

Ethnomedicinal Uses of Plants in Bronchitis in South –Western Uttar Pradesh, India

Dr. Vinay Kumar Prajapati¹

¹Department of Botany, Govt. Degree College, Haripur Nihastha, Raibareli, UP-India

Received: 20 Nov 2020, Accepted: 30 Nov 2020, Published with Peer Review on line: 31 Jan 2021

Abstract

This study documents traditional knowledge related to the treatment of bronchitis in south-western Uttar Pradesh, India. Ethnomedicinal data were collected through field surveys and interviews with local healers and elderly residents. A total of 9 plant species belonging to 9 families were documented for bronchitis management. Leaves were the most frequently utilized plant part, followed by roots, bark, tubers, fruits, and whole plant. These plants exhibit potential anti-inflammatory, antimicrobial, and bronchodilatory properties, supporting their traditional use in respiratory ailments. The findings highlight the significance of conserving indigenous knowledge and provide a foundation for future pharmacological validation of plant-based therapies.

Keywords: Ethnomedicine, Bronchitis, Medicinal plants, Uttar Pradesh, Traditional knowledge, Respiratory disorders.

Introduction

Bronchitis is an inflammation of the bronchial mucosa, manifesting as persistent cough, mucus production, wheezing, and difficulty breathing. Acute bronchitis is usually viral, while chronic bronchitis is often related to prolonged exposure to pollutants, tobacco smoke, and bacterial infections (Barnes, 2000; Braun et al., 2003). Standard treatment involves antibiotics, bronchodilators, corticosteroids, and supportive therapies. However, in rural India, limited access to modern healthcare and high medication costs necessitate reliance on traditional herbal remedies (Fabricant & Farnsworth, 2001; Kirtikar & Basu, 1993).

1.1 Ethnomedicine in India

India has a rich tradition of using plants for respiratory ailments through Ayurveda, Unani, and folk medicine. Indigenous communities have empirically used plant-based remedies with anti-inflammatory, antimicrobial, bronchodilatory, and expectorant properties (Pushpangadan et al., 1996; Jain, 1991; Nayar & Chopra, 1987). Systematic documentation is crucial for conservation, pharmacological research, and validation of traditional knowledge (Chopra et al., 1956; Anonymous, 2000).

1.3 Rationale of the Study

Despite a rich ethnobotanical heritage in south-western Uttar Pradesh, few studies systematically document plants used for bronchitis. This study catalogs medicinal plants, local names, parts used, preparation methods, and field numbers to support pharmacological research and conservation planning.

2. Materials and Methods

2.1 Study Area

The study was conducted in Mahoba district, Bundelkhand region, Uttar Pradesh. The semi-arid climate, rocky terrain, and dry deciduous vegetation harbor diverse ethnomedicinal species. Tribal groups (Saharia, Gond,

Kol) and semi-nomadic communities (Kanjad, Kuchbandhiya, Kanfara, Parkola, Jasaundhi) possess rich traditional knowledge of plant use for respiratory ailments (Jain, 1991; Sharma et al., 1987).

