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# An Ethnobotanical Investigation Of Medicinal Plants Used Among Rural And Tribal Communities For The Treatment Of Febrile Illnesses In Sohelwa Wildlife Sanctuary And Its Adjoining Areas

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**Abstract:**

Traditional herbal home remedies play a vital role in primary healthcare among rural and tribal communities in India. The present study aims to documents the knowledge and use of medicinal plants for the treatment of febrile illnesses among households in the Sohelwa Wildlife Sanctuary and its adjoining areas of the Tarai region of Uttar Pradesh, India. Ethnobotanical data were collected through structured interviews, household surveys, and focus group discussions using a standardized questionnaire to ensure diverse community representation. Plant specimens were collected, processed, and identified using standard floras and reference literature. The study recorded 48 ethnobotanical plant species representing 44 genera and belonging to 27 families that are traditionally used to treat various fever conditions. Fabaceae emerged as the most dominant plant family, with five species. The continued reliance on herbal remedies highlights the importance of traditional knowledge systems, particularly in regions with limited access to modern healthcare. Documentation of such ethnomedicinal practices is essential for the conservation of indigenous knowledge and may contribute to future pharmacological research.

**Key words:** Ethnomedicinal plants, indigeneous commuities, febrile illnesses, Sohelwa Wildlife Sanctuary.

## 1. Introduction

Medicinal plants have historically constituted the principal basis of health care systems worldwide (Gerique, 2006). Established traditional medical systems, including Ayurveda in India, Traditional Chinese Medicine (TCM) in China, and Muti in Africa, have been embedded within their respective cultural frameworks for several centuries (Singh *et al.* 2023). Angiospermic plant taxa have long represented a critical reservoir of ethnomedicinal resources, contributing substantially to the evolution and continuity of traditional healthcare practices (Abat, *et al.* 2017).

The use of ethnomedicinal floras can be traced to prehistoric periods and continues to play a significant role in both traditional and modern systems of medicine globally (World Health Organization, 2019). In the present study area, local communities rely extensively on plant species available in their immediate environment for the management of various febrile illnesses, including malaria, typhoid, dengue, chronic fever, and viral fever (World Health Organization, 2023). Knowledge pertaining to the identification, preparation, and therapeutic application of these medicinal plants is predominantly transmitted through oral traditions across generation (United Nations Educational, Scientific and Cultural Organization 2003). Herbal-based traditional medicine continues to constitute a fundamental component of primary healthcare rural regions India, where plant-derived remedies are widely utilized owing to their perceived therapeutic efficacy, affordability, accessibility, and strong cultural acceptance (Singh and Singh, 2009).

In India, ethnobotanical investigation have been extensively conducted by several workers, including Chopra, *et al.* (1956), Jain and Rao (1976), Jain (1991), Dastur (1996), Kirtikar and Basu (1999), Dubey, *et al.* (2004), and Bajpai, *et al.* (2016), thereby significantly enriching the documentation and systematization of indigenous plant-based knowledge. Within Uttar Pradesh, region-specific ethnobotanical assessments have also been conducted by numerous researchers, notably Singh and Maheshwari (1989), Pandey and Verma (2002), Singh, *et al.* (2002), Khanna (2002), Kumar, *et al.* (2003), Singh, *et al.* (2007), Dubey (2012), Kumar *et al.* (2013), Narayan and Singh (2017), Srivastava and Shukla (2018), Prajapati, *et al.* (2025) and Prajapati, *et al.* (2025).

Despite these contributions, ethnomedicinal knowledge in several localities remains inadequately documented. The present study aims to record and documentation of the traditional medicinal practices of ethnic communities in the study area, with the objective of conserving centuries-old indigenous knowledge for future generations and providing a scientific basis for further pharmacological investigations.

