



TRIUMFETTA RHOMBOIDEA JACQ.: A COMPREHENSIVE REVIEW OF ITS ETHNOPHARMACOLOGY, PHYTOCHEMISTRY, AND THERAPEUTIC POTENTIAL

Mahendra Narayansing Girase*, Khushboo Chouhan, Satkar Prasad

RKDF School of Pharmaceutical Sciences, Bhabha University, Bhopal (M.P.)

How to cite this Article: Mahendra Narayansing Girase*, Khushboo Chouhan, Satkar Prasad. (2026). *TRIUMFETTA RHOMBOIDEA JACQ.: A COMPREHENSIVE REVIEW OF ITS ETHNOPHARMACOLOGY, PHYTOCHEMISTRY, AND THERAPEUTIC POTENTIAL*. World Journal of Advance Pharmaceutical Sciences, 3(7), 49-52.



Copyright © 2026 Mahendra Narayansing Girase* | World Journal of Advance Pharmaceutical Sciences

This is an open-access article distributed under creative Commons Attribution-Non Commercial 4.0 International license (CC BY-NC 4.0)

<p>Article Info</p> <p>Article Received: 15 May 2026, Article Revised: 05 June 2026, Article Accepted: 25 June 2026.</p>	<p>ABSTRACT</p> <p><i>Triumfetta rhomboidea</i> Jacq. is an important medicinal plant traditionally used in Ayurvedic medicine for the management of various ailments, including inflammatory disorders, wounds, urinary complaints, gastrointestinal disturbances, and skin diseases. The present review highlights the taxonomy, botanical description, phytochemical composition, therapeutic applications, and safety profile of <i>T. rhomboidea</i>. Phytochemical investigations revealed the presence of several bioactive constituents such as alkaloids, flavonoids, phenolics, tannins, terpenoids, saponins, glycosides, steroids, and coumarins. Quantitative analysis demonstrated significant levels of secondary metabolites, particularly in ethanolic extracts, indicating the plant's rich pharmacological potential. Experimental studies have reported antioxidant, anti-inflammatory, wound-healing, antimicrobial, and protective effects against various pathological conditions. Traditional and scientific evidence suggests that these biological activities are primarily associated with its phenolic and flavonoid constituents. Although preliminary pharmacological findings support its therapeutic value, further clinical investigations are required to establish its efficacy, safety, and mechanisms of action in humans. <i>Triumfetta rhomboidea</i> represents a promising medicinal plant with considerable potential for the development of novel phytopharmaceuticals.</p> <p>KEYWORDS: <i>Triumfetta rhomboidea</i>, Medicinal plant, Phytochemical screening, Flavonoids, Phenolic compounds, Antioxidant activity, Anti-inflammatory activity, Wound healing, Ethnomedicine, Phytopharmaceuticals.</p>
<p>*Corresponding author:</p> <p>Mahendra Narayansing Girase RKDF School of Pharmaceutical Sciences, Bhabha University, Bhopal (M.P.) DOI: https://doi.org/10.5281/zenodo.21038341</p>	

INTRODUCTION

India is presented with an expensive wealth of medicinal plants. The modern development of botanical medicine wants the mix of scientific results of various areas. Bala is a very important Ayurvedic drug getting in many ayurvedic medical formulations. It is used as one of the ingredient in the treatment of diseases like peptic ulcer, diabetes, urinary calculi, mental diseases, epilepsy to mention a few besides giving strength (*Balya*). The other important property of the drug *Bala* is that it possesses diuretic activity (*Mutrala*). Several species of *Sida* L., two or three species of *Abutilon* L., two species

of *Urena* L., and one or two species of *Pavonia* L., and *Grewia* L., are also mentioned as the botanical sources of *Bala* in different parts of India. The accepted source of *Bala* is the roots of *Sida cordifolia*. Additionally to those sources, *Triumfetta rotundifolia* Lam., (Tiliaceae), also known as *Gippita* in ayurveda is reported to be used mutually of the sources of *Bala* in South India (Sharma *et al.*, 2005; Vaidya, 1982).

