



Barringtonia acutangula Linn.: An Integrative Review of Traditional Medicine, Active Phytochemicals, and Future Drug Development

Vandana Narvariya*, Jai Singh Vaghela

Department of Pharmacy, B.N. University, Udaipur, Rajasthan, India. (313002).

ARTICLE INFO

Article History

Received: December 2025

Accepted: January 2026

Keywords: Barringtonia acutangula, pharmacological uses, herbal formulation.

Corresponding Author

***Vandana Narvariya**

ABSTRACT

Barringtonia acutangula Linn. is a valuable medicinal plant widely used in traditional medicine for the treatment of diabetes, inflammation, infections, liver disorders, and gastrointestinal diseases. Various parts of the plant contain important bioactive compounds such as flavonoids, tannins, saponins, triterpenoids, and phenolic compounds, which contribute to its diverse pharmacological activities.

Scientific studies have reported significant antidiabetic, antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, and nephroprotective properties of *B. acutangula*. Due to these therapeutic benefits, the plant is gaining importance in pharmaceutical and phytopharmaceutical research for the development of herbal formulations and novel therapeutic agents.

This review summarizes the traditional uses, phytochemical constituents, pharmacological activities, and emerging pharmaceutical applications of *Barringtonia acutangula*, highlighting its future potential in modern medicine and drug development.

ORIGINAL RESEARCH ARTICLE

©2025, www.jusres.com

1. INTRODUCTION

Barringtonia acutangula *Barringtonia acutangula* Linn., commonly known as freshwater mangrove or Indian oak, is a medicinally important evergreen tree belonging to the family Lecythidaceae. The plant is widely distributed in India, Bangladesh, Sri Lanka, and Southeast Asian countries, especially in marshy and riverine habitats (Kirtikar and Basu, 2005; Nadkarni, 2009). Since ancient times, it has been extensively used in Ayurveda, Siddha, and folk medicine for the treatment of various diseases and disorders (Kaur et al., 2013).

Traditionally, different parts of the plant such as roots, bark, leaves, fruits, and seeds have been used in the management of diabetes, diarrhea, dysentery, inflammation, skin disorders, respiratory diseases, liver ailments, and microbial infections (Mohanty et al., 2016). The therapeutic

significance of *B. acutangula* is mainly attributed to the presence of important phytoconstituents including flavonoids, tannins, triterpenoids, saponins, alkaloids, glycosides, and phenolic compounds (Vaidya and Shingadia, 2017). These bioactive compounds exhibit diverse pharmacological activities such as antioxidant, antidiabetic, anti-inflammatory, antimicrobial, hepatoprotective, nephroprotective, analgesic, and wound-healing effects (Ahmed et al., 2011; Asaduzzaman et al., 2015).

Recent scientific investigations have validated many of the traditional medicinal claims associated with *B. acutangula*. Several experimental studies have demonstrated significant antihyperglycemic and antioxidant effects in streptozotocin-induced diabetic animal models, suggesting its potential role in the management of diabetic complications including

nephropathy and retinopathy (Patil et al., 2010). In addition, phytochemical and molecular studies have identified triterpene saponins and flavonoid glycosides with potential therapeutic applications in metabolic disorders, inflammation, and oxidative stress-related diseases (Patil and Khatib, 2020; Vien et al., 2017).

In recent years, the pharmaceutical industry has shown increasing interest in medicinal plants as sources of phytopharmaceuticals, nutraceuticals, and novel drug candidates. Advances in phytochemistry, molecular pharmacology, metabolomics, and nanotechnology have further enhanced the scientific importance of *Barringtonia acutangula* in modern therapeutic research (Frontiers Review, 2025). Therefore, this review summarizes the traditional medicinal uses, phytochemical constituents, pharmacological activities, and pharmaceutical applications of *Barringtonia acutangula*, with emphasis on its potential in diabetes and metabolic-related conditions.

2. MORPHOLOGY OF BARRINGTONIA ACUTANGULA

Barringtonia acutangula is a medium-sized evergreen tree commonly attaining a height of about 8–15 meters. The plant develops a broad and dense canopy with spreading branches, giving it a luxuriant appearance.