## 2. Materials and Methods

### 2.1. Study area

Sohelwa Wildlife Sanctuary is located in the districts of Shravasti, Balrampur, and Gonda in the state of Uttar Pradesh, India, and extends along the Indo-Nepal international boundary. Geographically, it extends between 27˚30ˈ01" N and 27˚55ˈ42" N latitude and 81˚55ˈ36" E to 82˚48ˈ33" E longitudes (Forest Survey of India, 2021). Historically, the forest tract formed part of the Balrampur Estate and remained under the ownership of the Maharaja of Balrampur prior to the implementation of the Zamindari Abolition Act of 1952 (District Gazetteer, Gonda (1988). Subsequently, in 1988, the area was formally notified as a wildlife sanctuary to ensure the protection and management of its biological resources (Forest Survey of India, 2021). It covers approximately 452 km² and extends as a narrow east–west corridor about 120 km in length and 6–8 km in width along the Indo–Nepal international border. Sohelwa Wildlife Sanctuary constitutes an important component of the Bhabar–Terai ecosystem, a biogeographic zone recognized for its high biodiversity and ecological significance (Champian *et al*. 1968).

The vegetation of the sanctuary is characterized by a mosaic of deciduous and semi-evergreen forest types (Forest Survey of India, 2021). The floral composition is dominated by species such as *Shorea robusta* (Sal), *Tectona grandis* (Teak), *Terminalia bellirica* (Bahera), *Anogeissus latifolia* (Phaldu), *Syzygium cumini* (Jamun), *Dalbergia sissoo* (Shisham), *Grewia tiliifolia* (Dhamina), *Lannea coromandelica* (Jigna), *Adina cordifolia* (Haldu), *Terminalia tomentosa* (Asna), and *Acacia catechu* (Khair). The sanctuary supports diverse faunal assemblages and provides important habitats for several wildlife species typical of the Terai region (Champian, *et al*., 1968 and Rodgers *et al*., 2002). The surrounding landscape has traditionally been inhabited by tribal community, whose livelihood practices have historically been linked with forest resources (Champian, *et al*., 1968).

