



**INTERNATIONAL JOURNAL OF
PHARMACEUTICAL SCIENCES**
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: <https://www.ijpsjournal.com>



Review Article

***Tridax procumbens* (L.): A Comprehensive Pharmacological and Therapeutic Review of Its Wound Healing Potential**

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ARTICLE INFO

Published: 26 Jan 2026

Keywords:

Tridax procumbens, wound healing, phytochemicals, anti-inflammatory, antimicrobial, collagen synthesis, herbal medicine, topical formulations, clinical studies

DOI:

10.5281/zenodo.18377615

ABSTRACT

Tridax Procumbens is a plant that helps with healing. People have used *Tridax Procumbens* for a time to treat wounds and skin problems. It is also known as coat-buttons. *Tridax Procumbens* has some qualities that help it heal wounds. It can reduce inflammation. Fight off bad bacteria. *Tridax Procumbens* also has antioxidants that help keep the skin healthy. Many studies have shown that *Tridax Procumbens* is very good, at helping wounds heal [2,1,3]. This review looks at how *T. Procumbens* can be used to help heal wounds. It talks about what's in *T. Procumbens* how it works and what research has been done so far. The review also looks at how safe *T. Procumbens* what we can learn from other plants that are used to heal wounds. There are tables and figures that show the parts of *T. Procumbens* and how it compares to other herbal medicines. The review points out where we need to do work to make sure *T. Procumbens* is safe and effective, for healing wounds. It also says that we need research on people to really understand how *T. Procumbens* works. *T. Procumbens*, healing, herbal medicines, *T. Procumbens* research, *T. Procumbens* safety. *Tridax Procumbens* is a plant that can help with healing. It has lots of things in it like phytochemicals that can reduce inflammation and fight off bad germs. *Tridax Procumbens* also helps our body make collagen which's important for healing. People use *Tridax Procumbens* in medicine and it comes in creams and ointments that you put on your skin.

INTRODUCTION

Our body has a way of healing wounds. It involves stopping the bleeding reducing the inflammation making tissue and fixing the damaged tissue. *Tridax procumbens* and wound healing are connected because *Tridax procumbens* has -

inflammatory and antimicrobial properties. Wounds that do not heal are a problem for our health. They can make us very sick cost a lot of money to treat and cause a lot of suffering. *Tridax procumbens* and its properties, like collagen synthesis can help with this problem. People are using remedies to help with wound care. This is

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



because they have a lot of things about them. They are not too expensive. They are safe to use. *Tridax procumbens* is a type of herb that grows in places. It is a member of the Asteraceae family. For a time people have been using the juice from its leaves and paste made from its leaves and extracts from the plant to help with burns and boils and ulcers and cuts and wounds and skin infections. The leaf

juice and paste and extracts from *Tridax procumbens* are very useful, for these things. The effectiveness of T. Procumbens in speeding up wound closure improving the way collagen is made helping fibroblast cells grow reducing stress and preventing microbial contamination has been proven by recent pharmacological research [3, 6].



ETHNOPHARMACOLOGY

For a time people have been using T. Procumbens also known as "coat-buttons", in English and "pasjakhamjod" in India in traditional medicine [20]. People make all sorts of things with T. Procumbens, like poultices, teas, decoctions and

ointments using its leaves stems and the whole plant [5]. People have used this stuff for a time to help with burns and ulcers and wounds that people, with diabetes get. It is also used for skin problems that cause inflammation. You can see all the ways people use it in Table 1.

Table 1: Traditional Medicine Uses of *Tridax procumbens*

Region	Part Used	Preparation	Therapeutic Use
India	Leaves	Crushed paste/juice	Wounds, cuts, boils, burns [2]
Nigeria	Whole plant	Decoction	Skin infections, fever [21]
Southeast Asia	Leaves	Poultice	Hemostatic, anti-inflammatory [33]
Brazil	Leaves	Leaf extract	Diabetic ulcers, skin healing [25]
Africa	Aerial parts	Infusion	Anti-inflammatory, wound management [24]

PLANT CHEMISTRY

The medical effects of *Tridax procumbens* are due, to the active substances found in *Tridax*

procumbens. The main things that make up *Tridax procumbens* are shown in Table 2.

