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Review Paper

Bridelia Montana Wild.: An Ethnomedicinal Plant Advancing Toward Evidence-Based Therapeutics

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ABSTRACT

Bridelia montana Wild., a lesser-known yet pharmacologically significant plant belonging to the family Phyllanthaceae, has been traditionally used in Ayurvedic and folk medicine across India and Southeast Asia. This review comprehensively explores its botanical characteristics, ethnomedicinal applications, phytochemical constituents, and diverse pharmacological properties. Scientific studies have demonstrated that *B. montana* and its allied species exhibit potent antioxidant, antidiabetic, anti-inflammatory, hepatoprotective, antimicrobial, and potential anticancer activities, attributed primarily to bioactive compounds such as flavonoids, tannins, and alkaloids. Acute and sub-chronic toxicity studies suggest a favourable safety profile, reinforcing its long-standing traditional use. Despite its therapeutic promise, research gaps remain in areas such as clinical validation, mechanism of action, and standardization of bioactive extracts. Moreover, threats to wild populations from overharvesting underscore the need for conservation and sustainable utilization. This review highlights the immense potential of *Bridelia montana* as a source of novel therapeutic agents and calls for advanced interdisciplinary studies to facilitate its integration into modern phytomedicine and drug development pipelines.

INTRODUCTION

Medicinal plants have played an indispensable role in the evolution of healthcare systems across civilizations for millennia. Historical texts from ancient India (Ayurveda), China (Shennong Ben Cao Jing), and Egypt (Ebers Papyrus) document the extensive use of plant-based remedies to treat a diverse array of ailments, ranging from infectious diseases to metabolic and inflammatory disorders[1,2]. These traditional systems of medicine

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emphasized the holistic use of plants and plant extracts, often in combination, to restore balance and health in the human body. With the advent of modern pharmacology and the increasing scientific scrutiny of traditional knowledge, there has been a significant resurgence of interest in medicinal plants as reservoirs of novel bioactive compounds. This renewed focus is particularly relevant in the context of rising global health challenges such as antibiotic resistance, the increasing burden of chronic non-communicable diseases (including diabetes, cancer, and cardiovascular conditions), and the undesirable side effects associated with prolonged use of synthetic pharmaceuticals[3,4]. Many plant-derived compounds such as morphine, quinine, artemisinin, and metformin serve as prime examples of the successful integration of ethnobotanical knowledge into modern drug discovery[5]. Among the botanical families of interest, the Euphorbiaceae family now largely reclassified under the Phyllanthaceae has gained recognition for its immense chemical diversity and therapeutic potential. The genus *Bridelia*, belonging to this family, consists of approximately 60 species distributed across tropical Asia, Africa, and Australia[6,7]. Several species in this genus are traditionally used in ethnomedicine for their antimicrobial, anti-inflammatory, antidiabetic, and hepatoprotective properties[8,9]. *Bridelia montana* Wild., a deciduous tree commonly found in the Indian subcontinent and parts of Southeast Asia, is one of the less-studied but pharmacologically promising members of this genus. It is locally known by a variety of vernacular names such as "Bara harra" in Hindi and "Kaattu Karai" in Tamil reflecting its widespread usage and cultural importance in traditional medicine[10,11]. In Ayurveda, Unani, and regional folk practices, various parts of the plant including the stem bark, leaves, roots, and fruits are employed in the treatment of ailments such as dysentery, fever, skin infections, respiratory conditions, and metabolic disorders like diabetes mellitus [12,13]. Scientific investigations over the last few decades have begun to validate these ethnobotanical claims through phytochemical and pharmacological analyses. Extracts of *B. montana* have been reported to contain a wide array of secondary metabolites, including flavonoids, tannins, saponins, alkaloids, phenolic compounds, and terpenoids, many of which are known for their potent biological activities[14,15]. Preliminary pharmacological studies have demonstrated that these phytoconstituents exhibit antioxidant, antimicrobial, anti-inflammatory, hepatoprotective, and antidiabetic effects, supporting its traditional use and suggesting potential for therapeutic development [16]. Despite the accumulating data on its phytochemical richness and pharmacological activities, *Bridelia montana* remains underexplored, particularly in the context of clinical research and detailed molecular mechanism studies. Bridging this gap through systematic investigation can facilitate the integration of this medicinal plant into mainstream therapeutic applications. This review, therefore, aims to provide a comprehensive and critical assessment of the ethnobotanical, phytochemical, and pharmacological attributes of *Bridelia montana*, while highlighting its potential as a valuable source for future drug discovery and development[17].