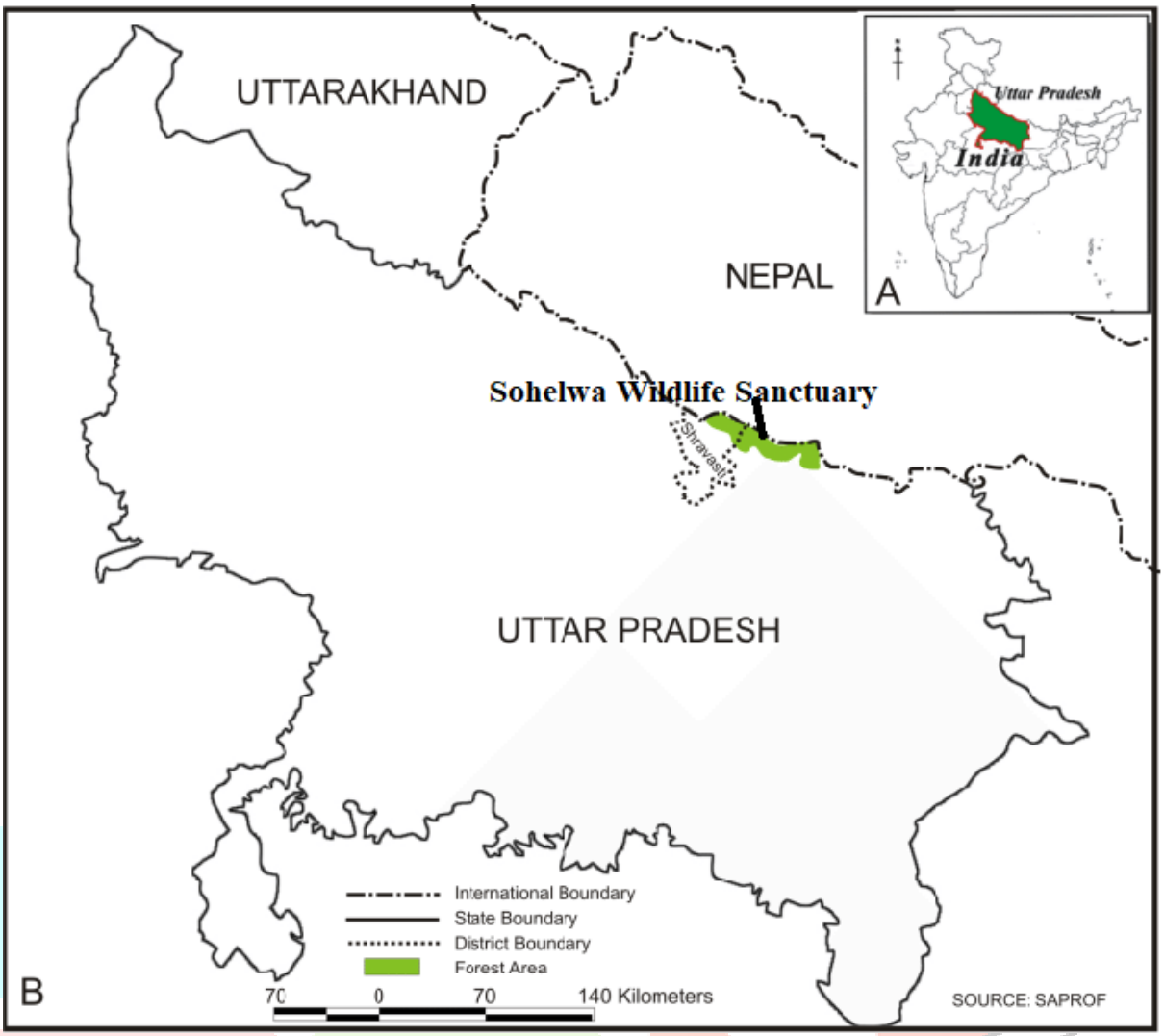


**Figure 1. Geographical location of the Sohelwa Wildlife Sanctuary and its adjoining areas.**

### 2.2. Ethnobotanical survey, identification and documentation

Field trips were systematically conducted in the Sohelwa Wildlife Sanctuary and its adjoining areas of the Tarai region to collect plant specimens from various locations across different seasons. The Tharu community and other local inhabitants assisted in identifying plants based on their traditional uses. During collection, detailed notes were recorded in a notebook, including the collection number, local name, accepted scientific name, family, vegetation type, and photographs of each specimen. Specimens were carefully processed, preserved, and poisoned using Mercuric Chloride ($HgCl_2$) to prevent fungal and insect damage. They were then mounted on standard herbarium sheets (41 × 28 cm), with labels documenting essential information such as the botanical name, family, habitat, location, collector's name, collection number, and other relevant details necessary for accurate identification (Jain and Rao, 1977). Identification of specimens was carried out using standard reference books and floras, including Hooker (1872–1897) and Duthie (1960). The prepared herbarium specimens were subsequently deposited in the Department of Botany, Prof. B. K. Verma Herbarium, Maharaja Bijli Pasi Government P.G. College, Lucknow of Uttar Pradesh.

**Figure 2. Photograph showing the interaction among the rural communities of Sohelwa Wildlife Sanctuary and its adjoining areas.**

### 2.3. Data Collection

To systematically documentation of the ethnomedicinal plants of the Sohelwa Wildlife Sanctuary and its adjoining areas used in the management of various types of febrile illnesses, an extensive field survey was conducted from December 2024 to February 2026. Primary information was obtained from traditional healers, particularly elderly members of the Tharu tribes and other local inhabitants, who possess extensive knowledge of plant uses. Data collection involved a pretested questionnaire (format provided in the supplementary information), direct field observations, and structured interviews. Detailed information on methods of preparation, modes of consumption, shelf-life, and other ethnobotanical practices was gathered through discussions with traditional healers, knowledgeable community members, and local Vaidyas of the tribal community.

## 3. Results

### 3.1. Demographic feature of the informants

An extensive ethnobotanical survey was conducted in the Sohelwa Wildlife Sanctuary of the Tarai region, Uttar Pradesh, involving interviews with 80 local informants (Table 1). Among the respondents, 70 individuals (87.5%) were male and 10 individuals (12.5%) were female. The predominance of male participants may be attributed to their greater willingness to engage in discussions with interviewers, whereas female informants exhibited comparatively lower participation, likely due to sociocultural constraints. The informants comprised a diverse group, including traditional herbal practitioners, medicinal plant collectors, farmers, and herdsmen. Traditional practitioners demonstrated substantial knowledge regarding the identification and utilization of indigenous medicinal plants for the treatment of various ailments.