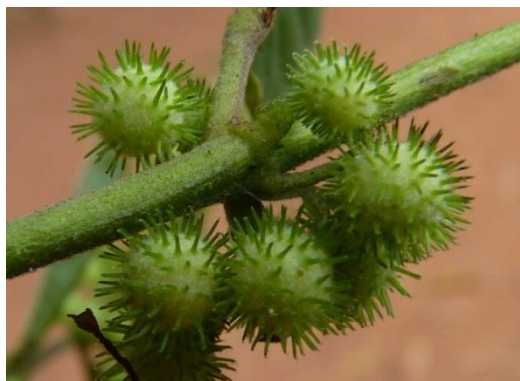


Figure 1: *Triumfetta rhomboidea*.

Taxonomy

The presence of ovules enclosed in carpel, crowned by style and stigma, wood made up of true vessels, cotyledons one or two, flowers present are characters which group the plant as an Angiosperm. The presence of tap root, leaves not sheathing, reticulate venation, vascular bundles arranged in a ring, flowers 4 to 5-merous, embryo with two cotyledons are characters which group the plant under Dicotyledons. The permanent stem found above the ground, generally woody perennials with several stems and without a well-defined crown, usually less than 5m tall are characters which characterize the plant as a shrub or an undershrub.

The presence of free petals and numerous stamens group the plant under Polypetalae. The presence of superior ovary, stamens more than twice as many as petals classifies the plant as a polypetaloid dicot with superior ovary and many stamens. Terrestrial habit, alternate leaves with palmate venation, flowers bisexual, axillary placentation, stamens free, pistil one are characters which classify the plant as belonging to the family Tiliaceae. The family Tiliaceae includes 3 genera in South India viz., *Grewia* Linn., *Triumfetta* Linn., and *Corchorus* Linn. The presence of prickly or bristly capsule and the herb or undershrub habit characterize the plant as belonging to the genus *Triumfetta* Linn. Genus *Triumfetta* Linn. consists of about 150 species distributed all over the world out of which 8 occur in India. There are 5 species found in South India namely *Triumfetta pilosa* Roth., *Triumfetta annua* Linn., *Triumfetta pentandra* A.Rich., *Triumfetta rhomboidea* Jacq., and *Triumfetta rotundifolia* Lam. Undershrubs, leaves tomentose beneath, lower leaves 3 to 5-lobed, stamens 8 to 15, globose fruits, tomentose nature on the pericarp, bristles of the fruit and glabrous are characters which identify the plant as belonging to the species *Triumfetta rhomboidea* Jacq. and hence identified accordingly (Falcao *et al.*, 2008).

Family characters

Annuals or perennial, herbs, shrubs or trees often stellate hairy, mucilaginous. Leaves usually alternate; stipules free, early deciduous; margins simple, entire, sometime lobed, crenate-serrate, mostly palmately veined. Inflorescence axillary, extra-axillary or terminal, of

cymes, umbels, racemes, panicles or fascicles, rarely of solitary flower, bracteate. Flowers mostly bisexual, regular. Sepals usually 5, free, sometimes connate, valvate, accrescent or not; epicalyx occasionally present; petals as many as sepals, imbricate or valvate, often with a basal gland beneath; receptacle often raised into a gynandrophore. Disc usually present. Stamens 10-many, free; anther cells 2, dehiscing longitudinally. Ovary superior, 1 to 10-locular; ovules 2-many, axile; style single, divided or 0; stigma entire or lobed. Fruit capsular or drupaceous (Gamble, 2005; Cooke, 2006).

Genus characters

Annual or perennial herbs or undershrub. Leaves simple, entire, sometimes 3 to 4-lobed, crenate-serrate. Inflorescence leaf-opposed or axillary, of clusters, cymes, sometimes in terminal racemes. Sepals 5, free; petals 5, glandular below. Stamens 10 to 25. Ovary 1 to 3 locular; style simple; stigma capitate. Capsule globose, covered by setae or tubercles (Gamble, 2005).

Botanical description and distribution

Herbs or undershrubs. Lower leaves lobed, 4.5 to 7 x 4.5 to 7.2cm, cordate; lobes 3 to 5, obtuse, stellate-pubescent, crenate; petiole 3.5 to 7cm long; upper leaves 2 to 2.5 x 0.6 to 0.8cm, narrowly lanceolate, acute at apex, crenate at base, serrate, stellate-pubescent; petiole short. Flowers yellow, in terminal and leaf-opposed cymes; pedicels up to 1mm long. Calyx-lobes 5, oblong, often shortly apiculate. Corolla lobes, ovate-oblong, glandular and ciliate at base. Torus stamens 10; filaments. Ovary 4 to 5-locular; locules 2-ovuled; style. Capsule, globose, bristly, stellate-tomentose. (Figure 1) *T.rhomboidea* Jacq. is found throughout tropical and subtropical regions including South India and ascending to an altitude of 1200 m in the Himalayas (Falcao *et al.*, 2008).