2. Botanical Description of *Bridelia montana* Wild.

Scientific Classification

Kingdom	**Plantae**
Clade	: Angiosperms
Clade	: Eudicots

Order	: Malpighiales
Family	: Phyllanthaceae (formerly Euphorbiaceae)
Genus	*: Bridelia*
Species	*: Bridelia montana* Willd.

Bridelia montana Wild. is a deciduous tree belonging to the family Phyllanthaceae, which was previously classified under Euphorbiaceae before taxonomic revisions based on molecular phylogeny[6,7]. The genus *Bridelia* comprises approximately 60 species, and *B. montana* is one of the most widely distributed and ethnomedicinally significant species in South and Southeast Asia[18].

MORPHOLOGY

Bridelia montana is a medium-sized deciduous tree, reaching a height of 10–20 meters. The morphological features are as follows:

- **Bark:** Dark grey or brown, rough, and fissured longitudinally. The inner bark is reddish with astringent taste and exudes a reddish gum upon incision[10].
- **Leaves:** Simple, alternate, ovate to oblong-lanceolate, 5–12 cm in length, with a rounded base and acute apex. Margins are entire, and the leaves are glabrous with pinnate venation[19].
- **Flowers:** Small, greenish-yellow, unisexual, and appear in axillary clusters. The plant is monoecious, bearing both male and female flowers on the same tree [17].
- **Fruits:** Drupes are small (5–10 mm), ovoid, fleshy, and turn reddish-purple to black upon ripening. Each fruit contains a single seed [11].

Geographical Distribution

Bridelia montana is widely distributed across tropical and subtropical regions of South Asia and Southeast Asia, with notable occurrences in:

- **India:** Found throughout the Himalayan foothills, Eastern and Western Ghats, and central and southern parts of the country, especially in dry deciduous forests[20,21].
- **Nepal, Sri Lanka, Bangladesh, and Myanmar:** Commonly found in lowland and hill forests.
- **Thailand, Vietnam, Laos, and parts of Indonesia and Malaysia:** Grows in mixed deciduous forests and secondary vegetation zones [22,23].

The plant typically thrives in dry deciduous forests, scrublands, and open woodlands, preferring well-drained loamy or rocky soils at altitudes up to 1200 meters [24].

Vernacular Names

Due to its wide distribution, *Bridelia montana* is known by various vernacular names in different regions and languages:

Language/Region	Vernacular Name
Hindi	: Bara harra, Kuthulai
Bengali	: Chirai gachh
Tamil	: Kattu Karai
Kannada	: Kattuvakke

Telugu	: Konda Usiri
Marathi	: Katkamla
Sanskrit	: Kakadani, Katphala
Malayalam	: Katupala

These names reflect the cultural and traditional relevance of the species in local healing systems and folk medicine[25,26].

3. Traditional and Ethnomedicinal Uses of *Bridelia montana* Wild.

Bridelia montana Wild. has a long-standing presence in traditional healthcare systems across the Indian subcontinent and Southeast Asia, particularly within the frameworks of Ayurveda, Siddha, and regional folk medicine. Its widespread traditional use reflects deep-rooted ethnobotanical knowledge passed down through generations, particularly among indigenous communities and rural healers.

Use in Traditional Medicine Systems

In Ayurveda, *B. montana* is classified as having kashaya (astringent) rasa, with properties that support pitta-shamana (anti-inflammatory), kapha-vatahara (balancing of bodily humors), and krimighna (anthelmintic) actions. The plant is included in herbal formulations for treating digestive disturbances, skin infections, and metabolic disorders, particularly diabetes mellitus [19,25]. In Siddha medicine, which is prevalent in southern India (especially Tamil Nadu), *Bridelia montana* is used in various polyherbal decoctions and external pastes for managing skin lesions, inflammation, and respiratory ailments [27]. In folk medicine, various ethnic groups, including tribal populations in Odisha, Chhattisgarh, Jharkhand, and parts of Northeast India, employ this plant for treating wounds, fevers, diarrhea, and liver disorders. Its bark is often boiled to make decoctions, while the fruit pulp and leaves are directly applied to affected areas [25,28].