The age distribution indicated that 24 participants (30%) were in the 50–59-year group, 43 participants (54%) were in the 60–70-year group, and 13 participants (16%) were above 70 years. This suggests that ethnomedicinal knowledge is predominantly retained among older individuals. Regarding

educational status, 69 informants (86%) were illiterate, while 11 (14%) had primary education. Illiterate respondents contributed more detailed information on traditional medicinal plant use than their literate counterparts. This may be associated with increasing reliance on modern healthcare systems, lifestyle changes, and gradual erosion of traditional knowledge due to urbanization.

**Table 1. Demographic characteristics of informants in Sohelwa Wildlife Sanctuary and its adjoining areas of the Tarai region, Uttar Pradesh.**

| Demographic Feature | Category | Number of Persons | Percentage (%) |
|---|---|---|---|
| Gender | Male | 70 | 87.5 |
| | Female | 10 | 12.5 |
| Age (years) | 50–59 | 24 | 30 |
| | 60–70 | 43 | 54 |
| | >70 | 13 | 16 |
| Education | Illiterate | 69 | 86 |
| | Primary | 11 | 14 |
| **Total** | | **80** | **100** |

**Table 2. Documentation of various Herbal and Local plants used by local inhabitants of Sohelwa Wildlife Sanctuary and its adjoining areas.**

| S. No. | Botanical Name | Local Name | Family | Febrile illnesses | Part uses |
|---|---|---|---|---|---|
| **1.** | *Aegle marmelos* (L.) Corr. | Bel | Rutaceae | Typhoid, Fever | Bark, Leaves |
| **2.** | *Allium sativum* L. | Lahsun | Liliaceae | Fever | Bulb |
| **3.** | *Aloe barbadensis* Mill. | Gheekumar | Liliaceae | Fever | Leaves |
| **4.** | *Alstonia scholaris* (L.) R. Br. | Chhatian | Apocynaceae | Malaria fever and fever | Bark |
| **5.** | *Alysicarpus pupleurifolius* (L.) DC. | Akranti | Fabaceae | Fever | Whole plant |
| **6.** | *Andrographis paniculata* (Burm. f.) Wall. | Chirata | Acanthaceae | Malaria fever and fever | Whole plant |
| **7.** | *Achyranthes aspera* L. | Chirchita | Amarantheceae | Malaria fever | Whole |
| **8.** | *Anthocephalus chinensis* (Lamk.) Rich. Ex Walp. | Kadam | Rubiaceae | Fever | Bark |
| **9.** | *Argemone maxicana* L. | Pili Katari | Papaveraceae | Malaria fever | Root |
| **10.** | *Azardirachta indica* Juss. | Neem | Meliaceae | Typhoid, Malaria fever | Leaves, Bark |
| **11.** | *Bacopa monnieri* (L.) Penn. | Bramhi, Jalnaveri | Scrophulariaceae | Fever | Whole plant |
| **12.** | *Bauhinia variegata* L. | Kachnar | Fabaceae | Malaria fever | Bark |
| **13.** | *Boerhaavia diffusa* L. | Patharchatta | Nyctaginace | Malaria | Root |

