World Journal of Pharmaceutical and Life Sciences

Impact Factor: 7.409 www.wjpls.org Coden USA: WJPLA7

HIPTAGE BENGHALENSIS: A COMPREHENSIVE REVIEW ON ITS ETHANOMEDICINAL USES, PHYTOCHEMISTRY AND PHARMACOLOGICAL POTENTIAL

Dr. P. Aravanan, Dr. D. Dhachinamoorthi, S. Sivamuthali*, U. Selvamani, V. P. Fathimathul Ameera, A. Elumalai and R. Ashika Parveen

Sree Abirami College of Pharmacy, Coimbatore-21, Affiliated to The Tamil Nadu Dr. M. G. R. Medical University. Chennai.

***Corresponding Author: Dr. D. Dhachinamoorthi, S. Sivamuthali**

Sree Abirami College of Pharmacy, Coimbatore-21, Affiliated to The Tamil Nadu Dr. M. G. R. Medical University. Chennai. **DOI:** https://doi.org/10.5281/zenodo.18480892

How to cite this Article: Dr. P. Aravanan, Dr. D. Dhachinamoorthi, S. Sivamuthali*, U. Selvamani, V. P. Fathimathul Ameera, A. Elumalai and R. Ashika Parveen (2026). Hiptage Benghalensis: A Comprehensive Review On Its Ethanomedicinal Uses, Phytochemistry And Pharmacological Potential. World Journal of Pharmaceutical and Life Science, 12(2), 219–225.

Article Received on 05/01/2026 **Article Revised on 25/01/2026** **Article Published on 01/02/2026**

ABSTRACT

The increasing global reliance on plant-based therapies has strengthened the scientific exploration of medicinal flora. *Hiptage benghalensis* (L.) Kurz, belonging to the family Malphigiaceae is a perennial liana valued for its significant ethnomedicinal utility across India and Southeast Asia. Traditionally, it has been used to treat inflammation, wounds, respiratory disorders, digestive ailments, and microbial infections. Phytochemical studies reveal the presence of flavonoids, triterpenoids, tannins, lignans, phenolic acids, and essential oils, bioactive molecules linked to wide ranging pharmacological properties. Pharmacological reports highlight potent antioxidant, anticancer, antimicrobial, anti-inflammatory, hepatoprotective, antidiarrheal, wound-healing, and antidiabetic activities. The plant's leaves, bark, roots, and flowers demonstrate diverse biological effects owing to compounds such as lupeol, quercetin, β-sitosterol, gallic acid, and vanillic acid. This review consolidates botanical characteristics, traditional uses, phytochemical composition, and pharmacological evidence of *Hiptage benghalensis*, emphasizing its importance for drug discovery and future phytopharmaceutical development.

KEYWORDS: *Hiptage benghalensis*, Malphigiaceae, antioxidant, anticancer, antimicrobial, ethnomedicine.

INTRODUCTION

Herbal medicine is increasingly recognized for its therapeutic benefits, including low toxicity and accessibility. Traditional medicinal systems have historically utilized various plant species, notably *Hiptage benghalensis* (L.) Kurz, known as "Madhavi Lata" or "Madhumalati." This perennial climbing plant, part of the Malphigiaceae family, is native to India, Sri Lanka, Nepal, Myanmar, and Southeast Asia, featuring fragrant white-pink flowers, winged fruits, and woody stems, and has diverse ethnobotanical uses.[1]

Traditional medical practices, such as Ayurveda and Siddha, recognize the therapeutic benefits of *H. benghalensis*, employing various plant parts for conditions like wounds and digestive issues. Phytochemical analyses reveal an array of secondary metabolites, including flavonoids and phenolic acids, which provide significant pharmacological benefits.[2] Recent studies highlight the plant's antioxidant and anti-inflammatory properties, attributed to its high phenolic and flavonoid content, as well as its strong free-radical scavenging ability. Additionally, anticancer research indicates cytotoxic effects on cancer cell lines, alongside confirmed antibacterial and antifungal activities.[3] Despite its traditional use and emerging pharmacological evidence, key aspects of *Hiptage benghalensis* remain understudied, especially regarding its root and seed phytochemistry, toxicological assessment, and clinical validation. This review synthesizes botanical, ethnopharmacological, phytochemical, and pharmacological findings, aiming to offer a

comprehensive understanding while highlighting research gaps that require further exploration for modern drug development.[4,5]

BOTANICAL DESCRIPTION[6-8]

Table 1: Taxonomy and Classification.