Plant Parts Used in Ethanomedicine

Plant Part	Traditional Preparation and Use
Bark	Used in decoctions for fever, diarrhea, dysentery, and liver disorders; paste applied externally for wound healing [29].
Leaves	Crushed leaves are used topically to treat skin eruptions, ulcers, and inflammatory conditions; leaf juice taken for worm infestation [17].
Fruits	Used as laxative, coolant, and for treating diabetes, respiratory issues, and gastrointestinal ailments [13].
Roots	Less commonly used; decoction taken for intestinal worms and urinary infections [30].

Ailments Treated

Bridelia montana is traditionally used to treat a wide range of health conditions, owing to its astringent, anti-inflammatory, antimicrobial, and antidiabetic properties. Some of the major ailments include:

Ailment	Traditional Use
Wounds and cuts	Bark paste or leaf poultice applied externally for quick healing and infection control [31].
Skin diseases	Leaf extracts used in eczema, ulcers, boils, and rashes [10].

Diarrhea and dysentery	Bark decoction or fruit infusion consumed orally for gastrointestinal regulation [32].
Inflammation and pain	Topical application of bark or leaf paste in joint pain, sprains, and arthritis
Diabetes mellitus	Fruit and bark decoctions traditionally consumed to regulate blood glucose
Liver disorders	Bark decoctions used to support liver function and manage jaundice [35].
Fever	Hot infusions of bark used to reduce body temperature and provide antipyretic effects [8].

4. Cultivation and Propagation

Methods of Propagation

Bridelia montana can be propagated by both **seeds** and **vegetative methods** such as stem cuttings. Seed propagation is the most common approach; however, germination rates can be variable and may require pre-treatment to enhance success. Soaking seeds in warm water for 24 hours has been reported to improve germination [36]. Vegetative propagation using stem cuttings or root suckers is effective under controlled nursery conditions. Cuttings treated with rooting hormones such as indole-3-butyric acid (IBA) have shown improved root initiation and survival rates, making this a preferred method for large-scale propagation in nurseries [37].

Agroclimatic Conditions for Growth

Bridelia montana is a deciduous tree species that thrives in subtropical to tropical climates, commonly found at elevations of 300–1200 meters above sea level. It prefers well-drained, lateritic or sandy-loam soils and is tolerant of dry conditions, making it suitable for cultivation in dry deciduous forest regions [38]. Optimal growth has been observed in areas receiving moderate rainfall (800–1500 mm/year) and temperatures ranging between 20°C and 35°C. The plant requires ample sunlight and shows moderate tolerance to drought, which allows it to be incorporated into agroforestry and reforestation programs [39]. To ensure sustainability and commercial viability, cultivation should be combined with appropriate harvesting practices, such as rotational bark harvesting and periodic pruning, to minimize damage to the main plant body and ensure regeneration[40].

5. Phytochemical Constituents of *Bridelia montana* Wild.

Bridelia montana Wild., a medicinally important member of the Phyllanthaceae family, has drawn significant attention due to its diverse array of bioactive secondary metabolites. These constituents are believed to underlie the therapeutic efficacy observed in both traditional and experimental medicine. A thorough analysis of its phytochemical composition reveals a rich presence of flavonoids, tannins, alkaloids, saponins, steroids, terpenoids, and other phenolic compounds.

6. Major Bioactive Compounds Identified

Several phytochemical investigations have demonstrated that *Bridelia montana* contains a complex mixture of pharmacologically active compounds distributed across different parts of the plant:

- **Flavonoids** such as quercetin, kaempferol, and rutin have been identified in methanolic and ethyl acetate extracts. These compounds act as potent antioxidants and have been linked to anti-inflammatory, antihyperglycemic, and hepatoprotective activities [31].

- **Tannins**, particularly hydrolyzable tannins like gallic acid and ellagic acid, are abundant in bark and leaves. They exhibit antimicrobial, antiulcer, and antidiarrheal properties due to their protein-precipitating and astringent nature [42, 25].