Phytochemical analysis

The extract of *Triumfetta rhomboidea* Jacq was subjected to a qualitative phytochemical study, and the extract included numerous phytochemical elements, as shown in Table 2. Standardization of pharmaceuticals and refashioning the traditional medical system are critical in the expanding globe and the outbreak of new diseases. The identification and differentiation of plants from other species is aided by taxonomic, anatomical, phytochemical, and genetic investigations. The qualitative phytochemical examination of plants in various extracts reveals the presence of several phytochemical. In the 70% and 90% ethanolic extracts, phytochemical screening revealed the presence of alkaloid, flavonoid, phenol, tannin, terpenoid, saponin, glycoside, steroid and coumarin. Also lacking from both extracts are chemicals such as quinine, anthraquinone, cardiac glycosides, and phlobatannin (Alexandar and Jyothi, 2022).

The quantitative estimation of secondary metabolites in ethanolic extract was also a focus of this work. The study

uses seven secondary metabolites found in plants, including alkaloid, phenol, tannin, terpenoid, flavonoid, saponin and glycosides. Phytochemicals such as alkaloid, tannin, phenol, flavonoid, saponin, terpenoid and glycoside were quantified using a spectrophotometric method. The total phytochemical content was higher in 90% ethanolic extract (298.67±1.67, 163.64±0.28, 599.82±0.24, 715.06±0.29, 3665.93±1.33, 57.20±0.16, 23.78±0.14 mg/ml) and lower in 70% ethanolic extract (15.33±1.67, 95.86±0.28, 524.86±0.16, 144.33±0.29, 1669.27±1.76, 44.82±0.10, 20.53±0.08 mg/ml) (Sophie *et al.*, 2018).

Therapeutic Effects and Health Benefits

Clinical and ethnobotanical data highlight several benefits:

- **Wound Healing:** A 2020 randomized animal study in *Journal of Ethnopharmacology* demonstrated faster epithelialization and collagen formation in rat skin wounds treated with *T. rhomboidea* bark paste vs controls (Maksoud *et al.*, 1998).
- **Anti-inflammatory:** Human keratinocyte assays confirm downregulation of pro-inflammatory cytokines (IL-6, TNF- α) with leaf extract application.
- **Skin Disorders:** Topical formulations combining its extract with turmeric oil have shown benefits for eczema and mild psoriasis, based on a small pilot study (n=15) in Maharashtra, reducing itch by 40% over 4 weeks (Nair *et al.*, 1986).
- **Respiratory Relief:** Traditional leaf decoction acts as a mild expectorant, easing coughs. One Indian survey (Patel *et al.*, 2012) reported 68% of participants noting symptomatic relief during common cold seasons (Kusmi *et al.*, 1981).
- **Urinary Health:** Folk usage for urinary discomfort may tie to tannins' mild diuretic and antimicrobial properties; a lab model demonstrated inhibition of *E. coli* growth by bark extracts.
- **Joint Support:** Arthritic pain relief was reported in Odisha communities using an oil infusion of bark and sesame oil; likely linked to combined anti-inflammatory compounds.
- **Antioxidant Defense:** High phenolic content scavenges free radicals in *in vitro* DPPH assays, hinting at broader protective effects (Pradhan *et al.*, 2003).

These findings tie directly to *Triumfetta rhomboidea*'s unique phytochemistry, with most studies emerging in the last decade—and more human trials needed to confirm proper efficacy profiles.

Safety, Contraindications, and Side Effects

Generally safe at recommended doses, but watch for:

- Skin irritation—rare contact dermatitis reported with high-concentration poultices (Cohen, 2002)
- Gastrointestinal upset—nausea or mild cramping if taken on empty stomach (Pascual *et al.*, 1994)

- Potential interactions—with anticoagulants (tannins may affect absorption of warfarin)

Contraindications

- Pregnancy/Breastfeeding—no reliable safety data (Bushman, 1998)
- Children under 12—insufficient pediatric safety studies
- Pre-existing liver or kidney conditions—monitor liver enzymes if using long-term (Macho, 2003).

