of smooth muscle in isolated aortic ring preparation. *Tridax procumbens* of the aqueous extract of *procumbens* leaves An attempt was made to examine the properties of direct action. Endothelium Intact Aortic Ring, from normotensive rats was performed and the aqueous extract (0.15-1.05mg/mL) was added to the bath fluid. Separately, induction of concentration dependent relaxation by pre-contraction with noradrenaline also reduces the contractile response to KCl and shifts the concentration response curve to the right received *Tridax procumbens* aqueous extract of *procumbens* .¹⁷

Antilithiatic Activity:

Ethanol extract of the plant is also used to treat kidney stone disorder, 0.75% V/V ethylene has antilithiatic activity.

Glycol and 2% w/v ammonium chloride induced calcium oxalate urolithiasis, and hyperoxaluria induced oxidative stress.

Treatment with animal and plant deductions

Urinary excretion induced by calcogenesis and of calcium oxalate. It was able to reduce renal deposition and consequently lipid peroxidation, suggesting anti-urolithiasis and antioxidant effects.

Anti-obesity activity:

With decoctions of plants in research investigations

A significant reduction in total was observed in treated animals.

Elevation of cholesterol, triglycerides, total protein, free fatty acids and high density lipoprotein cholesterol levels, analgesic activity

Potential lyophilized decoction of the plant Found to be analgesic.

Hypotensive activity:

Anesthetized aqueous decoctions of leaves on animals Cardiovascular effects were studied. The Average of water decoctions Arterial blood pressure can be significantly dose-dependently reduced. High dose a significant decrease in heart rate was observed, while the lower dose did not cause any changes.

Phytochemicals Analysis:

Individual extracts were subjected to qualitative phytochemical screening for the presence of certain chemical constituents. Phytochemical testing was conducted following standard methods. Trease et al 1983, Kokate et.al 1997, Hegde et.al (2010). Steroids, tannins, saponins, phytosterols, phenols, phlobatannin, Anthocyanins, coumarins, emodins, Alkaloids, proteins, amino acids, diterpenes, Leuco anthocyanin cardiac Glycosides were tested.

Table no:4

<p>Steroid 1 ml extract in 10 ml chloroform was dissolved and the concentration of H-SO₄. Equally along the side of the test tube acid was added. The upper layer turns red and H₂SO₄ layer yellow with green fluorescence.</p> <p>This indicates the presence of steroids.</p>

<p>Tannins 2 ml of extract added to 1% lead acetate A yellowish precipitate indicate the presence of tannin. 4ml extract condensed with 4 ml FeCl to produce a green color Indicates the presence of tannins.</p>
<p>Anthocyanins 2 ml of aqueous extract is added to 2 ml of 12N HCL and NH, pinkish red color appears. Blue violet indicates the presence of anthocyanin.</p>
<p>Saponins 5 ml of extract was mixed with 20 ml of distilled water and then in a graduated cylinder for 15 minutes Foaming indicates saponin.</p>
<p>Coumarin 3 ml of 10% NaOH yellow was added to 2 ml of the aqueous extract. coumarins indicate.</p>
<p>Emodins 2 ml of NH₄OH for appearance of red colour and 3 ml of benzene was added to the emodin presence of alkaloids.</p>
<p>Alkaloids A volume (3 ml) of the concentrated extract was taken in a test tube and ml HCL was added and the mixture was heated gently for 20 min. was performed and filtered, for filter test was used²⁰ a) Wagner test: Filtrate was treated with Wagner's reagent; formation of brown reddish precipitate indicates presence of alkaloids. b) Hager's test: Filtrate was treated with Hager's reagent, presence of alkaloids confirmed by the yellow coloured precipitate.</p>

Table no :5

Proteins

Xanthoproteic test

Extract was treated with drops of concentrated HNO_3 formation yellow indicating the presence of proteins.

Amino acid

Ninhydrin test: To the 2 ml extract 2 ml on ninhydrin reagent was added & boil for few minutes, formation of blue colour indicates the presence of amino acid.

Diterpene

Copper acetate test: Extract were dissolved in water and treated with 10 drops of copper acetate solution, formation of emerald green colour indicates presence of diterpenes.

Phytosterol

Salkowski's test. Extract was treated with chloroform and filtered.

The filtrate was treated with a few drops of concentrated H_2SO_4 , and shakes allowed standing, the appearance of golden red indicates the positive test.

Phenol

Ferric Chloride test

Test extracts were treated with 4 drops of Alcohol FeCl_3 solution. Formation bluish black colour indicates the presence of Phenol.

Phlobatannin

Deposition of red ppt when aqueous extract of each plant sample is boiled with Aqueous HCl taken as evidence for presence of Phlobatannin

Leuco Anthocyanin

5 ml of isoamyl alcohol added to 5 ml of aqueous extract, the upper layer appearing red in colour indicates the presence of leuco anthocyanin.

Cardiac glycosides

Keller-Killani Test Plant extract treated with 2 glacial acetic acid containing a drop of

FeCl_3 : A brown colour ring indicates the presence of a positive test.

Flavonoids

Alkaline reagent test Extract was treated with 1 NaOH solution, formation of intense yellow colour indicates presence of Flavonoid. ¹⁸

Medicinal properties of Tridax procumbens:¹⁹

Table no :5

Sr/ no Phytoconstituent Ether Chloroform Methanol 1 Carbohydrates + + +

2 Cardiac glycosides Keller killiani test

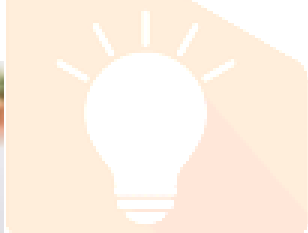
3 Protein xanthoproteic test

4 Flavonoids Alkaline reagents NH₄OH

Marketed preparation



Tridax procumbens kaplet



Conclusion

T. procumbens is mainly seen in conventional wound healing. Shows antimicrobial, anti-inflammatory properties. This is not further supported by isolation of chemical compounds, the guides bossays lack of isolation strategies T. Procumbens contains several major active chemical compounds. The medicinal effect of active secondary metabolites of this plant can help in defeating dangerous diseases like diabetes, cancer, current coronavirus COVID-19. Current treasure of traditional uses, chemical compounds and medicinal activities of T. Procumbens will be useful to researchers in the future in their search for new leads for drug discovery.

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