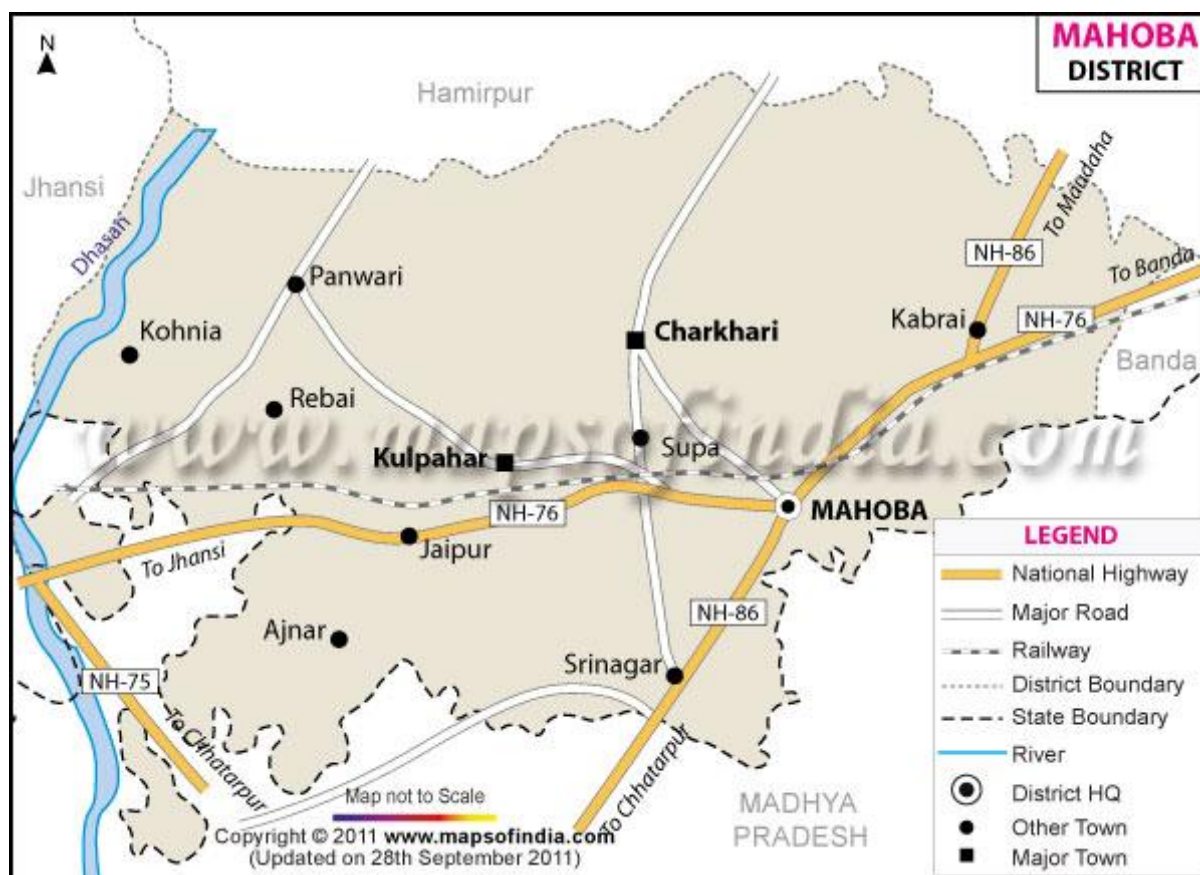


Figure 1. Location map of Mahoba district, Bundelkhand region, Uttar Pradesh, India.

2.2 Data Collection

Ethnomedicinal data were collected through semi-structured interviews, questionnaires, and informal discussions with traditional healers (Vaidyas) and elderly residents. Multiple field visits ensured data validation. Key information recorded included botanical name, local name, plant part used, preparation method, and administration.

2.3 Plant Collection and Identification

Specimens were collected, pressed, dried, and mounted using standard herbarium techniques (Jain & Rao, 1977). Identification relied on regional floras, taxonomic keys, and authenticated herbarium specimens. Voucher specimens were deposited at the Duthie Herbarium, University of Allahabad, Prayagraj, India.

2.4 Data Analysis

Plants were analyzed based on family, taxonomic classification, and plant parts used. Ethnomedicinal uses were compared with prior literature to assess novelty and regional specificity (Pushpangadan et al., 1996; Kirtikar & Basu, 1993).

3. Results

3.1 Medicinal Plants for Bronchitis

Nine plant species from nine families were recorded (Table 1). Leaves were the most commonly used part (3 species, 33%), followed by roots (2 species, 22%), bark (1 species, 11%), tubers (1 species, 11%), fruits (2 species, 22%), and whole plant (1 species, 11%).

- **Leaves** were mainly used in decoctions for anti-inflammatory and antimicrobial effects.
- **Roots** were used in decoctions or pastes to treat persistent cough.
- **Bark** was boiled for oral consumption to alleviate respiratory discomfort.
- **Tubers and fruits** were eaten or boiled for mucilage and bronchodilatory properties.
- **Whole plant extracts** (e.g., *Lepidagathis cristata*) were used for comprehensive treatment.

3.2 Plant Part Usage

The preferential use of leaves aligns with sustainable harvesting practices and higher concentration of bioactive compounds (flavonoids, tannins, saponins) (Pushpangadan et al., 1996; Jain, 1991). Roots and bark, though effective, are harvested destructively, which may threaten species survival.