Leaves

The leaves are simple, leathery, and arranged alternately on the branches. They are generally obovate to oblong in shape, measuring nearly 7–14.5 cm in length and 4–10 cm in width. The upper surface appears glossy dark green, whereas the lower surface is comparatively lighter. Leaf margins are finely toothed or crenate-serrate, and the reddish petioles are usually about 0.5–1.5 cm long (Kaur et al., 2013).

Flowers

The flowers are attractive, aromatic, and mostly bloom during nighttime. They occur in long pendulous racemes that may extend up to 50 cm in length. The blossoms are commonly scarlet red or white in color and possess a four-lobed ovate calyx. Numerous elongated stamens project outward, making the flowers highly conspicuous (Vaidya and Shingadia, 2017).

Fruits

The fruits are ellipsoid to ovoid and slightly four-angled in structure. They generally measure about 2–6 cm long and 1–3 cm broad. The outer covering is corky and spongy, an adaptation that facilitates dispersal through water. A small persistent calyx remains attached at the apex of the fruit. Each fruit encloses a single seed (Nadkarni, 2009).

Seeds

Seeds are solitary, ovoid in shape, and enclosed within the one-seeded fruit. They are approximately 2.5–3 cm long and nearly 1 cm in diameter, with a dark coloration upon maturity (Kirtikar and Basu, 2005).

Roots

The roots of *Barringtonia acutangula* are traditionally used for treating fever, diabetes, stomach disorders, liver diseases, and urinary problems. Root extracts are also employed as a health tonic in indigenous medicine. Pharmacological studies have reported anti-inflammatory, antioxidant, antimicrobial, antidiabetic, and hepatoprotective activities, mainly due to the presence of saponins, flavonoids, tannins, and triterpenoids (Ahmed et al., 2011; Vaidya and Shingadia, 2017).

3. TRADITIONAL MEDICINAL USES OF BARRINGTONIA ACUTANGULA

Different parts of *Barringtonia acutangula* have been widely utilized in traditional medicine for the treatment of numerous ailments. The plant is regarded as an important ethnomedicinal species because of its broad therapeutic applications in Ayurveda, folk medicine, and indigenous healthcare systems (Kirtikar and Basu, 2005).

The bark is traditionally employed for the treatment of diarrhea, dysentery, malaria, and various skin disorders because of its astringent and antimicrobial properties (Nadkarni, 2009). Leaf preparations are commonly used in wound healing, pain relief, inflammation, and gastrointestinal disturbances (Kaur et al., 2013). Fruits and seeds are utilized for respiratory disorders such as cough and asthma and are also used as anthelmintic agents against parasitic infections (Duke, 2002).

4. PHYTOCHEMICAL SCREENING AND REPORTED ACTIVE CHEMICAL CONSTITUENTS OF *BARRINGTONIA ACUTANGULA*

Phytochemical investigations of *Barringtonia acutangula* have revealed the presence of numerous biologically active secondary metabolites responsible for its wide range of medicinal and pharmacological activities. Different solvent extracts prepared from roots, bark, leaves, fruits, flowers, and seeds have shown the occurrence of flavonoids, tannins, saponins, triterpenoids, alkaloids, glycosides, steroids, phenolic compounds, and carbohydrates (Mohanty et al., 2016; Vaidya and Shingadia, 2017). Recent studies further confirmed that the plant is a rich source of antioxidant phenolics and triterpene saponins with significant pharmaceutical importance.

Qualitative phytochemical screening of methanolic, ethanolic, aqueous, and hydroalcoholic extracts demonstrated strong presence of flavonoids, phenolics, tannins, and saponins, while moderate amounts of alkaloids and glycosides were also detected. These phytoconstituents are associated with antioxidant, antidiabetic, anti-inflammatory, hepatoprotective, nephroprotective, and antimicrobial activities reported in experimental studies (Asaduzzaman et al., 2015). Recent flower extract analysis showed high phenolic and flavonoid content along with

potent α -glucosidase inhibitory activity, suggesting its possible use in diabetes management. Major phenolic compounds identified included gallic acid and pyrogallol.

Several active chemical constituents have been isolated and characterized from *B. acutangula*. Triterpenoid saponins such as barringtogenol-B, barringtogenol-C, barringtogenol-D, barringtogenol-F, acutangulosides, and ilexsaponin A1 are considered important bioactive molecules contributing to antidiabetic and anti-inflammatory activities (Patil and Khatib, 2020).

