

A Review on Tridax Procumbens A Multi Useful Gift of Nature

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ABSTRACTS:

The restorative plant Tridax Procumbens, prominently known as traditional shirt or kansari (Hindi) or Ghamara, has a place with the Asteraceae family. It is the most involved spice in Indian medication and is as yet utilized by various networks. It is an exceptionally encouraging animal varieties, delivering optional metabolites like alkaloids, steroids, carotenoids, flavonoids (catechins, centaaurines and brachynins), unsaturated fats, phytosterols, tannins and minerals, demonstrating that it has numerous restorative purposes, including cell reinforcement, antibacterial. . It has been deductively assessed as against maturing, mitigating, antibacterial, vasodilator, hostile to leishmanic, hostile to pallid, immunomodulatory, hepatoprotective and mosquito repellent. There are still holes in research on the confinement, portrayal

and assessment of dynamic fixings in extracts. This concentrate on means to survey and demonstrate logical information on restorative properties, dissemination, morphology, geological dispersion, phytoconstituents and pharmacological exercises, gather and examine them to uncover their therapeutic importance and make ethnobotanical promises. In expansion, this study gives itemized data about this species and demonstrates the way that the treatment of certain sicknesses can be powerful, protected and reasonable, particularly in hot locales where the plants are local and boundless.

I. INTRODUCTION:

Tridax procumbens has a place with the family Asteraceae or Compositae. It is a yearly or perpetual Weed from Focal America and tracked down all through in India particularly in



Fig.1-T. procumbens Linn. Whole Plant ,Leaves of plant , Flowers of plant

Maharashtra, Madhya Pradesh and Chhattisgarh districts as weed. It is in many cases establishing at Hubs with singular, long followed, yellow composite, Heterogamous, sexually open blossoms with white blooming Heads and extremely

bushy, coarsely toothed, petiolate, prairie Or lanceolate leaves[1]. All parts of the plant are useful for medicinal purposes, the leaves have a wound-healing, insecticidal, antisecretory and hypotensive effect, antheses are used to stop bleeding[2].

Taxonomical classification –

Classification	
Divisions	Classing
Kingdom	Plantae – Plants
Sub kingdom	Tracheobionta – Vascular plants
Division	Spermatophyta
Subdivision	Magnoliophyta – Flowering plants
Class	Magnoliopsida – Dicotyledons
Subclass	Asteridae
Order	Asterales
Family	Asteraceae – Aster family
Genus	<i>Tridax</i> L. – <i>Tridax</i>
Species	<i>Tridax procumbens</i> L. – Coat buttons

Table.1-classification of *Tridax procumben*

Vernacular names	
Language	Names
English	Coat Buttons and <i>Tridax</i> Daisy
Hindi	Ghamra
Sanskrit	Jayanti Veda
Marathi	Dagadi Pala
Telugu	Gaddi Chemanthi
Tamil	Thata poodu
Malayalam	Chiravanak
Spanish	Cadilp Chisaca
French	Herbe Caille

Table.2- Vernacular names of *Tridax Procumben*[3]

MICROSCOPIC DESCRIPTION:

LEAVES:

Leaves are exstipulate, simple, opposite, entire, hairy, infrequently pinnatisect, and short-petioled. The lanceolate-ovate leaves have a sharp edge and a similar base. It is long, irregularly toothed, 3-7 cm long and has a 45 cm long edge.

Flower:

Long flower heads appear all year round. The flowers are small, tubular, pubescent, whitish-yellow in color. Capitulum - inflorescence. Disc inflorescences and ray inflorescences with basal placenta. The disc flowers have a narrow, bell-shaped corolla, 8 mm long, bright yellow, pubescent on the upper part, with spreading feathery caps. Ray florets

5 or 6 females with a white or light yellow colour and a narrow corolla tube and brown ligulate limb[4].

Fruit:

The fruit is a hard achene covered in stiff hairs with a white feather-like tuft at one end. The plant's abundance of achenes, each of which can catch the wind with its tufts and travel short distances, contributes to its aggressiveness. Achenes have a length of 1.5–2.5 mm and a diameter of 0.5–1 mm.

Seed: Seeds have no endosperm and have a pendulous embryo[5].

Stem: The stem is herbaceous and cylindrical, lodging and branching.