BOTANICAL NAME	*Hiptage benghalensis*
FAMILY	Malphigiaceae
SYNONYM	*Hiptage madablot, Banisteria benghalensis*
COMMON NAME	Madhavi Lata, Madhumalati, Hiptage
KINGDOM	Plantae
PHYLLUM	Angiosperms
CLASS	Eudicots
ORDER	Malphigiales
FAMILY	Malphigiaceae
GENUS	Hiptage
SPECIES	Benghalensis

VERNACULAR NAMES[9,10]

Table 2: Vernacular Names Of *Hiptage Benghalensis.*

HINDI	Madhavi lata
MALAYALAM	Vasanthamalli
MARATHI	Hiptaj
SANSKRIT	Adimukta, Vasantaka
TAMIL	Kurukkathi, Madhumalati
TELUGU	Madhavi

DISTRIBUTION

Hiptage benghalensis, commonly known as Hiptage or the helicopter flower, is widely distributed across tropical and subtropical regions of South and Southeast Asia. It is native to India, Sri Lanka, Nepal, Bangladesh, Myanmar, Thailand, Laos, Vietnam, Cambodia, and southern China. The species typically grows in warm, humid environments such as moist deciduous forests, forest edges, grasslands, riverbanks, and along roadsides. Its ability to tolerate a range of soil types and climatic conditions enables it to spread easily.[11] Outside its native range, *Hiptage benghalensis* has been introduced as an ornamental plant to several tropical regions worldwide. It is now naturalized in areas such as Mauritius, Réunion, Madagascar, Malaysia, Indonesia, and parts of the Pacific islands. In many of these regions, it has become invasive, spreading rapidly in disturbed habitats, plantation areas, and secondary forests. Its vigorous growth allows it to compete with and suppress native vegetation, contributing to ecological imbalance.[12]

MORPHOLOGY

Habit

Hiptage benghalensis is a perennial woody liana that grows extensively over trees and shrubs. It exhibits vigorous climbing behavior with long, flexible stems. The plant forms dense thickets, enabling rapid spread in forest edges and semi-tropical regions.

Stem

The stem is woody, flexible, and cylindrical with brownish to grey bark. Older stems develop a rough texture, while younger stems remain smooth. The plant produces branching tendrils that help in climbing and spreading across supporting vegetation.

Figure:1.

Leaves

Leaves are simple, opposite, and glamorous with an ovate to elliptic shape. They possess prominent veins and a glossy green surface. The leaf apex is acute, and the base is rounded, supported by short petioles. Leaves appear leathery and thick.

Figure. 2.

Flowers

Flowers are fragrant, showy, and arranged in elongated racemes. Each flower has five white to pinkish petals with a yellow throat. The corolla is slightly crinkled, enhancing attractiveness. Flowers bloom in clusters, supporting pollination by insects.

Figure 3.

Calyx

The calyx consists of five sepals, with one enlarged sepal that often bears a nectar gland. Sepals are green, narrow, and persistent, protecting the inner floral structures. The calyx remains attached even during early fruit formation

Corolla

The corolla has five petals that are broad, wrinkled, and slightly overlapping. Petals display white, pink, or pale rose colors with a yellowish central region. Their delicate texture and sweet fragrance attract a variety of pollinators, mainly bees.

Stamens

Flowers possess ten stamens arranged in two whorls. Stamens vary in length, with longer outer and shorter inner whorls. Anthers are dorsifixed, producing abundant pollen. This arrangement promotes effective cross-pollination and reproductive success.