Phytochemical studies on leaf extracts also led to the isolation of flavonoid glycosides known as barringosides A–F, along with several flavan-3-ol derivatives and phenolic compounds (Vien et al., 2017). These compounds demonstrated antioxidant and nitric oxide inhibitory activity, indicating their therapeutic potential in oxidative stress and inflammatory disorders.

The pharmacological significance of these phytochemicals has attracted considerable interest in pharmaceutical and phytopharmaceutical research. Ongoing studies between 2020 and 2026 are exploring molecular docking, metabolomic profiling, and nanoformulations of *Barringtonia acutangula* bioactive compounds for the development of novel therapeutic agents against diabetes, obesity, metabolic syndrome, microbial infections, and inflammatory diseases.

Table 1: Major Reported Phytochemicals in *Barringtonia acutangula*

Phytochemical Group	Reported Active Constituents	Reported Biological Activities	References
Flavonoids	Barringosides A–F, flavonoid glycosides	Antioxidant, anti-inflammatory, free radical scavenging activity	Vien et al. (2017); Asaduzzaman et al. (2015)
Triterpenoid Saponins	Barringtogenol-B, Barringtogenol-C, Barringtogenol-D, Barringtogenol-F, Acutangulosides, Ilexsaponin A1	Antidiabetic, anti-inflammatory, anti-obesity activity	Patil and Khatib (2020); Mills et al. (2005)
Phenolic Compounds	Gallic acid, pyrogallol, phenolic acids	Antioxidant, α -glucosidase inhibitory activity	ScienceDirect Study (2025); Asaduzzaman et al. (2015)
Tannins	Hydrolysable tannins	Antimicrobial,	Mohanty et al.

		antidiarrheal, wound healing activity	(2016); Vaidya and Shingadia (2017)
Alkaloids	Various unidentified alkaloids	Antimicrobial and neuropharmacological effects	Mohanty et al. (2016)
Glycosides	Flavan-3-ol glycosides	Antioxidant and anti-inflammatory activity	Vien et al. (2017)
Steroids	Phytosterols and steroidal compounds	Hepatoprotective and anti-inflammatory effects	Vaidya and Shingadia (2017)
Terpenoids	Terpenoid derivatives and triterpenes	Analgesic and anti-inflammatory activities	Ahmed et al. (2011)
Saponins	Monodesmosidic saponins, acutangulosides	Antidiabetic and metabolic regulatory activity	Mills et al. (2005); Patil and Khatib (2020)

5. PHARMACOLOGICAL ACTIVITIES

Antidiabetic Activity:

Research carried out on experimental diabetic animals has shown that extracts of *Barringtonia acutangula* can effectively lower elevated blood glucose levels and improve metabolic abnormalities. The plant also helps reduce oxidative stress associated with diabetes (Gupta et al., 2005).

Antioxidant Activity:

The plant possesses strong free radical scavenging activity due to its rich phenolic and flavonoid content. Experimental studies revealed that the extract enhances antioxidant defense enzymes and minimizes lipid peroxidation damage (Kumar et al., 2010).

Anti-inflammatory Activity:

Animal model studies demonstrated that the extract significantly suppresses inflammatory reactions, indicating its potential usefulness in inflammatory disorders (Husain et al., 1992).

Analgesic Activity:

Pain-relieving effects of the plant have been observed in laboratory animals through different experimental methods, supporting its traditional use in painful conditions (Kirtikar and Basu, 1999).

Antimicrobial Activity:

Extracts prepared from different parts of the plant exhibited inhibitory action against several pathogenic bacteria and fungi, suggesting important antimicrobial potential (Kumar et al., 2010).

Hepatoprotective Activity:

Studies in experimental animals showed that the plant extract protects liver tissues from toxic chemical injury and improves liver function markers (Husain et al., 1992).

Antidiarrheal Activity:

Traditional applications of the bark and fruits for diarrhea and dysentery have been scientifically supported by studies demonstrating reduced intestinal motility and secretion (Nadkarni, 1976).

Anthelmintic Activity:

The plant has shown activity against parasitic worms, possibly due to the presence of tannins and saponins that interfere with parasite survival (Kirtikar and Basu, 1999).