Plant part: Whole plant (leaf, stem, and flowers) is used to treat a variety of diseases. The plant's powder microscopy revealed fibres of 175 μm in length, collenchyma cells of 70–115 μm in diameter, glandular trichomes of the stem, latex cells, root cortex cells of the diameter of 80–120 μm , spiral vessels in the leaf, and unicellular covering trichomes of length 200 μm [6].

PHYTOCHEMICAL CONSTITUENTS:

This medicinal plant contains alkaloids, carotenoids, saponins, flavonoids, and Tannins, according to the phytochemical screening. Due to their similar properties, scallops have more sodium, potassium and calcium content[7]. The estimate of the plant shows that it is rich in sodium, potassium and calcium. *Tridacna* leaves mainly consist of protein (26%), crude fiber (17%) and soluble carbohydrates (17%). Its flowers contain 39% calcium oxide, 5% luteolin, glyoxanthin, quercetin and isoquercetin. The plant also contains fumaric acid, sitosterol and tannins. Its flowers have been found to contain luteolin, glucoluteolin, quercetin, and isoquercetin[9].

PHARMACOLOGICAL PROPERTIES:

The great variety of secondary metabolites in *Tridax*, show the potential pharmacological properties of this Species, however, we have yet to see the use in allopathic medicine. These compounds have been used for their properties in anemia prevention, liver protection, immuno-enhancement, antioxidant, anticancer, Antibacterial, antifungal, antiparasitic, antiplasmodial, and antiviral activities. This species could provide a bridge between traditional medicine and western medicine due to its pharmacological potential. More isolation and characterization of active components is needed. There is no research indicating whether there are changes in activity during the preparation and isolation of the pharmacological compounds.

1.Antimicrobial Activity: Antibacterial testing has been performed, but more research is needed to confirm some of the results. There are different types of bacterial and fungal species have been shown to be sensitive to the antimicrobial activity of *T. procumbens*. Recently, root and leaf callus have been shown to be useful in the synthesis of silver nanoparticles that exhibit some antibacterial properties. *E. coli*, *V. cholerae*, *A. niger*, and *A. flavus*[10].

However, this activity is lower than that of silver nitrate, so these results are inconclusive. *procumbens* leaves exhibited antibacterial activity against *B. faecalis*. Chloroform extract has antibacterial properties against *Bacillus faecalis*, *Bacillus subtilis*, *Escherichia coli* and *Pseudomonas aeruginosa*[11].

2.Antifungal Activity :

Different methods were used to find the effective inhibition zone for different fungal species, including *Microsporum flavum*, *Microsporum gypsum*, *Trichophyton mentagrophytes*, *Trichophyton rubrum*, *Candida albicans* and *Trichocystis campestris*. Extracts from the aerial part of the plant showed activity against dermatophytes with a zone of inhibition of 17 to 25 mm; dichloromethane (DCM) was the best response[12]. However, the authors did not explain which bioactive compounds had antibacterial properties. The authors stated that these substances may be fatty acid derivatives and products, but there is no evidence for this claim.

3.Antibacterial Activity:

Tridax procumbens has been shown to have antibacterial properties. It is one of the most common herbs used to treat bacterial infections in rural areas of the world[13]. *Tridax* extract has been proven effective against a variety of bacteria. The N-hexane extract is active against *Mycobacterium smegmatis*, *E. coli*, [14] and *Klebsiella* sp. Ethyl acetate extract is used against Gram-positive bacteria (such as *Bacillus cereus*, *Mycobacterium smegmatis*, *Staphylococcus aureus*) and Gram-negative bacteria (such as *Klebsiella*). *T. procumbens* essential oil extract has significant activity against Gram-positive bacteria: *Staphylococcus aureus* and *Streptococcus pneumoniae*[15]. There are some differences in the way the research was done, so although the antibacterial properties of these animals seem to be supported, more research is needed.

4.Antiparasitic Activity:

Treats some diseases caused by protozoal diseases, such as malaria[16]. The active compound (3*S*)-16,17-didehydrofalcarinol, an Oxylipin, was evaluated for dysentery, colic and vaginitis in *Procumbens* by bioassay-guided fractionation of methanol extracts. *Tridax* appears to show activity against *Leishmania* when using the raw material of the whole plant[17]. A study conducted in Ghana tested the anti-plasmodial activity of aqueous, chloroform, ethyl acetate and ethanol extracts from flowers, leaves and stems of *T. procumbens*. There is

evidence that aqueous and ethanolic extracts of this species have anti-plasmodial properties; Research using tetrazolium-based colorimetric analysis shows that *T. procumbens* helps protect red blood cells from damage caused by *Plasmodium falciparum*[18]. Tridax shows great promise in the fight against diseases that kill millions of people around the world.