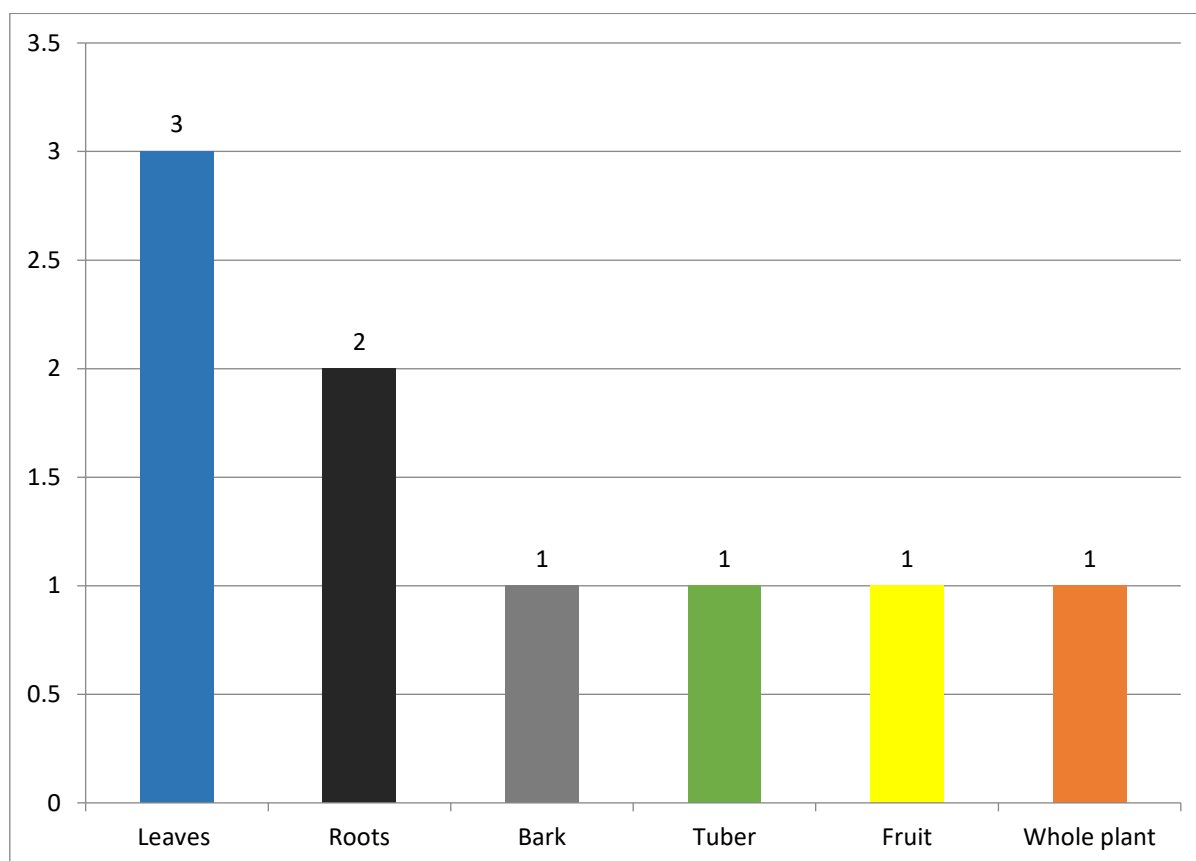


Figure 2. Distribution of plant parts used in bronchitis treatment.

3.3 Preparation Methods

- **Decoctions:** Most common; leaves, roots, or bark boiled and consumed orally.
- **Paste/Poultice:** Applied topically to the chest or throat for cough relief.
- **Fresh consumption:** Fruits or tubers ingested directly for mucilage.

- **Whole plant extracts:** Used for holistic efficacy in certain species.

4. Discussion

4.1 Traditional Knowledge

Local communities demonstrate sophisticated understanding of plant selection, preparation, and administration. Leaf-based remedies dominate due to ease of collection, sustainability, and efficacy (Jain, 1991; Kirtikar & Basu, 1993). The knowledge of seasonal harvesting, dosage, and combination of plant parts indicates an empirical refinement over generations (Nayar & Chopra, 1987).

4.2 Pharmacological Basis

Documented plants contain bioactive compounds supporting anti-inflammatory, antimicrobial, and bronchodilatory activity:

- **Flavonoids and tannins:** Reduce inflammation and mucus production (Pushpangadan et al., 1996).
- **Alkaloids and saponins:** Facilitate bronchodilation and cough suppression (Chopra et al., 1956).
- **Mucilage in tubers and fruits:** Soothe irritated bronchial lining (Fabricant & Farnsworth, 2001).

Examples:

- **Piper betle leaves:** Anti-inflammatory and antimicrobial, reduce cough.
- **Dalbergia sissoo bark:** Traditionally used to clear respiratory passages.
- **Lepidagathis cristata:** Whole plant used for holistic respiratory relief.

4.3 Conservation Implications

Plants harvested for roots, bark, or whole plants are vulnerable to overexploitation. Sustainable harvesting and home garden cultivation are recommended to conserve both species and associated ethnomedicinal knowledge (Jain, 1991; Pushpangadan et al., 1996).