Antipyretic Activity:

Experimental findings indicate that the extract can reduce elevated body temperature in fever models, confirming its antipyretic effect (Husain et al., 1992).

Wound Healing Activity:

Topical use of the extract promoted faster wound contraction and tissue regeneration in animal studies, indicating beneficial effects on wound repair (Kumar et al., 2010).

Antiulcer Activity:

The plant demonstrated protective effects against gastric ulcer formation by strengthening mucosal defense and decreasing gastric irritation (Husain et al., 1992).

Nephroprotective and Retinoprotective Activities:

Because of its antioxidant and antihyperglycemic properties, *Barringtonia acutangula* may help prevent oxidative damage in kidney and retinal tissues associated with diabetic

nephropathy and diabetic retinopathy (Gupta et al., 2005).

The broad range of pharmacological activities reported for *Barringtonia acutangula* highlights its significance as a promising natural source for future herbal drug development and management of chronic diseases.

Table 2: Traditional Medicinal Uses and Research Profile of *Barringtonia acutangula*

Plant Part	Traditional Uses	Pharmacological Activities	Major Phytochemicals	Supporting References
Bark	Used for diarrhea, dysentery, malaria, piles, and skin diseases	Antimicrobial, antidiarrheal, anti-inflammatory	Tannins, saponins, flavonoids	Nadkarni (2009); Kirtikar and Basu (2005)
Leaves	Applied in wounds, pain, ulcers, and digestive disorders	Antioxidant, analgesic, hepatoprotective	Flavonoids, phenolics, glycosides	Kaur et al. (2013); Ahmed et al. (2011)
Roots	Used in fever, diabetes, urinary disorders, and liver diseases	Antidiabetic, antioxidant, hepatoprotective	Saponins, tannins, triterpenoids	Vaidya and Shingadia (2017); Patil et al. (2010)
Fruits	Used in cough, asthma, bronchitis, and parasitic infections	Anthelmintic, antimicrobial	Terpenoids, phenolics	Duke (2002); Kaur et al. (2013)
Seeds	Used for intestinal worms, respiratory disorders, and skin diseases	Antioxidant, antimicrobial	Sterols, fatty acids, saponins	Vaidya and Shingadia (2017)
Whole Plant	Used traditionally in diabetes, inflammation, and infections	Antidiabetic, anti-inflammatory, antioxidant	Polyphenols, flavonoids	Ahmed et al. (2011); Kaur et al. (2013)

6. Pharmaceutical Industry Uses of *Barringtonia acutangula*

Barringtonia acutangula has gained considerable attention in the pharmaceutical industry because of its rich phytochemical

composition and broad spectrum of pharmacological activities. Different parts of the plant are being explored for the development of herbal formulations, phytopharmaceuticals, and novel therapeutic agents.

Table 3: Pharmaceutical Industry Uses of *Barringtonia acutangula*

Pharmaceutical Application	Description	Major Bioactive Compounds	References
Antidiabetic Formulations	Root and bark extracts are investigated for reducing blood glucose levels and managing diabetic complications such as nephropathy and retinopathy	Flavonoids, tannins, saponins	Patil et al. (2010); Kaur et al. (2013)
Antioxidant Products	Plant extracts are used in herbal antioxidant preparations to reduce oxidative stress	Phenolics, flavonoids, triterpenoids	Ahmed et al. (2011)
Anti-inflammatory Drugs	Bioactive constituents are studied for development of anti-inflammatory and analgesic formulations	Triterpenoids, saponins	Ahmed et al. (2011)
Hepatoprotective Preparations	Extracts are explored in liver-protective herbal medicines	Polyphenols, tannins	Vaidya and Shingadia (2017)
Antimicrobial Agents	Bark and fruit extracts are investigated for antibacterial and antifungal pharmaceutical products	Tannins, glycosides	Duke (2002)
Herbal Wound-Healing Formulations	Leaf extracts are incorporated into topical creams and ointments for wound management	Flavonoids, phenolics	Kaur et al. (2013)
Nephroprotective Research	Plant extracts are studied for protection against renal damage associated with diabetes and oxidative stress	Antioxidant phytoconstituents	Recent pharmacological studies
Nutraceutical Development	Due to antioxidant and metabolic benefits, extracts are	Polyphenols, bioactive phytochemicals	Recent herbal research reports

	evaluated in nutraceutical and dietary supplement industries		
Phytopharmaceutical Research	Isolation of active molecules for drug discovery and standardization of herbal medicines	Saponins, triterpenoids, alkaloids	Vaidya and Shingadia (2017)
Cosmetic and Herbal Care Industry	Antioxidant-rich extracts are explored in herbal skincare and cosmetic products	Phenolic compounds	Emerging industrial applications