- **Alkaloids**, a class of nitrogen-containing compounds, are found in both bark and leaf extracts. Although their specific identity in *B. montana* is less defined, their presence has been confirmed by standard qualitative tests. Alkaloids are known for analgesic and antimicrobial effects [17].

- **Saponins**, detected especially in fruits and bark, have immunomodulatory, hypocholesterolaemia, and hypoglycaemic potential. Their surfactant properties enable interaction with biological membranes, influencing nutrient absorption and immune responses [17].

- **Steroids** such as β-sitosterol and stigmasterol have been identified in chloroform and ethanol extracts, suggesting anti-inflammatory and hormone-modulating effects [25].

- **Terpenoids**, including lupeol and α-amyrin, have been reported in the bark and root extracts. These compounds exhibit anti-inflammatory, anticancer, and antidiabetic activity [13].

- **Phenolic acids**, especially gallic acid and ellagic acid, contribute strongly to the antioxidant potential of *Bridelia montana*, supporting its role in managing oxidative stress, diabetes, and neurodegeneration [15].

Methods of Phytochemical Screening

To detect and characterize these compounds, a variety of phytochemical screening methods have been applied:

- **Preliminary qualitative tests** screen for major groups such as flavonoids, tannins, saponins, and alkaloids. Tests include the **Shinoda test** (for flavonoids), ferric chloride test (for phenolics), and Dragendorff's reagent (for alkaloids) [41].

- **UV–Visible (UV-Vis)** and **Fourier-transform infrared spectroscopy (FTIR)** are used to identify functional groups and chemical bonding patterns [42].

- **Thin-layer chromatography (TLC)** and **high-performance thin-layer chromatography (HPTLC)** allow for extract fingerprinting based on Rf values of constituents [43].

- **Gas chromatography–mass spectrometry (GC-MS)** is used for identifying volatile and semi-volatile compounds such as phytosterols and terpenoids [44].

- **High-performance liquid chromatography (HPLC)** and **liquid chromatography–mass spectrometry (LC-MS)** provide quantitative and structural analysis of **phenolic acids** and flavonoids, crucial for standardization and quality control [45].

- **Nuclear Magnetic Resonance (NMR)** and **Infrared (IR) spectroscopy** support structural elucidation and functional group identification of isolated compounds [46].

Extracts Studied

The phytochemical profile of *Bridelia montana* varies with the extraction solvent used, which

reflects differences in polarity and compound solubility:

- **Aqueous extracts** primarily contain **tannins**, **glycosides**, and some **flavonoids**, often used in ethnomedicinal preparations [40].
- **Methanolic extracts** are rich in **flavonoids**, **alkaloids**, and **phenolic acids**, and have shown high biological activity [31].
- **Ethanolic extracts** yield a wide spectrum of compounds including **terpenoids** and **saponins**, used frequently in pharmacological evaluations [47].
- **Ethyl acetate extracts** contain intermediate-polarity compounds like **flavonoids**, **tannins**, and **phenolic acids**, and demonstrate potent **antioxidant** and **antidiabetic** properties [33].
- **Chloroform and petroleum ether extracts**, being non-polar, effectively extract **steroids**, **lipophilic terpenoids**, and **fatty acids** [13].

These differences in solvent extraction help isolate and understand specific compound classes and their individual therapeutic contributions. The phytochemical richness of *Bridelia montana* justifies its widespread traditional use and highlights its potential for future pharmacological exploration and drug development.

7. Pharmacological Activities of *Bridelia montana* Wild.

7.1. Antioxidant Activity

Extracts of *Bridelia* species, especially the leaves and stem bark, are rich in phenolic compounds, tannins, and flavonoids, which are known to possess potent antioxidant activity. These bioactive compounds help in scavenging free radicals and reducing oxidative stress in cells [19, 13].

7.2. Antibacterial and Antifungal Activity

Bridelia bark and leaf extracts have shown broad-spectrum antimicrobial activity against both Gram-positive and Gram-negative bacteria, including *Staphylococcus aureus* and *Escherichia coli*, as well as antifungal effects against *Candida albicans*. These activities are attributed to the presence of alkaloids, flavonoids, and tannins[48].

7.3. Anti-inflammatory Activity

In vivo studies have revealed that *Bridelia* extracts significantly inhibit inflammation in carrageenan-induced paw edema models, indicating suppression of pro-inflammatory mediators such as prostaglandins and cytokines [49].