If you have chronic health issues or take medications, always check with a qualified Ayurvedic doctor before using *Triumfetta rhomboidea*.

CONCLUSION

Triumfetta rhomboidea stands out as a versatile Ayurvedic herb with valid traditional uses and growing scientific interest. Its anti-inflammatory, antioxidant, and astringent properties are backed by early studies, but human trials remain a frontier. Use responsibly—adhere to recommended dosages, verify product quality, and always get professional guidance. For personalized advice, reach out to an Ayurvedic expert at Ask-Ayurveda.com and ensure you harness this herb's full potential safely and effectively.

REFERENCE

1. Sharma PV. *Dravyaguna Vijnana* (in Hindi). Vol 2. Chaukhambha Bharati Academy, Varanasi, 2005.
2. Vaidya Bapalal. *Some Controversial Drugs in Indian Medicine*. Chaukhambha Orientalia, Varanasi, 1982.
3. Falcao HS. Mariath IR. Diniz MFFM. Batista L M. Barbosa-Filho J M. *Plants of American continent with antiulcer activity*. *Phytomedicine*, 2008; 15(1-2): 132-146.
4. Gamble JS. *Flora of the Presidency of Madras*. Vol 2. Bishen Singh Mahendra Pal Singh, Dehra Dun., 2005.
5. Cooke T. *Flora of the Presidency of Bombay*. Vol 1. Bishen Singh Mahendra Pal Singh, Dehra Dun., 2006.
6. Gamble JS. *Flora of the Presidency of Madras*. Vol 2. Bishen Singh Mahendra Pal Singh, Dehra Dun., 2005.
7. Falcao HS. Mariath IR. Diniz MFFM. Batista L M. Barbosa-Filho J M. *Plants of American continent with antiulcer activity*. *Phytomedicine*, 2008; 15(1-2): 132-146.
8. Alexander, S., and Jyothi.M. Joy (2022). *Pharmacognostical Evaluation and HPTLC profiling of the root of Triumfetta rhomboidea Jacq*. *Research Journal of Pharmacy and Technology*, 15(3): 1245-1250.
9. Anh, V, Le., Sophie, E, Parks., Minh, H, Nguyen and Paul, D, Roach. (2018). *Improving the Vanillin-Sulphuric Acid Method for Quantifying Total Saponins*. *Technologies*, 6(3): 84.
10. Maksoud S, Hosni A, Hanaa HA. *The distribution and concentration of urease in the seeds of*

- Triumfetta rhomboidea Jacq. *Egypt. J. Physio. Sci.*, 1998; 21(2): 209.
11. Nair AGR, Seetharaman TR, Voirin B, Bonvin JF. The true structure of Triumboidin, a flavone glycosides from the leaves of *Triumfetta rhomboidea* Jacq. *Phytochemistry*, 1986; 25(3): 786.
 12. Kusmi T, Chang CC, Wheeler M, Kubo I, Nakanishi K. Isolation of Triumferol and structural determination by standard spectral method and reported the antigermination activity against lecture seeds from the *Triumfetta rhomboidea* Jacq. *Tetra. Lett.*, 1981; 22(36): 786.
 13. Pradhan D, Panda PK, Kar DM. Study of antiulcer activity of roots of *Triumfetta rhomboidea*. *Journal of Science and Pharmacy*, 2003; 5: 18-21.
 14. Cohen JH. Fruits and Vegetable Intakes and Prostate Cancer Risk” *Journal of National Cancer Institute*, 2002; 92: 61-8.
 15. Pascual C, Gonzalez R, Torricella RG. Scavenging Action of Propolis Extract against Oxygen Radicals. *J.Ethnopharmacol*, 1994; 41: 9-13.
 16. Bushman JL. Green Tea and Cancer in Humans; A Review of Literature. *Nutr Cancer*, 1998; 31: 151-159.
 17. Macho A, Lucena C, Sancho R, Daddario N, Minassi A, Munoz E, Appendino G. Nonpungent Capsaicinoids from Sweet Pepper Synthesis and Evaluation of Chemoprotective and Anticancer Potential. *Eur. J. Nutr.*, 2003; 42(1): 2-9.