7. INDUSTRIAL IMPORTANCE

The pharmaceutical importance of *B. acutangula* mainly arises from its antidiabetic, antioxidant, antimicrobial, hepatoprotective, and anti-inflammatory properties. The plant is increasingly being investigated for the preparation of standardized herbal formulations and as a source of lead compounds for modern drug development. Current research also focuses on nanoformulations, phytosome-based delivery systems, and polyherbal combinations containing *Barringtonia acutangula* extracts.

8. ADVANCED PHARMACEUTICAL INDUSTRY APPLICATIONS OF BARRINGTONIA ACUTANGULA

Recent pharmaceutical and phytopharmaceutical research has expanded the industrial importance of *Barringtonia acutangula* beyond traditional herbal medicine. The plant is now being explored in modern drug discovery, nutraceuticals, cosmeceuticals, and targeted therapy research because of its rich content of triterpenoid saponins, flavonoids, tannins, and phenolic compounds. (Mohanty A et al. 2016)

Table 4: Advanced Pharmaceutical Industry Applications of *Barringtonia acutangula*

Pharmaceutical Sector	Industrial Application	Scientific Importance	References
Herbal Antidiabetic Industry	Used in formulation of herbal antidiabetic capsules, syrups, and polyherbal preparations	Helps reduce hyperglycemia and oxidative stress in diabetic conditions	Patil et al. (2010); Patil and Khatib (2020).
Drug Discovery Research	Isolation of active triterpenoid saponins for lead molecule development	Potential target for metabolic syndrome and insulin resistance	Patil and Khatib (2020).
Nephroprotective Formulations	Investigated in herbal kidney-protective products for diabetic nephropathy	Antioxidant-mediated renal protection	Recent pharmacological studies
Ophthalmic Research	Studied for prevention of diabetic retinopathy and retinal oxidative damage	Reduces inflammatory and oxidative pathways	Emerging diabetic complication studies
Hepatoprotective	Incorporated into	Protects hepatic	Mohanty A et al.

Products	liver tonic and hepatoprotective herbal medicines	tissue from toxin-induced damage	(2016)
Anti-inflammatory Drug Development	Bioactive extracts explored for chronic inflammatory disorders	Inhibits inflammatory mediators and free radicals	Ahmed et al. (2011)
Antimicrobial Pharmaceutical Preparations	Used in antimicrobial creams, lotions, and herbal disinfectants	Effective against bacterial and fungal pathogens	Sahoo et al. (2008)
Nutraceutical Industry	Used in antioxidant dietary supplements and wellness products	Rich source of natural antioxidants and polyphenols	Asaduzzaman et al., (2015)
Cosmeceutical Industry	Extracts utilized in herbal skincare and anti-aging formulations	Antioxidant and wound-healing effects improve skin protection	Emerging herbal cosmetic research
Nanopharmaceutical Research	Plant extracts investigated in nanoparticle-based drug delivery systems	Improves bioavailability and targeted drug delivery	Current phytopharmaceutical research trends
Standardized Herbal Extract Industry	Used in preparation of standardized extracts for pharmaceutical manufacturing	Ensures consistent phytochemical composition	Mohanty A et al. (2016)
Metabolic Syndrome Research	Compounds studied for obesity, insulin resistance, and lipid disorders	11 β -HSD1 inhibitory activity reported	Patil and Khatib (2020)
Antioxidant Pharmaceutical Products	Used in free radical scavenging and anti-aging formulations	Reduces oxidative cellular injury	Asaduzzaman et al., (2015)
Polyherbal Drug Industry	Combined with other medicinal plants in Ayurvedic and Siddha formulations	Synergistic therapeutic activity	Nadkarni (2009); Kirtikar and Basu (2005)
Phytopharmaceutical Standardization	Studied for quality control and marker-based standardization	Supports development of evidence-based herbal medicines	Mohanty A et al. (2016)

9. SUMMARY

Barringtonia acutangula Linn. was found to be a medicinally important plant with significant pharmacological and pharmaceutical potential. Phytochemical studies revealed the presence of flavonoids, tannins, triterpenoids, saponins, alkaloids, glycosides, and phenolic

compounds, which contribute to its therapeutic activities (Vaidya and Shingadia, 2017).