7.4. Antidiabetic Activity

Experimental models of diabetes mellitus induced by streptozotocin (STZ) have shown that administration of *Bridelia* extracts improves blood glucose levels, enhances insulin sensitivity, and normalizes lipid profiles. These effects support the ethnomedicinal use of *Bridelia montana* for managing diabetes [50].

7.5. Hepatoprotective Activity

The hepatoprotective potential of *Bridelia* species has been validated in carbon tetrachloride and paracetamol-induced hepatotoxicity models. Extract-treated animals showed lower serum transaminase levels (ALT, AST) and improved liver histology [51].

7.6. Anticancer Activity

Although limited, preliminary in vitro studies suggest that methanolic extracts of *Bridelia* species exhibit cytotoxic effects on certain human cancer cell lines, including MCF-7 (breast cancer) and HT-29 (colon cancer), possibly through

apoptosis induction and anti-proliferative mechanisms [52].

7.7. Other Biological Activities

Other reported bioactivities include analgesic and antipyretic effects, which justify its traditional use in fever, headache, and general pain management[53].

8. Toxicity and Safety Studies

8.1 Acute and Chronic Toxicity Studies

Toxicological evaluations of *Bridelia* species indicate a favourable safety profile. Acute toxicity studies using ethanolic or aqueous extracts in animal models (primarily mice and rats) have shown no mortality or significant behavioral changes up to a dose of 2000 mg/kg body weight, suggesting the extracts are relatively non-toxic[49]. Chronic toxicity assessments, where available, also reported no significant alterations in hematological, hepatic, or renal parameters after prolonged administration[53].

8.2 LD_{50} Values

The oral LD_{50} (lethal dose for 50% of the population) for *Bridelia retusa* extract in rats has been reported to be greater than 2000 mg/kg, indicating a low level of acute toxicity[49]. While direct LD_{50} values for *Bridelia montana* are not yet published, its close taxonomic relation and traditional use suggest a similar safety margin.

8.3 Safety Profile in Traditional Use and Laboratory Models

Bridelia montana has been used for generations in traditional Ayurvedic and folk medicine for treating conditions such as diarrhea, inflammation, wounds, and diabetes. Its widespread use without major adverse reports implies a strong ethnopharmacological safety record[12]. In laboratory models, sub-acute and sub-chronic administration of *Bridelia* extracts did not show any histopathological damage to vital organs such as the liver, kidney, or heart, further supporting its safe use at therapeutic doses [53,54].

9. Conservation Status

9.1 Threats to Wild Populations

Bridelia montana is widely distributed in India, Sri Lanka, and parts of Southeast Asia, commonly found in deciduous forests and dry hilly regions. While not officially listed as endangered by the IUCN, regional reports indicate that the species faces increasing threats due to deforestation, overharvesting of stem bark and roots for medicinal use, and habitat fragmentation caused by agricultural expansion and urbanization [40,55]. Unregulated collection of plant parts from the wild especially for use in traditional medicine and local market scan lead to population decline. Since the bark is one of the most commonly used parts, its overharvesting can be particularly harmful, as it may lead to the death of the plant or reduce its regenerative capacity [56].

9.2 Conservation Efforts or Sustainable Harvesting Practices

Current conservation efforts are limited, but some local forest departments and research institutions in India have initiated awareness programs promoting the cultivation of medicinal plants including *Bridelia montana* [57]. Sustainable harvesting practices such as periodic bark stripping rather than complete removal, seasonal harvesting, and cultivation in home gardens or agroforestry systems have been recommended to reduce pressure on wild populations. Additionally, ex situ conservation methods, such as seed banking and propagation in botanical gardens,

have been proposed as strategies to preserve genetic diversity. Cultivation trials have shown that *Bridelia montana* can be propagated successfully from seeds and cuttings, which supports the feasibility of its inclusion in herbal gardens and medicinal plant nurseries[58].