5. Antioxidant Activity:

Free radicals are molecules that have unpaired electrons in atomic orbitals, making them highly reactive. Some of these free radicals include reactive hydroxyl radicals (OH), superoxide anion radicals, hydrogen peroxide, reactive oxygen species (ROS), and peroxy. The instability of these radicals can damage many biologically important molecules such as DNA and macromolecules, causing cellular damage and homeostasis disturbances. Antioxidants or free radical scavengers are used to reduce this activity by preventing oxidation in biological systems[19].

6. Anticancer Activity

Crude flower aqueous and acetone extracts were tested against epithelial prostate cancer cells (PC3). Very weak anticancer activity was observed in the aqueous extract. Acetone extract showed 82.28% activity against cancer cells within 24 hours of treatment [20]. Viability was analyzed using the MTT assay. The authors do not describe the toxicity analysis, so the results are inconclusive, as the only extract that was effective was the acetone extract and the control was not clearly specified in the publication.

7. Hepatoprotective Activity:

Many models have been used to evaluate the hepatoprotective activity of various extracts as well as the effectiveness of *T. procumbens* in reducing oxidative stress in the liver that causes liver damage[21]. The chloroform-insoluble fraction of the ethanol extract is effective in alleviating liver stress caused by pharmacological agents that cause the same pathologies as viral hepatitis, drug intoxication and lipid peroxidation by reactive oxidative species. Another study showed that chloroform-insoluble ethanol extract reduced hepatotoxic activity by reducing various enzymes in CCl₄-treated rats [22]. A study in male albino rats evaluated the use of *T. procumbens* to treat liver damage caused by paracetamol (acetaminophen).

8. Antidiabetic Properties

Diabetes has become a global epidemic. Interestingly, *T. procumbens* exhibits anti-diabetic properties. Male albino Wistar rats with streptozotocin-induced diabetes were administered ethanol extracts of whole *T. procumbens* plants. Studies have shown that this extract has anti-diabetic activity similar to that of Glibenclamide, a drug used to treat type 2 diabetes. This medication works by increasing the amount of insulin produced by the pancreas[23]. The study included appropriate controls and two different concentrations of Tridax whole plant extract (250 mg/kg and 500 mg/kg). ANOVA and Dennett's post hoc test showed significant antidiabetic activity compared to controls. The extract also showed positive effects on diabetes-related hyperlipidemia. Another study found that male albino rats with alloxan-induced diabetes responded better to a methanolic extract of *T. procumbens* than to the existing drug glibenclamide.

PHYTOCHEMICAL TESTS-

1. Flavonoids:

Kaempferol and catechin and its derivatives (-)-epicatechin, (+)-catechin, (-)-eigallocatechin, (+)-gallocatechin, (-)-Epigallocatechin-3-Gallate (EGCG) and (-)-Epicatechin-3-Gallate account for about 17.59% and 26.3% respectively. The remaining 56.11% are 16 flavonoids, namely biochanin, apigenin, naringenin, daidzein, quercetin, butein, robinetin, baicalein, nobiletin, genistin, ellagic acid, luteolin, myricetin, baicalin, Isoramnetin and silymarin[24]

2. Alkaloids:

Alkaloids are defined as all types of nitrogen-containing organic compounds of plant origin that have important physiological effects on humans. There are also reports of the presence of some alkaloids in *T. procumbens*. In the phytochemical screening analysis using aqueous leaf extract, 39 alkaloids were present, mainly acoumideine (73.91%) and voacangine (227.33%). In addition to alkaloids, the extract contains sterols and tannins.

3. Saponins

Saponins are steroid glycosides with pharmacological and medicinal properties found in *T. procumbens*, especially steroid saponins and Another study found that saponins from the ethanol extract of *T. procumbens* could potentially have anti-diabetic properties by inhibiting sodium-glucose cotransporter-1 (SGLUT-1) in the intestines of male albino Wistar rats[25].

4. Tannins

Tannins have antibacterial, anti-inflammatory and anti-inflammatory properties due to their antioxidant capacity. Acetone-water or chloroform-water showed the presence of tannins in *T. procumbens* leaf extract. Tannin is present in the peduncles and buds of *T. procumbens*[25].