Experimental studies demonstrated that different extracts of the plant possess antidiabetic, antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, and nephroprotective properties (Ahmed et al., 2011; Asaduzzaman et al., 2015). Major active constituents such as acutangulosides

and barringtonenol derivatives were reported to exhibit promising biological activities, particularly in metabolic and inflammatory disorders (Patil and Khatib, 2020).

The reviewed studies support the traditional medicinal uses of *B. acutangula* and highlight its potential application in herbal formulations, phytopharmaceuticals, and future drug development. However, further clinical and toxicological studies are required to confirm its safety and therapeutic efficacy in humans.

10. CONCLUSION

Barringtonia acutangula Linn. is an important medicinal plant with significant ethnomedicinal and pharmacological value. Different parts of the plant possess a wide range of bioactive compounds, including flavonoids, tannins, saponins, and triterpenoids, which contribute to its diverse therapeutic activities. Scientific studies have demonstrated its antidiabetic, antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, and nephroprotective properties, supporting many of its traditional medicinal uses.

Overall, *Barringtonia acutangula* represents a promising natural source for future pharmaceutical and therapeutic applications.

11. ACKNOWLEDGEMENT

The authors express their sincere gratitude to all researchers and scholars whose valuable studies and publications contributed to the preparation of this review on *Barringtonia acutangula*. The authors are also thankful to the faculty members, guides, and institutional authorities for their continuous support, encouragement, and academic guidance throughout the completion of this work. Special appreciation is extended to the libraries and online scientific databases that provided access to relevant literature and research articles.

12. REFERENCES

- Ahmed, F., Selim, M. S. T., Das, A. K., and Choudhuri, M. S. K. (2011). Anti-inflammatory and analgesic activities of *Barringtonia acutangula*. *Asian Journal of Pharmaceutical and Clinical Research*, 4(2), 74–77.
- Asaduzzaman, M., Rana, M. S., Hasan, S. M. R., et al. (2015). Phytochemical and antioxidant investigation of *Barringtonia acutangula*. *European Journal of Medicinal Plants*, 8(4), 231–238.
- Barua, A. K., Chakraborti, P., and Das, B. (1963). The constitution of barringtonenol D—a new triterpenoid sapogenin from *Barringtonia acutangula*. *Tetrahedron*, 19(11), 1727–1732.
- Dao, N.-V.-T. et al. (2025) ‘Effect of different solvents on bioactive phenolics and antioxidant, antimicrobial, and α -glucosidase inhibition activities of *Barringtonia acutangula* Gaertn. flower extracts’, *Natural Product Research*, pp. 1–10. doi: 10.1080/14786419.2025.2486322.
- Duke, J. A. (2002). *Handbook of Medicinal Herbs* (2nd ed.). CRC Press, Boca Raton, Florida.
- Gupta RK, Kesari AN, Murthy PS, et al. Hypoglycemic and antidiabetic effect of ethanolic extract of *Barringtonia acutangula* roots in experimental animals. *Journal of Ethnopharmacology*. 2005;99(1):75–81.
- Husain A, Virmani OP, Sharma A, Kumar A, Misra LN. *Major Medicinal Plants of India*. Lucknow: Central Institute of Medicinal and Aromatic Plants; 1992.
- Imam, M. Z., Sultana, S., and Akter, S. (2012). Antinociceptive, antidiarrheal, and neuropharmacological activities of *Barringtonia acutangula*. *Pharmaceutical Biology*, 50(9), 1078–1084.
- Jiang S, Wang M, Kaur A, Jiang L, Cai Y, Luo J, Li M, Wang H, Wan D and Peng Y (2025) *Ehretia* genus: a comprehensive review of its botany, ethnomedicinal values, phytochemistry, pharmacology, toxicology and clinical studies. *Front. Pharmacol.* 16:1526359. doi: 10.3389/fphar.2025.1526359.
- Kaur, M., Singh, G., and Mohan, C. (2013). *Barringtonia acutangula*: A traditional medicinal plant. *International Journal of Pharmaceutical Sciences Review and Research*, 23(1), 168–171.
- Kaur, R., Kaur, H., and Kaur, S. (2013). *Barringtonia acutangula*: A traditional medicinal plant. *International Journal of Pharmaceutical Sciences Review and Research*, 21(2), 281–286.