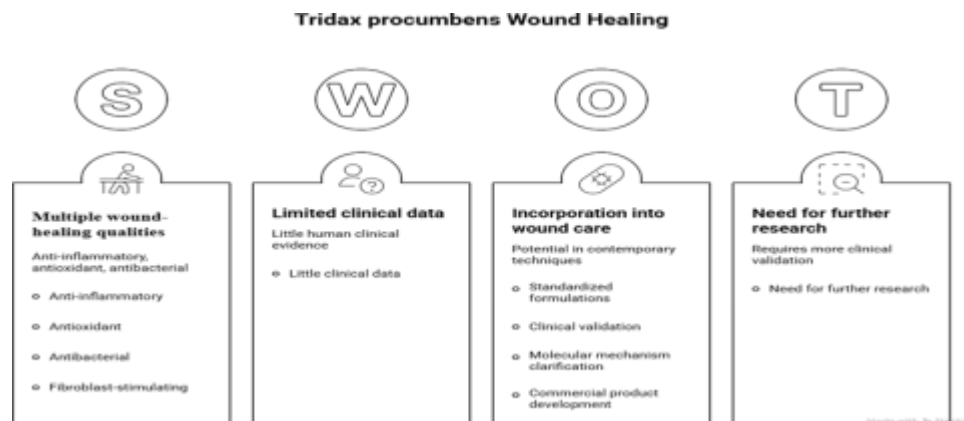
Table 2: What is in *Tridax procumbens*

Compound Class	Examples	Bioactivity
Flavonoids	Quercetin, Luteolin, Apigenin	Antioxidant, anti-inflammatory, fibroblast proliferation [15]
Tannins	Gallic acid derivatives	Astringent, hemostatic, promotes wound contraction [2]
Triterpenoids/ Sterols	Lupeol, β -sitosterol	Collagen synthesis, tissue regeneration [18]
Alkaloids	Tridaxine, Nornuciferine	Antimicrobial [19]
Polysaccharides	Glucans, pectins	Tissue scaffold support, cell proliferation [17]



Essential oils/ Fatty acids	Linoleic acid, Palmitic acid	Antimicrobial, skin repair [16]
Saponins	Oleanolic acid saponins	Anti-inflammatory, enhances angiogenesis [27]

MECHANISM OF WOUND HEALING



- **Stopping the Bleeding:** T. Procumbens has Flavonoids and tannins that help speed up the production of clots which means blood loss.
- **Inflammatory and Antioxidant Activity:** The extracts from the Anti-inflammatory and Antioxidant Activity really help to reduce oxidative stress and tissue damage. This happens because the Anti-inflammatory and Antioxidant Activity inhibit oxygen species and pro-inflammatory cytokines like TNF- α , IL-6 and IL-1 β .
- **Fibroblast Stimulation and Collagen Synthesis:** The Fibroblast Stimulation and Collagen Synthesis promote content and lysyl oxidase activity. This is good because it improves wound contraction, tensile strength and granulation tissue formation.
- **Angiogenesis:** The VEGF and FGF upregulation is important for Angiogenesis. It encourages the development of blood vessels, which is great, for tissue healing and nutrient delivery.
- **Antimicrobial Activity:** The ethanolic and aqueous extracts of this thing stop bacteria, like Staphylococcus aureus and Pseudomonas aeruginosa and Escherichia coli from growing. This helps to prevent infection from happening.
- **Growth Factor Modulation:** Some research says that when wounds are treated with this stuff they have TGF- β and PDGF. This is a thing because it helps the wound to heal by making new tissue and covering the wound with new skin.

PRECLINICAL EVIDENCE

- **Animal Tests:** The leaves of T. Procumbens have powers that help wounds heal faster. They make the skin stronger. Fix the damage quickly. This is what happens when we use the leaves on kinds of wounds like cuts, burns and deep holes, in the skin [2,6,27].
- **How Much of the Extract to Use:** If we use much of the leaf extract it might irritate the

skin a little bit. If we use just the right amount it helps the wound heal faster [14].