5. Carotenoids :

Some specific metabolites have been extracted from *T. procumbens*: Lipids are essential for bacterial survival; They affect the communication between cells, cell composition and body energy. *T. procumbens* contains oils commonly found in the Asteraceae family. These species also provide some lipids that provide the plant with unique and promising medicinal uses. These unique fats have been extracted and include: methyl 14-oxooctadecanoate, methyl 14 oxonacosanoate, 3-methylnonadecylbenzene, heptacosanyl cyclohexane carboxylate, 1(2,2- Dimethyl-3-hydroxypropyl)-2-isobutyl phthalate, 12-hydroxytetracosan-15-one, 32-methyl-30-oxotetracont-31-en-1-ol and 30-methyl-28 -Oxotetracont-29-en-1-oic acid dotriacontanol, β -amirone, Δ 12-dehydrolupen-3-one, β -amyrin, lupeol, fucosterol, 9-oxoheptadecane, 10-oxononadecane and sitosterol [25].

6. Secondary metabolites

Secondary metabolites are compounds produced by plants that are not essential for the normal growth and development of the plant, but play an important role in plant defenses, communication, stress responses and others. Secondary metabolites often contain bioactive substances with beneficial and important medicinal properties. Some of the most important bioactive drugs are found in compounds such as glycosides, nitrogenous organic compounds, fat-soluble compounds, polyphenolic compounds and mineral secondary metabolites [25].

II. CONCLUSION

There are magnificent pharmacological actions in every plant component. Research on pharmacological effects such as hepatoprotective effect, immunomodulating property, promising wound healing activity, antidiabetic, hypotensive effect, antimicrobial, insect repellent activity, anti-inflammatory and antioxidant, bronchial catarrh, dysentery, and diarrhea is included in the report. The production of the *Tridax procumbens* Linn is largely found in the Indian America Africa and Asia.

REFERENCES

- [1]. Oommachan M (1976). The Flora of Bhopal. I Edn. J. K. Jain Brothers, Bhopal, 192-199.
- [2]. Oudhia P (1999). Medicinal weeds in rice fields of Chhattisgarh (India). International Rice Research Note, 24(1): 40-41
- [3]. R. Amutha, et al. *Tridax procumbens* (Coat Button) -A Gift of Nature: An Overview. Pharmacological Benefits of Natural Products First Edition. Chapter – 12. 2019; 193 – 212.
- [4]. Rahman, A. H. M. M., Alam. M. S., Khan, S. K., Ahmed, F., Islam, A. K. M. R., & Rahman, M. M. (2008). Taxonomic studies on the family Asteraceae (Compositae) of the Rajshahi division. Research Journal of Agriculture and Biological Sciences, 4(2), 134. 140.
- [5]. Yadav. P., & Nayak. S. (2011). Microscopic studies of *Tridax procumbens* Linn. Bulletin of Pharmaceutical Research. 1 (2).25-32.
- [6]. Kethamakka, S. R. P., & Deogade, M. S. (2014). Jayant veda (*Tridax procumbens*)-unnoticed medicinal plant by Ayurveda. Journal of Indian System of Medicine Vol, 2(1).
- [7]. Ghosh, P., Biswas, S., Biswas, M., Dutta, A., Sil, S., & Chatterjee, S. (2019). Morphological, Ethno biological and Phytopharmacological Attributes of *Tridax procumbens* Linn.(Asteraceae): A Review. Int. J. Sci. Res. In Biological Sciences Vol, 6(2).
- [8]. Mundada, S., & Shivhare, R. (2010). Pharmacology of *Tridax procumbens* a weed. Int J Pharm Tech Res, 2(2), 1391-1394.
- [9]. Kondawar, V. B. (2019). A comprehensive review on phytochemistry and pharmacological use of *Tridax procumbens* Linn. Journal of Pharmacognosy and Phytochemistry, 8(4), 01-10.
- [10]. Bhati-Kushwaha, H., & Malik, C. P. (2014). Assessment of antibacterial and antifungal activities of silver nanoparticles obtained from the callus extracts (stem and leaf) of *Tridax procumbens* L. Indian Journal of Biotechnology, 13(1), 114-120.
- [11]. Christudas, S., Kulathivel, T. M., & Agastian, P. (2012). Phytochemical and antibacterial studies of leaves of *Tridax procumbens* L. Asian Pacific Journal of Tropical Biomedicine, 2(1), 159-161. [https://doi.org/10.1016/S2221-1691\(12\)60149-X](https://doi.org/10.1016/S2221-1691(12)60149-X)