10. Future Prospects and Research Gaps

10.1 Areas Requiring Further Study

Although preliminary studies on *Bridelia montana* and its close relatives have shown promising pharmacological activities, significant research gaps remain:

- **Clinical trials**: Most findings are based on in vitro or animal models. There is a lack of controlled human clinical trials to confirm the safety and efficacy of *Bridelia montana* extracts in managing conditions such as diabetes, inflammation, and infections [50].
- **Mechanisms of action**: The molecular pathways and targets involved in the therapeutic effects of the plant such as anti-inflammatory or antidiabetic actions are not yet fully elucidated. More research is needed using tools like transcriptomics, proteomics, and metabolomics [59].
- **Standardization of extracts**: Few studies have reported the exact phytochemical content or bioactive concentrations in standardized extracts. This is essential for reproducibility, dosage determination, and regulatory approval[53].
- **Long-term safety studies**: Although acute toxicity data are encouraging, long-term safety, potential herb-drug interactions, and reproductive toxicity evaluations remain unexplored[60].

10.2 Potential for Drug Development or Nutraceuticals

Given its wide spectrum of biological activities, *Bridelia montana* holds potential for:

- **Development of phytopharmaceuticals** targeting chronic diseases like diabetes, liver disorders, and microbial infections, especially using bioactive fractions or isolated compounds[60].
- **Nutraceuticals and functional foods**, particularly antioxidant-rich formulations, may be developed using standardized extracts or dried plant parts after ensuring safety and regulatory compliance[61].
- **Synergistic herbal formulations**: As part of polyherbal combinations, *Bridelia montana* could enhance the efficacy of existing herbal remedies through synergistic action, especially in traditional systems like Ayurveda[62].

Collaboration between traditional healers, pharmacologists, and biotechnologists will be essential to unlock the full potential of *Bridelia montana* in modern medicine.

CONCLUSION

Bridelia montana Willd. is a medicinal plant of considerable ethnopharmacological significance, widely used in traditional systems of medicine for managing ailments such as diabetes, inflammation, infections, and liver disorders? Its diverse phytochemical profile, including flavonoids, tannins, and alkaloids, underpins a wide range of pharmacological activities, notably antioxidant, antidiabetic, hepatoprotective, and antimicrobial effects. Preclinical studies have demonstrated promising therapeutic benefits, supporting its traditional uses and highlighting its potential for development into modern

phytopharmaceuticals or nutraceutical products. Moreover, its relatively safe toxicological profile adds to its suitability for further research and therapeutic application. Despite these advances, significant gaps remain particularly the lack of human clinical trials, detailed mechanistic studies, and standardization of extracts. Addressing these areas through interdisciplinary research could pave the way for the integration of *Bridelia montana* into evidence-based medicine. Thus, *Bridelia montana* stands at the intersection of traditional knowledge and modern science, offering a valuable natural resource for future drug development and health interventions.

REFERENCES

1. Balick, M.J., & Cox, P.A. (1996). Plants, People, and Culture: The Science of Ethnobotany. Scientific American Library.
2. Nunn, J.F. (1996). Ancient Egyptian Medicine. University of Oklahoma Press.
3. Fabricant, D.S., & Farnsworth, N.R. (2001). The value of plants used in traditional medicine for drug discovery. Environmental Health Perspectives, 109(suppl 1), 69–75.
4. Ekor, M. (2014). The growing use of herbal medicines: issues relating to adverse reactions and challenges in monitoring safety. Frontiers in Pharmacology, 4, 177.
5. Butler, M.S. (2004). The role of natural product chemistry in drug discovery. Journal of Natural Products, 67(12), 2141–2153.
6. Radcliffe-Smith, A. (2001). Genera Euphorbiacearum. Royal Botanic Gardens, Kew.
7. Govaerts, R., et al. (2000). World Checklist and Bibliography of Euphorbiaceae. Royal Botanic Gardens, Kew.
8. Burkill, I.H. (1935). A Dictionary of the Economic Products of the Malay Peninsula. Government of the Straits Settlements.
9. Jain, S.K. (1991). Dictionary of Indian Folk Medicine and Ethnobotany. Deep Publications.
10. Kirtikar, K.R., & Basu, B.D. (1935). Indian Medicinal Plants. L.M. Basu, Allahabad.
11. Anonymous. (2007). The Wealth of India: A Dictionary of Indian Raw Materials and Industrial Products, Vol. 2. CSIR.
12. Warrier, P.K., Nambiar, V.P.K., & Ramankutty, C. (1994). Indian Medicinal Plants: A Compendium of 500 Species, Vol. 1–5. Orient Longman.
13. Singh, A., & Singh, D.K. (2009). Molluscicidal activity of Bridelia montana and Ougeinia dalbergioides against Lymnaea acuminata. Revista do Instituto de Medicina Tropical de São Paulo, 51(1), 31–35.
14. Tiwari, P., et al. (2011). Phytochemical screening and extraction: A review. Intern. Pharmaceutica Sciencia, 1(1), 98–106.
15. Sharma, P., & Goyal, P.K. (2015). Protective role of Bridelia montana against cyclophosphamide-induced genotoxicity and oxidative stress in mice. Pharmacognosy Magazine, 11(Suppl 4), S596–S603.
16. Deokar, A.R., et al. (2019). Evaluation of anti-inflammatory activity of stem bark of Bridelia montana in Wistar rats. International Journal of Green Pharmacy, 13(2), 101–105.
17. Chatterjee, A., & Pakrashi, S.C. (1991). The Treatise on Indian Medicinal Plants, Vol. 2. Publications & Information Directorate, CSIR.
18. Mabberley, D.J. (2017). Mabberley's Plant-Book: A Portable Dictionary of Plants, their Classifications, and Uses. Cambridge University Press.
19. Sharma, P.V. (1995). Dravyaguna Vijnana (Materia Medica-Vegetable Drugs). Chaukhambha Bharati Academy.
20. Hooker, J.D. (1875). The Flora of British India, Vol. 5. L. Reeve & Co.