- Kirtikar KR, Basu BD. Indian Medicinal Plants. Vol. II. Dehradun: International Book Distributors; 1999.
- Kirtikar, K. R., and Basu, B. D. (2005). Indian Medicinal Plants (2nd ed.). International Book Distributors, Dehradun, India.
- Kumar S, Kumar V, Prakash O. Pharmacognostic and phytochemical investigations on *Barringtonia acutangula*. *Journal of Medicinal Plants Research*. 2010;4(14):1405–1410.
- Latif, R., Nawaz, T. Medicinal plants and human health: a comprehensive review of bioactive compounds, therapeutic effects, and applications. *Phytochem Rev* **25**, 2299–2342 (2026). <https://doi.org/10.1007/s11101-025-10194-7>.
- Mills, C., Carroll, A. R., and Quinn, R. J. (2005). Acutangulosides A–F, monodesmosidic saponins from the bark of *Barringtonia acutangula*. *Journal of Natural Products*, **68**(3), 311–318.
- Mohanty, A., Das, C., Ghosh, G., and Sahu, P. K. (2016). Antimicrobial potential of methanolic extract of *Barringtonia acutangula* fruits. *Research & Reviews: A Journal of Pharmacognosy*, **3**(3), 13–18.
- Mohanty, A., Das, D., Ghosh, G., and Sahu, P. K. (2016). *Barringtonia acutangula*: Ethnobotanical and phytopharmacological review. *International Journal of Pharmaceutical Sciences Review and Research*, **38**(1), 22–29.
- Nadkarni KM. Indian Materia Medica. 3rd ed. Mumbai: Popular Prakashan; 1976.
- Nadkarni, K. M. (2009). Indian Materia Medica (Vol. 1). Popular Prakashan, Mumbai, India.
- Patil, U. H., Dattatraya, K. V., and Mahajan, R. T. (2010). Evaluation of antidiabetic activity of *Barringtonia acutangula* root extract in experimental animals. *International Journal of PharmTech Research*, **2**(1), 30–35.
- Patil, V. S., and Khatib, N. A. (2020). Triterpene saponins from *Barringtonia acutangula* as potent inhibitors of 11 β -HSD1 for type 2 diabetes mellitus, obesity, and metabolic syndrome. *Clinical Phytoscience*, **6**, 61.
- Sahoo, S., Panda, P. K., Mishra, S. R., Parida, R. K., Ellaiah, P., and Dash, S. K. (2008). Antibacterial activity of *Barringtonia acutangula* against selected urinary tract pathogens. *Indian Journal of Pharmaceutical Sciences*, **70**(5), 677–679.
- The Wealth of India: A Dictionary of Indian Raw Materials and Industrial Products. New Delhi: CSIR Publications; 2003.
- Tripathi, G., Poptani, R., Agrahari, D., et al. (2025). Freshwater Mangrove (*Barringtonia acutangula*): An ethnomedicinal tree of India. In *Medicinal Trees of India* (Vol. III, pp. 11–28). Ambika Prasad Research Foundation.
- Vaidya, G. S., and Shingadia, H. U. (2017). Pharmacognostic and phytochemical review on *Barringtonia acutangula*. *World Journal of Pharmacy and Pharmaceutical Sciences*, **6**(9), 408–418.
- Vien, L. T., Van, Q. T. T., Hanh, T. T. H., et al. (2017). Flavonoid glycosides from *Barringtonia acutangula*. *Bioorganic & Medicinal Chemistry Letters*, **27**(16), 3700–3703.
- Wong, F.J., Shah, M.D., Chong, W.S. et al. Metabolites composition and therapeutic potential of rhizophoraceae mangroves in Asia: a review. *Discov. Chem.* **3**, 18 (2026). <https://doi.org/10.1007/s44371-025-00465-9>.