- [12]. Policegoudra, R. S., Chattopadhyay, P., Aradhya, S. M., Shivaswamy, R., Sing, L., & Veer, V. (2014). Inhibitory Effect of *Tridax procumbens* against human skin pathogens. *Journal of Herbal Medicine*, 4(2), 83-88. <https://doi.org/10.1016/j.hermed.2014.01.004>
- [13]. Taddei, A., & Rosas-Romero, A. J. (2000). Bioactivity studies of extracts from *Tridax procumbens*. *Phytomedicine*, 7(3), 235-238. [https://doi.org/10.1016/S0944-7113\(00\)80009-4](https://doi.org/10.1016/S0944-7113(00)80009-4)
- [14]. Taddei, A., & Rosas-Romero, A. J. (2000). Bioactivity studies of extracts from *Tridax procumbens*. *Phytomedicine*, 7(3), 235-238. [https://doi.org/10.1016/S0944-7113\(00\)80009-4](https://doi.org/10.1016/S0944-7113(00)80009-4)
- [15]. Manjamalai, A., Valavil, S., & Grace, V. M. B. (2012b). Evaluation of essential oil of *Tridax Procumbens* L. for Anti-microbial and anti-inflammatory activity. *International Journal of Pharmacy and Pharmaceutical Science*, 4(3), 0975-1491.
- [16]. Appiah-Opong, R., Nyarko, A. K., Dodoo, D., Gyang, F. N., Koram, K. A., & Ayisi, N. K. (2011). Antiplasmodial activity of extracts of *Tridax procumbens* and *Phyllanthus amarus* in in vitro *Plasmodium Falciparum* culture system. *Ghana Med J.*, 45(4), 143-150
- [17]. Martín-Quintal, Z., Moo-Puc, R., González-Salazar, F., Chan-Bacab, M. J., Torres-Tapia, L. W., Peraza-S, L. W., & Torres-Sanchez, S. R. (2009). In vitro activity of *Tridax procumbens* against promastigotes of *Leishmania Mexicana*. *J. Ethnopharmacol.*, 122(3), 463-467. <https://doi.org/10.1016/j.jep.2009.01.037>
- [18]. Appiah-Opong, R., Nyarko, A. K., Dodoo, D., Gyang, F. N., Koram, K. A., & Ayisi, N. K. (2011). Antiplasmodial activity of extracts of *Tridax procumbens* and *Phyllanthus amarus* in in vitro *Plasmodium Falciparum* culture system. *Ghana Med J.*, 45(4), 143-150.
- [19]. Agrawal, S. S., Talele, G. S., & Surana, S. J. (2009). Antioxidant activity of fractions from *Tridax procumbens*. *Journal of Pharmacy Research*, 2(1), 71-73.
- [20]. Vishnu, P., Radhika, K., Siva, R., Ramchandra, M., Prameela, Y. A., & Srinivas, R. (2011). Evaluation of Anti-cancer activity of *Tridax procumbens* flower extracts on PC 3 cell lines. *Pharmanest – An International Journal of Advances In Pharmaceutical Sciences*, 2(1), 28-30.
- [21]. Hemalatha, R. (2008). Anti-hepatotoxic and anti-oxidant defense potential of *Tridax procumbens*. *International Journal of Green Pharmacy*, 2(3), 164-169. <https://doi.org/10.4103/0973-8258.42736>
- [22]. Saraf, S., & Dixit, V. (1991). Hepatoprotective activity of *Tridax procumbens* – part II. *Fitoterapia*, 62, 534-536
- [23]. Petchi, R. R., Parasuraman, S., & Vijaya, C. (2013). Antidiabetic and antihyperlipidemic effects of an ethanolic Extract of the whole plant of *Tridax procumbens* (Linn.) in streptozotocin-induced diabetic rats. *Journal of Basic and Clinical Pharmacy*, 4(4), 88-92. <https://doi.org/10.4103/0976-0105.121655>
- [24]. Samantha Beck, et al. A Review of Medicinal Uses and Pharmacological Activities of *Tridax Procumbens* (L.). *J Plant Stud.*2018; 7(1): 19-35 <https://images.app.goo.gl/EnyZuj2raqJyHLUo7>