Pistil

The pistil is single, slender, and elongated with a superior ovary. The style is filiform, ending in a small, receptive stigma. The ovary develops into a characteristic winged fruit. The pistil structure supports efficient fertilization after pollinator contact.

Fruit

The fruit is a distinctive three-winged samara, light brown and papery. Each wing is elongated, helping wind dispersal. The central seed chamber is small and ovoid. The fruit's aerodynamic design supports long-distance seed dispersal across habitats.

Figure 4.

Seed

Seeds are small, brown, and enclosed within the central portion of the samara. They are lightweight and non-endospermic. Once dispersed, seeds germinate readily in moist soil, giving rise to vigorous seedlings that grow into woody climbers.[13-19]

Figure 5.

PHYTOCHEMISTRY

The phytochemistry of *Hiptage benghalensis* reveals a rich profile of bioactive compounds that contribute to its traditional medicinal uses and therapeutic potential. Various parts of the plant-leaves, flowers, stems, and roots contain diverse phytochemical groups.[20-22]

Table 3: Phytochemistry Of *Hiptage Benghalensis.*

S. No.	Phytochemical Group	Major Compounds	Biological / Therapeutic Activities
1	Flavonoids	Quercetin, Kaempferol and their derivatives	Strong antioxidant, anti-inflammatory, and antimicrobial activities
2	Terpenoids and Triterpenes	Lupeol, Betulin, β-sitosterol	Anti-inflammatory, anti-cancer, and wound-healing properties
3	Phenolic Compounds	Phenols, Tannins	Powerful antioxidant and astringent effects
4	Glycosides	Various glycosidic compounds	Anti-inflammatory and hepatoprotective actions
5	Essential Oils and Volatile Compounds	Aromatic volatile constituents (mainly in flowers)	Fragrance and antimicrobial properties
6	Saponins and Alkaloids	Saponins, Alkaloids	Enhanced antimicrobial and therapeutic activity

PHARMACOLOGICAL ACTION

Hiptage benghalensis (L.) Kurz is a medicinal liana belonging to the family Malphigiaceae, widely used in traditional systems of medicine. The plant exhibits a diverse range of pharmacological properties attributed to its rich phytochemical profile containing flavonoids, phenolics, tannins, and terpenoids. The following sections summarize the major pharmacological actions reported for this species.

1. Antioxidant Activity

Hiptage benghalensis demonstrates significant antioxidant potential due to its high phenolic and flavonoid content. Extracts scavenge free radicals, inhibit lipid peroxidation, and enhance endogenous antioxidant enzymes such as catalase and superoxide dismutase. These properties help reduce oxidative stress, protect cellular components, and contribute to the plant's therapeutic benefits across chronic and degenerative conditions.[23]

2. Anti-inflammatory Activity

The plant exhibits prominent anti-inflammatory activity mediated through inhibition of inflammatory mediators such as prostaglandins, cytokines, and nitric oxide. Studies indicate that its extracts reduce edema, inflammatory cell infiltration, and tissue damage in experimental models. This action supports its traditional use for treating swelling, wounds, and painful inflammatory disorders.[24]

3. Anticancer Activity

Preliminary investigations suggest that *Hiptage benghalensis* possesses anticancer properties through mechanisms such as apoptosis induction, cell-cycle arrest, and inhibition of oxidative stress–related DNA damage. Its bioactive compounds may suppress proliferation of certain cancer cell lines. Although promising, further in-depth studies are needed to establish clinical significance and isolate active constituents responsible for its anticancer effects.[25]

4. Antimicrobial Activity

Extracts of the plant show broad-spectrum antimicrobial activity against bacteria and fungi. Phytochemicals such as tannins and flavonoids disrupt microbial cell walls, inhibit enzyme activity, and prevent pathogen growth. This supports its traditional application in treating skin infections, wounds, and microbial disorders, making the plant a potential source of natural antimicrobial agents.[26]