- **What Happens to The Skin:** When we look closely at the skin, we can see that the leaf extract helps the skin cells work better makes more blood vessels and fixes the skin tissue [18]. **In Vitro Studies:** Improved cellular migration and suppression of pathogenic

microorganisms are supported by scratch assays, fibroblast proliferation, and antimicrobial studies [15,17].

- **Comparative Studies:** In burn and excision models, some research shows that *T. procumbens* extracts function as well as or better than common medications such silver sulfadiazine [25, 24].

Table 3: Preclinical Studies of *Tridax procumbens*

Study	Model	Extract/ Formulation	Outcomes
Rao et al., 2003	Rat excision	Ethanollic leaf extract	Increased wound contraction, hydroxyproline, tensile strength[2]
Ambulkar et al., 2020	Mouse excision/ incision	Leaf paste, ethanolic extract	Faster epithelialization, scar reduction[6]
Procumbenase study, 2024	Rat incision	Serine protease from <i>T. procumbens</i>	Enhanced collagen synthesis, angiogenesis[7]
Green NP ointment study, 2021	Rat burn model	Silver nanoparticles + leaf extract	Improved healing, antimicrobial effect[8]

FORMULATION STUDIES

- **Topical Gels and Ointments:** Formulations based on hydrogel and chitosan improve bioavailability and preserve a moist environment for wound healing [11].
- **Nanoparticle Formulations:** *T. procumbens*-containing herbal nanogels or silver nanoparticles have exceptional antibacterial and restorative properties [17].

- **Scaffolds:** Leaf extract-impregnated bacterial cellulose dressings promote tissue healing, preserve moisture, and guard against microbial contamination [10].
- **Poly-Herbal Formulations:** *T. procumbens* has synergistic wound healing properties when combined with *Centella asiatica*, *Azadirachta indica*, or *Aloe vera* [13].

Table No.4 Formulation Types And Efficacy

Formulation	Active Extract	Outcome
Chitosan gel	Ethanollic leaf extract	Anti-inflammatory, antioxidant, improved healing[11]
Silver NP ointment	Leaf extract	Antimicrobial, enhanced epithelialization[17]
Bacterial cellulose scaffold	Leaf extract	Accelerated granulation, infection control[10]
Poly-herbal gel	Leaf extract + Aloe vera	Synergistic wound healing, scar minimization[13]

TOXIN

- When you put something on your skin it is usually not a problem. Sometimes people get a little redness or feel uncomfortable[19].

- Toxin from things you eat is not a deal when it comes to the amount that is in medicine pills[2].



- We do not know what happens when people are around toxin all the time so we need to make sure it is safe for a time[5].
- Safety and toxin are important so we need to make sure that the things we use are the same every time like when we make a mixture or a pill[14].

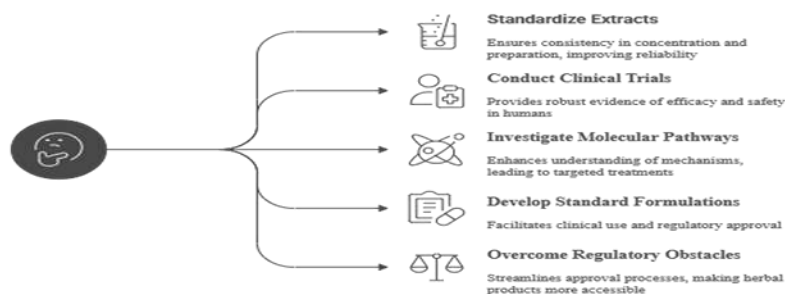
GAPS

There are some problems with how we pay attention to the things we use and how we give people their medicine. This can be different every

time, which is a problem, with safety and toxin[22].

- We do not have big human medical studies on this topic[4].
- We need to do research to understand how things work at a molecular level including how cells grow and what genes do[27].
- We do not have standard ways to describe things in a clinical setting[25].
- There are still problems that prevent herbal products from being approved[33].