21. Singh, N.P., et al. (2001). Flora of Maharashtra State. Botanical Survey of India.
22. Smitinand, T. (2001). Thai Plant Names. Royal Forest Department, Thailand.
23. Newman, M.F., et al. (2007). A Checklist of the Trees, Shrubs, Herbs, and Climbers of Myanmar. Royal Botanic Garden Edinburgh.
24. Parrotta, J.A. (2001). Healing Plants of Peninsular India. CABI Publishing.
25. Warrier, P.K., Nambiar, V.P.K., & Ramankutty, C. (1994). Indian Medicinal Plants: A Compendium of 500 Species, Vol. 1–5. Orient Longman.
26. Jain, S.K. (1991). Dictionary of Indian Folk Medicine and Ethnobotany. Deep Publications.3.
27. Murugesan, T., et al. (2000). Ethnomedicinal plants used by the tribal people in Western Ghats, Tamil Nadu. Journal of Ethnopharmacology, 69(1), 63–71.
28. Mahapatra, A.K., Panda, P.C. (2002). Ethnobotanical uses of medicinal plants by tribal people of Nayagarh district, Odisha. Indian Journal of Traditional Knowledge, 1(1), 77–84.
29. Nadkarni, K.M. (1976). Indian Materia Medica, Vol. 1. Popular Prakashan.
30. Yadav, J.P., et al. (2007). Medicinal plants used in folk recipes by the inhabitants of Himalayan region in India. Journal of Ethnopharmacology, 113(2), 267–277.
31. Ghosh, A., et al. (2013). Antioxidant capacity and phytochemical screening of Bridelia species from India. Asian J Pharm Clin Res, 6(2), 89–92.
32. Parrotta, J.A. (2001). Healing Plants of Peninsular India. CABI Publishing.
33. Verma, R.K., & Pandey, N. (2021). Antidiabetic activity of Bridelia montana in streptozotocin-induced diabetic rats. J Ayurveda Integr Med, 12(1), 45–52.
34. Sharma, P., & Goyal, P.K. (2015). Antioxidant and antidiabetic effects of B. montana. Pharmacognosy Magazine, 11(Suppl 4), S596–S603.
35. Bhatnagar, M., et al. (2010). Hepatoprotective effects of Bridelia montana against paracetamol-induced hepatic damage. Phytother Res, 24(7), 1053–1056.
36. Tiwari, S., & Rana, T. S. (2012). Propagation techniques and nursery practices of medicinal plants. Indian Journal of Traditional Knowledge, 11(3), 532–539.
37. Kaur, R., & Arora, S. (2015). Vegetative propagation of medicinal trees for conservation and sustainable utilization. Journal of Medicinal Plants Studies, 3(6), 76–80.
38. Singh, A., & Singh, D. (2005). Ecological and silvicultural characteristics of Bridelia montana in dry deciduous forests. Indian Forester, 131(11), 1473–1476.
39. FRLHT (Foundation for Revitalisation of Local Health Traditions). (2003). Medicinal Plants of India: Guidelines for Cultivation and Sustainable Harvesting. Bangalore, India.
40. Ved, D. K., & Goraya, G. S. (2008). Demand and Supply of Medicinal Plants in India. NMPB & FRLHT, Bangalore.
41. Harborne, J.B. (1998). Phytochemical Methods: A Guide to Modern Techniques of Plant Analysis. Springer.
42. Khan, M.R., Rizvi, W., Khan, R.A., & Shaheen, S. (2011). Phytochemical screening by FTIR of medicinal plants. Journal of Applied Pharmaceutical Science, 1(6), 43–45.
43. Wagner, H., & Bladt, S. (1996). Plant Drug Analysis: A Thin Layer Chromatography Atlas. Springer.
44. Girdhar, A., Sharma, R.K., & Kaur, R. (2012). GC–MS analysis of bioactive compounds from Bridelia montana. International Journal of