| | | | | | |
|---|---|---|---|---|---|
| | | | ae | fever | |
| **14.** | *Blumea lacera* (Burm. f.) DC. | Purroh | Asteraceae | Fever | Whole plant |
| **15.** | *Bombax ceiba* L. | Semal | Malvaceae | Fever | Bark |
| **16.** | *Caesalpinia bondac* (L.) Roxb. | Karanj | Fabaceae | Fever | Seed |
| **17.** | *Calotropis procera* Br. | Madar | Asclepiadaceae | Fever | Root |
| **18.** | *Carica papaya* L. | Papita | Caricaceae | Dengue | Leaves |
| **19.** | *Cissampelos pareira* L. | Patha | Menispermaceae | Typhoid fever | Root |
| **20.** | *Clerodendrum serratum* (L.) Moon. | Bharang | Verbenaceae | Malaria fever | Root |
| **21.** | *Clerodendrum viscosum* Vent. | Bhatwasi, Addakajo | Verbenaceae | Fever, Malaria fever | Leaves |
| **22.** | *Cuscuta capitata* Roxb. | Deelasazin | Convolvulaceae | Fever | Whole Plant |
| **23.** | *Datura metel* L. | Dhatura | Solanaceae | Fever | Fruit |
| **24.** | *Evolvulus alsinoides* (L.) L. | Chatpatia | Convolvulaceae | Fever | Root |
| **25.** | *Ficus bengalensis* L. | Bargad | Moraceae | Fever | Bark |
| **26.** | *Ficus religiosa* L. | Piple | Moraceae | Typhoid fever | Bark |
| **27.** | *Hibiscus rosa-sinensis* L. | Betjongnaro | Malvaceae | Fever | Flower |
| **28.** | *Justicia adhatoda* L. | Adusa | Acanthaceae | Typhoids | Leaves |
| **29.** | *Lantana camara* L. | Galphusia | Verbenaceae | Malaria | Stem |
| **30.** | *Mangifera indica* L. | Aam, Amba | Anacardiaceae | Fever | Leaves |
| **31.** | *Momordica charantia* L. | Karela | Cucurbitaceae | Malaria fever | Leaves |
| **32.** | *Momordica dioica* Roxb. | Bankarela | Cucurbitaceae | Fever | Root |
| **33.** | *Moringa oleifera* Lam. | Saijana | Moringaceae | Fever | Bark |
| **34.** | *Nyctanthes arbor-tristis* L. | Gargad, Harsingar | Oleaceae | Malaria fever | Leaves |
| **35.** | *Ocimum sanctum* L. | Babri-biol, tulsi | Lamiaceae | Dengue, Malaria fever | Leaves |
| **36.** | *Oxalis corniculata* L. | Amrul | Oxalidaceae | Fever | Leaves, Whole plant |
| **37.** | *Rauvolfia serpentine* (L.) Benth. ex Kurz. | Sarpagandha | Apocynaceae | Malaeria fever | Root |
| **38.** | *Sida cordifolia* L. | Bala | Malvaceae | Malaria fever | Root |
| **39.** | *Solanum melongena* var. *incanum* (L.) Ktze. | Banbhantawa | Solanaceae | Fever | Fruits |
| **40.** | *Solanum nigrum* L. | Bhambhola | Solanaceae | Fever | Fruits |
| **41.** | *Sonchus wightianus* DC. | Dudoribon | Asteraceae | Fever | Whole plant |
| **42.** | *Tabernaemontana divaricate* (L.) Br. ex Roem. & Schult. | Chandni | Apocynaceae | Fever | Leaves |
| **43.** | *Tamarindus indica* L. | Amli, Imli | Fabaceae | Fever | Leaves |

| | | | | | |
|---|---|---|---|---|---|
| **44.** | *Terminalia alata* Roxb. | Asan | Combretaceae | Fever | Bark |
| **45.** | *Tinospora codifolia* (L.) Merr. | Athervel, Giloe | Menispermiaceae | Dengue, Fever | Whole plant |
| **46.** | *Tridex procumbens* L. | Bellamaku | Asteraceae | Fever | Roots |
| **47.** | *Xanthium strumarium* L. | Lapetua, Adasisi | Asteraceae | Malaria fever | Leaves |
| **48.** | *Uraria picta* (Jacq.) Desv. | Pitvan | Fabaceae | Fever | Root |

### 3.2. Diversity of medicinal plants use

The ethnobotanical assessment documented a diverse assemblage of 48 medicinal plant species, distributed across 44 genera and 27 families, which are traditionally employed in the management of various febrile disorders. The substantial taxonomic diversity observed in this study reflects the depth and richness of traditional knowledge systems related to fever management within the study area.