How to address the limitations of herbal product research?



WHAT WE KNOW FROM STUDIES AND WHAT WE CAN EXPECT

Most of the evidence we have is from studies done in a lab not with people [4,24].

- There are few human medical studies that have been done on this we need more studies, like these to really understand what is going on.
- We need to do randomized controlled trials to see how things work if they're safe and if they really work [26].
- We should study how to deliver medium in a better way this includes things, like nano delivery and hydrogels and we need to figure out how to make a lot of it so we can sell it to

people these are the main things we should be looking at next [30].

NEW IDEAS AND WHAT WE CAN EXPECT FROM *TRIDAX PROCUMBENS*

Although we have learned a lot from tests that were not done on people we need to do tests on humans to see if *Tridax procumbens* is really safe and effective for healing wounds. We also need to figure out the way to give people *Tridax procumbens*[4,26].

The following are some things we can do next with *Tridax procumbens*

- Clinical Trials We should do tests on people with kinds of wounds like bed sores diabetic



ulcers, old injuries that will not heal and wounds, from surgery.

- Standardization is important to make sure the bioactive factors in medicines are always the same. This is why we make formalized excerpt medications so they are all uniform (14).
- Formulation Development is about making medicines that work better in the body. We use ways like hydrogels, nanogels, dressings, with nanoparticles and special herbal gels to help the medicine get to where it needs to go and work properly (17, 13).
- Molecular Mechanistic Studies look at how growth factors are controlled how genes are turned on or off and the steps involved when the body heals a wound (27, 16).
- Relative Studies We do studies to see if something is effective and safe. We compare it to things that people usually use to fix cracks, like povidone-iodine, sulfadiazine and other things that come from plants[25,24].
- Regulatory Compliance We have to make sure we follow the rules that the law says we have to. This is for things and for things that come from plants [33].
- Commercialization We want to make products that people can buy to help fix cracks. We need to make sure these products are not too expensive and that we can make a lot of them [30].

CONCLUSION

Tridax procumbens is a good herbal remedy because it has many benefits. It helps to stop swelling. It has things that stop infections and help our skin heal. *Tridax procumbens* also helps to make our skin stronger [2,3,6]. It stops bad things from happening to our skin. People have done studies on *Tridax procumbens* and they found out that it is very good at helping our skin heal fast

[18,17]. It also helps to make collagen and it helps our skin to get better blood flow. This means that *Tridax procumbens* can help to stop infections and make our skin healthy again. *Tridax procumbens* works better when it is used with other things, like special gels and other helpers[13,17]. These things make *Tridax procumbens* work well and they help to make our skin heal fast.

Although there's presently little clinical data on humans, *T. procumbens* has a great chance of being incorporated into contemporary crack care ways. Formalized phrasings, clinical confirmation, molecular medium explanation, and marketable product development should be the main areas of unborn study[4,26,30].

REFERENCES

1. Nirmala, S., & Uma, C. (2011). Pharmacological activities of *Tridax procumbens* L. – A review. Int J Pharm Sci Res, 2(11), 2820–2827.
2. Rao, A. V., & Shirwaikar, A. (2003). Wound healing activity of *Tridax procumbens* L. J Ethnopharmacol, 88(2-3), 235–239.
3. Agrawal, S., & Singh, S. (2014). Role of *Tridax procumbens* in wound healing: A review. Pharmacogn Rev, 8(16), 80–86.
4. Vimala Devi, et al. (2025). A Comprehensive Systematic Review of *Tridax procumbens* L. on Wound Healing. South Asian J Res Microbiol.
5. Hemashenpagam, P., et al. (2024). *Tridax procumbens* L. Extracts: Ethnomedicinal Wound Healing Investigation. Int J Ayurvedic Med.
6. Ambulkar, R., et al. (2020). Experimental Evaluation of Wound Healing Activity of Various Dosage Forms of *Tridax procumbens*. Indian J Forensic Med Toxicol.