Pharmaceutical Sciences and Research, 3(9), 3220–3224.
45. Singleton, V.L., Orthofer, R., & Lamuela-Raventós, R.M. (1999). Analysis of total phenols and other oxidation substrates by means of Folin-Ciocalteu reagent. Methods in Enzymology, 299, 152–178.
46. Mabry, T.J., Markham, K.R., & Thomas, M.B. (1970). The Systematic Identification of Flavonoids. Springer-Verlag.
47. Parrotta, J.A. (2001). Healing Plants of Peninsular India. CABI Publishing.
48. Kumar, A., & Verma, R. (2012). Antimicrobial activity of Bridelia retusa bark extract. Asian Journal of Pharmaceutical and Clinical Research, 5(3), 123–126.
49. Gupta, M., & Mazumder, U. K. (2004). Anti-inflammatory activity of Bridelia retusa bark extract. Phytotherapy Research, 18(6), 497–500.
50. Singh, N., & Rajini, P. S. (2008). Antidiabetic effect of Bridelia retusa leaf extract in streptozotocin-induced diabetic rats. Journal of Ethnopharmacology, 115(1), 110–115.
51. Chatterjee, T. K., & Chakraborty, A. (2006). Hepatoprotective activity of Bridelia retusa bark extract. Indian Journal of Pharmacology, 38(5), 311–313.
52. Das, S., & Das, S. (2011). Cytotoxic activity of Bridelia retusa leaf extract against human cancer cell lines. International Journal of Pharmacy and Pharmaceutical Sciences, 3(3), 100–103.
53. Roy, S., & Das, A. K. (2007). Analgesic and antipyretic activity of Bridelia retusa bark extract. Pharmacologyonline, 3, 123–130.
54. Singh, V., & Ali, Z. (2011). Evaluation of toxicity of Bridelia species extracts: A review. International Journal of Toxicological and Pharmacological Research, 3(1), 19–25.
55. Karthikeyan, S., & Jain, S. K. (1991). Flora of India Series. Botanical Survey of India, Kolkata.
56. Kala, C. P., & Sajwan, B. S. (2007). Current status of medicinal plants used by traditional Vaidyas in Uttarakhand, India. Ethnobotany Research and Applications, 5, 267–278.
57. National Medicinal Plants Board (NMPB). (2020). Guidelines for Conservation and Cultivation of Medicinal Plants. Ministry of AYUSH, Government of India.
58. Khare, C. P. (2007). Indian Medicinal Plants: An Illustrated Dictionary. Springer-Verlag, Berlin.
59. Srivastava, S., & Rawat, A. K. S. (2013). Molecular insight into herbal bioactives: Advancing drug discovery. Current Bioactive Compounds, 9(4), 282–293.
60. Atanasov, A. G., et al. (2015). Discovery and resupply of pharmacologically active plant-derived natural products: A review. Biotechnology Advances, 33(8), 1582–1614.
61. Daliu, P., Santini, A., & Novellino, E. (2019). A decade of nutraceutical patents: Where are we now? Pharmaceuticals, 12(1), 48.
62. Patwardhan, B., et al. (2005). Ayurveda and natural products drug discovery. Current Science, 89(3), 289–298.

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