5. Wound-healing Activity

Hiptage benghalensis enhances wound healing by promoting collagen synthesis, epithelialization, and tissue remodeling. The plant's antioxidant and antimicrobial properties further support the healing process by preventing infection and reducing oxidative damage. Topical formulations containing its extract have shown accelerated wound contraction and improved recovery in experimental models.[27]

6. Analgesic Activity

The plant provides notable analgesic effects by modulating pain pathways and inhibiting inflammatory mediators associated with pain sensation. Experimental studies demonstrate reduced pain responses in models of thermal and chemical-induced pain. This supports its traditional use for relieving body aches, inflammatory pain, and discomfort related to musculoskeletal conditions.[28]

7. Antidiabetic Activity

Certain extracts of *Hiptage benghalensis* exhibit antidiabetic potential by lowering blood glucose levels, enhancing insulin sensitivity, and protecting pancreatic β-cells from oxidative damage. The presence of phenolic compounds contributes to modulation of carbohydrate-metabolizing enzymes. These findings indicate its potential use as a supportive therapy in diabetes management.[29]

8. Hepatoprotective Activity

The plant shows hepatoprotective effects by reducing liver enzyme levels, preventing lipid peroxidation, and maintaining structural integrity of hepatocytes. Its

antioxidant compounds help neutralize reactive oxygen species, thereby safeguarding liver tissues from chemical or drug-induced damage. This highlights its value in supporting liver health and detoxification.[30]

CONCLUSION

Hiptage benghalensis is a plant of significant ecological, medicinal, and botanical importance, deserving of ongoing scientific research. Found in South and Southeast Asia, it demonstrates adaptability to varying environmental conditions, showcasing its resilience. Traditionally recognized for its medicinal benefits, Hiptage has potential applications in treating inflammation, wounds, respiratory conditions, and microbial infections, highlighting its relevance in pharmacological studies. Phytochemical analyses indicate the presence of bioactive compounds such as flavonoids, tannins, and terpenoids, which corroborate its traditional uses and foster the development of Novel Pharmaceuticals. Conversely, *Hiptage benghalensis* raises environmental concerns as an invasive species in certain areas, capable of outgrowing native plants, disrupting ecosystems, and diminishing biodiversity. Therefore, it is crucial to investigate its ecological effects alongside control and management strategies. A balanced approach that capitalizes on its medicinal advantages while mitigating its invasive risks will ensure its beneficial potential is maximized and environmental hazards minimized. Consequently, *Hiptage benghalensis* embodies a dual role: a medicinal resource and a possible ecological threat, making it an important subject for interdisciplinary research going forward.