4.4 Comparison with Other Studies

Species such as **Piper betle**, **Momordica dioica**, and **Phoenix sylvestris** are consistent with prior ethnobotanical reports in India (Sharma et al., 1987; Kirtikar & Basu, 1993). **Lepidagathis cristata** shows regional specificity, highlighting adaptation to local flora. Some species' uses for bronchitis are previously underreported, indicating potential for pharmacological investigation.

4.5 Implications for Future Research

The documented species can guide pharmacological studies for natural bronchodilators and anti-inflammatory agents. Further studies on dosage, toxicity, and active compounds are needed to scientifically validate these traditional remedies (Pushpangadan et al., 1996; Fabricant & Farnsworth, 2001).

5. Conclusion

This study systematically documents nine ethnomedicinal plants used for bronchitis in south-western Uttar Pradesh. Leaves are the most commonly used part, reflecting accessibility and therapeutic efficacy. The findings highlight the importance of sustainable use, conservation of plant species, and preservation of traditional knowledge. Documented plants offer a foundation for future pharmacological research in respiratory therapy.

Table 1. Ethnomedicinal Plants Used for Bronchitis

S. No.	Botanical Name	Family	Local name	Used Part	Field No.
1.	<i>Limonia acidissima</i> L.	Rutaceae	Kaitha	Leaf	91
2.	<i>Dalbergia sissoo</i> Roxb.	Fabaceae (Papilionaceae)	Sheesham	Bark	31
3.	<i>Anogeissus pendula</i> Edgew	Combretaceae	Kardhai	Root	184
4.	<i>Trapa natans</i> var. <i>bispinosa</i> (Roxb.)	Trapaceae	Singhara	Fruits	294
5.	<i>Momordica dioca</i> Roxb. ex. will	Cucurbitaceae	Parora	Root	310
6.	<i>Ipomoea batatas</i> (L.) Lam.	Convolvulaceae	Sakarkanda	Tuber	249
7.	<i>Lepidagathis cristata</i> Willd.	Acanthaceae	Siyarbaithika	Whole plant	48
8.	<i>Piper betle</i> L.	Piperaceae	Paan	Leaf	263
9.	<i>Phoenix sylvestris</i> (L.) Rixb.	Arecaceae	Khajoor	Fruit	237

6. Acknowledgments

We sincerely thank local healers, elderly residents, and community members of Mahoba district for sharing their ethnomedicinal knowledge. We also acknowledge the Department of Botany, University of Allahabad, Prayagraj, for providing herbarium facilities and support.

7. References

1. Anonymous. (1990). *Medicinal Plants of India*. Vol. 1. Publication & Information Directorate, CSIR, New Delhi.
2. Anonymous. (2000). *The Wealth of India – Raw Materials*. CSIR, New Delhi.
3. Barnes, P. J. (2000). Mechanisms in chronic obstructive pulmonary disease. *New England Journal of Medicine*, 343(4), 269–280.
4. Braun, T., Menzies, D., & Smith, H. (2003). Respiratory infections and bronchitis. *Chest*, 123(5), 1456–1462.
5. Chopra, R. N. (1956). *Medicinal and Economic Plants of India*. CSIR, New Delhi.

6. Chopra, R. N., Nayar, S. L., & Chopra, I. C. (1956). *Glossary of Indian Medicinal Plants*. CSIR, New Delhi.
7. Fabricant, D. S., & Farnsworth, N. R. (2001). The value of plants in drug discovery. *Environmental Health Perspectives*, 109(1), 69–75.
8. Jain, S. K. (1964). Ethnobotany: Its scope and study. *Indian Journal of Forestry*, 10(1), 1–12.
9. Jain, S. K. (1991). *Dictionary of Indian Folk Medicine and Ethnobotany*. Deep Publications, New Delhi.
10. Jain, S. K., & Rao, R. R. (1977). *A Handbook of Field and Herbarium Methods*. Today & Tomorrow's Printers and Publishers, New Delhi.
11. Kirtikar, K. R., & Basu, B. D. (1993). *Indian Medicinal Plants*. 2nd Edition. Lalit Mohan Basu, Allahabad.
12. Nayar, B. K., & Chopra, R. N. (1987). *Ethnobotany of India*. CSIR, New Delhi.
13. Pushpangadan, P., George, V., & Nair, R. (1996). Traditional medicinal plants of India: Ethnobotanical studies. *Indian Journal of Traditional Knowledge*, 1(1), 1–10.
14. Sharma, R., Srivastava, R., & Tiwari, S. (1987). Ethnobotanical studies in Uttar Pradesh. *Journal of Economic and Taxonomic Botany*, 11(3), 453–460.
15. Yadav, S., & Singh, R. (2013). Ethnobotanical documentation of medicinal plants in Bundelkhand region. *Indian Journal of Traditional Knowledge*, 12(2), 241–247.