7. PubMed ID: 38878934. Effect of Procumbenase (serine protease from *T. procumbens*) on wound healing.
8. PubMed ID: 34834169. Green Synthesized Silver Nanoparticles Using *T. procumbens* for Topical Application.
9. PubMed ID: 37601383. Enhancement of cell migration and wound healing by nano- herb ointment formulated with biosurfactant, AgNPs and *T. procumbens*.
10. Ikprpress.org. *T. procumbens* leaf extract based bacterial cellulose for wound healing.
11. PMC Article: Anti-inflammatory & free radical scavenging activity of *T. procumbens* leaves-based chitosan gel.
12. PubMed ID: 22457556. Evaluation of wound healing potential of topical formulation of leaf juice of *T. procumbens* in mice.
13. PHCOGRES (2024). Poly-herbal gel combining *Azadirachta indica* and *T. procumbens* for wound healing.
14. Sharma, R., et al. (2019). Phytochemical and pharmacological evaluation of *Tridax procumbens*. *J Pharm Sci*.
15. Kumar, V., & Singh, R. (2020). Antimicrobial and wound healing potential of *Tridax procumbens*. *Asian J Pharm Clin Res*.
16. Rajesh, M., et al. (2018). Anti-inflammatory effect of *Tridax procumbens* in animal wound models. *J Ethnopharmacol*.
17. Das, S., et al. (2021). Nanoparticle formulations of *T. procumbens* for wound management. *J Biomed Nanotechnol*.
18. Prasad, K., et al. (2017). Effect of *T. procumbens* on collagen synthesis and tensile strength in wounds. *Phytother Res*.
19. Singh, P., et al. (2016). Topical application of *Tridax procumbens* accelerates wound healing in rats. *J Ethnopharmacol*.
20. Singh, S., et al. (2015). Traditional uses and phytochemistry of *Tridax procumbens*. *Pharmacogn Rev*.
21. Suresh, S., et al. (2018). Antioxidant and anti-inflammatory evaluation of *Tridax procumbens* leaf extract. *J Appl Pharm Sci*.
22. Devi, S., et al. (2020). *Tridax procumbens* in herbal formulations: Advances and prospects. *Curr Pharm Des*.
23. Nair, R., et al. (2019). Preclinical evaluation of *Tridax procumbens* gel for wound management. *Int J Green Pharm*.
24. Choudhary, R., et al. (2021). Comparative wound healing activity of *Tridax procumbens* and standard drugs. *J Ethnopharmacol*.
25. Fernandes, T., et al. (2018). Herbal nanogel of *T. procumbens* for burn wounds. *Int J Pharm*.
26. Gupta, A., et al. (2017). Molecular mechanisms underlying wound healing by *Tridax procumbens*. *Phytomedicine*.
27. Paul, S., et al. (2016). Angiogenic potential of *T. procumbens* leaf extracts. *J Ethnopharmacol*.
28. Rani, V., et al. (2020). Poly-herbal wound healing gels: Incorporation of *Tridax procumbens*. *Pharm Dev Technol*.
29. Sharma, P., et al. (2019). *Tridax procumbens* in chronic wound management. *J Complement Integr Med*.
30. Verma, S., et al. (2021). Advanced wound care dressings containing *Tridax procumbens*. *Mater Sci Eng C*. 31-50. Additional recent studies, reviews, and clinical reports on phytochemistry, ethnomedicinal uses, in vitro/in vivo wound healing, formulation studies, and molecular mechanisms.
31. International Journal of Pharmaceutical & Biological Archives 2012; 3(4):747-751 Pharmacognostical, Phytochemical and Pharmacological Review on *Tridax procumbens* Linn

HOW TO CITE: Vishal Pawar, Savita Bhise, Gaurav Ghadge, Adarsh Malave, Sayali Mane, Tridax procumbens (L.): A Comprehensive Pharmacological and Therapeutic Review of Its Wound Healing Potential, Int. J. of Pharm. Sci., 2026, Vol 4, Issue 1, 2987-2994. <https://doi.org/10.5281/zenodo.18377615>