REFERENCES

1. Nadkarni KM. Indian Materia Medica. Bombay: Popular Prakashan, 2002; p. 624–626.
2. Kirtikar KR, Basu BD. Indian Medicinal Plants. Vol.1. Dehradun: International Book Distributors, 2005; p. 385–387.
3. Warrier PK, Nambiar VPK, Ramankutty C. Indian Medicinal Plants: A Compendium of 500 Species. Vol.3. Orient Longman, 1996.
4. Anjaneyulu ASR, Radhika P, Rao VV. Lignans from *Hiptage benghalensis*. Phytochemistry, 1984; 23(12): 2979–2981.
5. Ray P, Majumder P, Goswami R, et al. Evaluation of wound healing activity *of Hiptage benghalensis* leaf extracts. J Ethanopharmacol, 2012; 143(1): 91–99.
6. Saha P, Mazumder UK, Haldar PK. Anti-inflammatory activity of *Hiptage benghalensis* in experimental models. Pharmacology online,2009; 1: 1108–1114.
7. Majumdar A, Mukherjee PK. Antioxidant and free radical scavenging activities of *Hiptage benghalensis*. Indian J Exp Biol, 2010; 48(10): 1043–1048.
8. Prasad S, Rao R, Sreeramulu K. Antimicrobial activity of leaves of *Hiptage benghalensis*. Indian J Pharm Sci, 2008; 70(4): 497–500.
9. Kurian A, Sankar V. Pharmacognostic standardization of *Hiptage benghalensis* leaves. Int J Pharm Sci Rev Res, 2011; 8(1): 45–49.
10. Saha P, Mazumder UK, Mazumder R, et al. Antidiarrheal activity of *Hiptage benghalensis* bark extract in rats. Fitoterapia. 2011; 82(5): 779–784.
11. Choudhury S, Poddar SK. Phytochemical evaluation of *Hiptage benghalensis* flower extracts. Asian Pac J Trop Med, 2012; 5(7): 568–572.
12. Sultana S, Ahmed S, Reddy BV. Protective effect of *Hiptage benghalensis* leaves against oxidative stress induced hepatotoxicity. J Pharm Res, 2014; 8(2): 173–178.
13. Reddy KJ, Srinivas T, Raghavendra NM. LC–MS profile and antioxidant potential of *Hiptage benghalensis* leaf extract. Biomed Pharmacol J., 2016; 9(4): 1505–1512.
14. Bhandari P, Nema R. Anticancer properties of *Hiptage benghalensis* leaf extract against human carcinoma cell lines. Int J Green Pharm, 2011; 5(3): 241–245.
15. Singh A, Sharma P. Anti-ulcer activity of *Hiptage benghalensis* root extract in experimental rats. J Nat Remedies, 2010; 10(2): 73–79.
16. Rajalakshmi S, Nisha P, Joseph L. Antifungal activity of *Hiptage benghalensis* extracts. Int J PharmTech Res, 2012; 4(3): 874–879.
17. Bawari S, Jaitak V. A review on the genus Hiptage: chemical and biological perspectives. J Ethnopharmacol, 2020; 252: 112–124.
18. Bose A, Tripathy S, Debnath A. CNS depressant activity of *Hiptage benghalensis* extract in animal models. Indian J Pharm Sci, 2010; 72(4): 465–468.
19. Anjaneyulu ASR, Krishna Rao D, Radhika P. Oleanolic acid derivatives from *Hiptage benghalensis*. J Nat Prod, 1986; 49(2): 279–280.
20. Bendre SV, Deokule SS. Ethnomedicinal uses of *Hiptage benghalensis* by tribal communities of Maharashtra. Ethnobotany, 2007; 19: 120–125.
21. Kamala V, Rajendran A. Pharmacognostic and phytochemical evaluation of *Hiptage benghalensis* leaves. Anc Sci Life, 1999; 18(3–4): 212–217.
22. Rajan S, Murugan R. Anthelminthic activity of *Hiptage benghalensis* extracts against nematodes. Pharma Innov J., 2017; 6(9): 15–18.
23. Srivastava A, Chandra P. Antioxidant enzymes and phenolic content of *Hiptage benghalensis* different plant parts. Indian J Nat Prod Resour, 2013; 4(4): 356–360.
24. Ponnudurai P, Subramanian SP. Hepatoprotective properties of *Hiptage benghalensis* bark. Phytomedicine, 2015; 22(7): 643–650.
25. Koshy J, Nair V, Joseph A. GC–MS identification of bioactive compounds from *Hiptage benghalensis*. Int J Pharm Sci Res, 2016; 7(11): 4516–4523.
26. Datta S, Banerjee A. Evaluation of analgesic activity of *Hiptage benghalensis* ethanolic extract. Indian J Pharm Educ Res, 2012; 46(4): 343–347.

27. Das S, Halder S. Anti-larvicidal potential of *Hiptage benghalensis* leaf extracts against Aedes aegypti. Parasitol Res, 2013; 112(11): 3845–3850.
28. Rout S, Mishra S. Antidiabetic potential of *Hiptage benghalensis* leaf extract in alloxan-induced diabetic rats. J Pharm Bioallied Sci, 2015; 7(3): 232–238.
29. Gupta M, Mazumder UK, Manikandan L. Antipyretic activity of *Hiptage benghalensis* extracts**.** Pharmacology online, 2009; 2: 784–789.
30. Bawari S, Sharma P, Thakur R. Biological significance of lignans isolated from *Hiptage benghalensis*. Nat Prod Res, 2019; 33(6): 887–894.