Among the recorded families, Fabaceae was the most dominant, contributing five species, followed by Asteraceae, which was represented by four species. Apocynaceae, Malvaceae, Solanaceae, and Verbenaceae each contributed three species. Furthermore, Acanthaceae, Convolvulaceae, Cucurbitaceae, Liliaceae, Menispermaceae and Moraceae were represented by two species each. The remaining families such as Rutaceae, Amaranthaceae, Rubiaceae, Papaveraceae, Meliaceae, Scrophulariaceae, Nyctaginaceae, Asclepiadaceae, Anacardiaceae, Moringaceae, Oleaceae, Lamiaceae, Oxalidaceae, Caricaceae and Combretaceae were each represented by a single species.

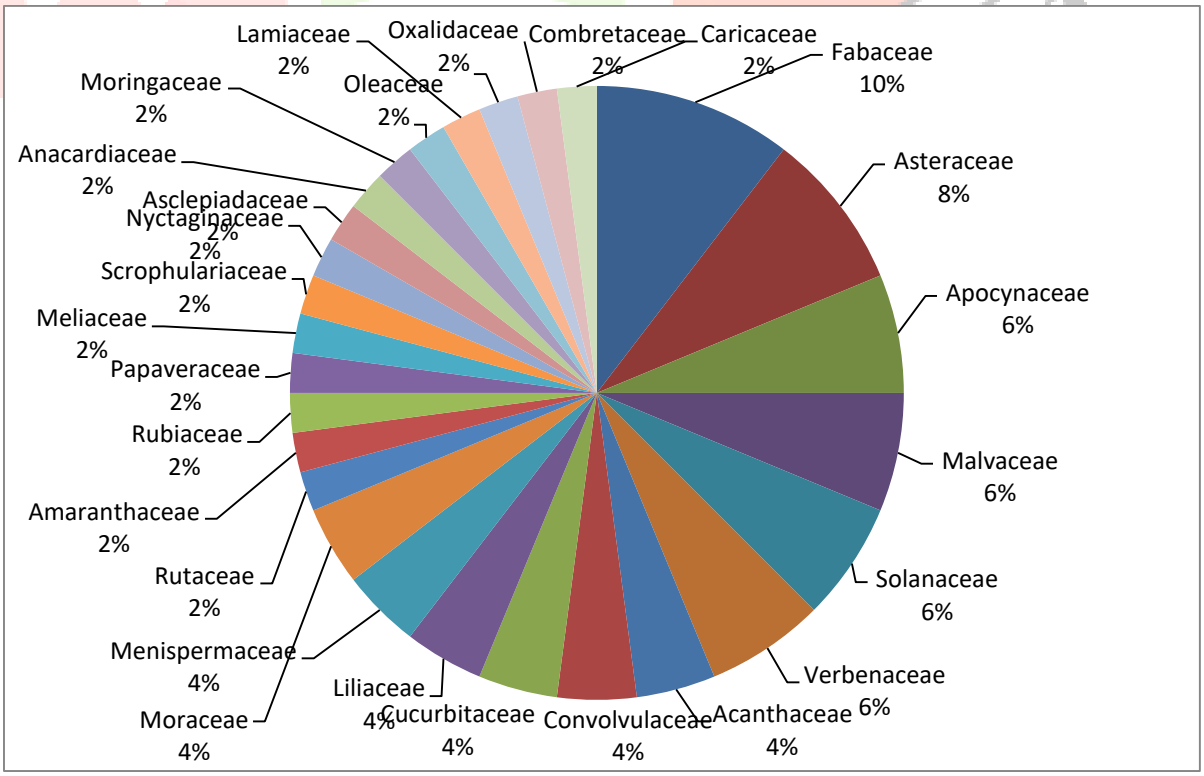


**Figure 3. Major plant families used in ethnomedicine in the Sohelwa Wildlife Sanctuary and adjacent areas.**

### 3.3. Number of medicinal plants used for febrile illnesses

A total of 30 plant species were recorded in the study area for the treatment of fever. Additionally, 15 species were reported to be used in the management of malaria, while 5 species were identified for the treatment of typhoid and 3 species for dengue fever. These findings underscore the diversity of medicinal plant species utilized locally for the management of febrile and infectious diseases.

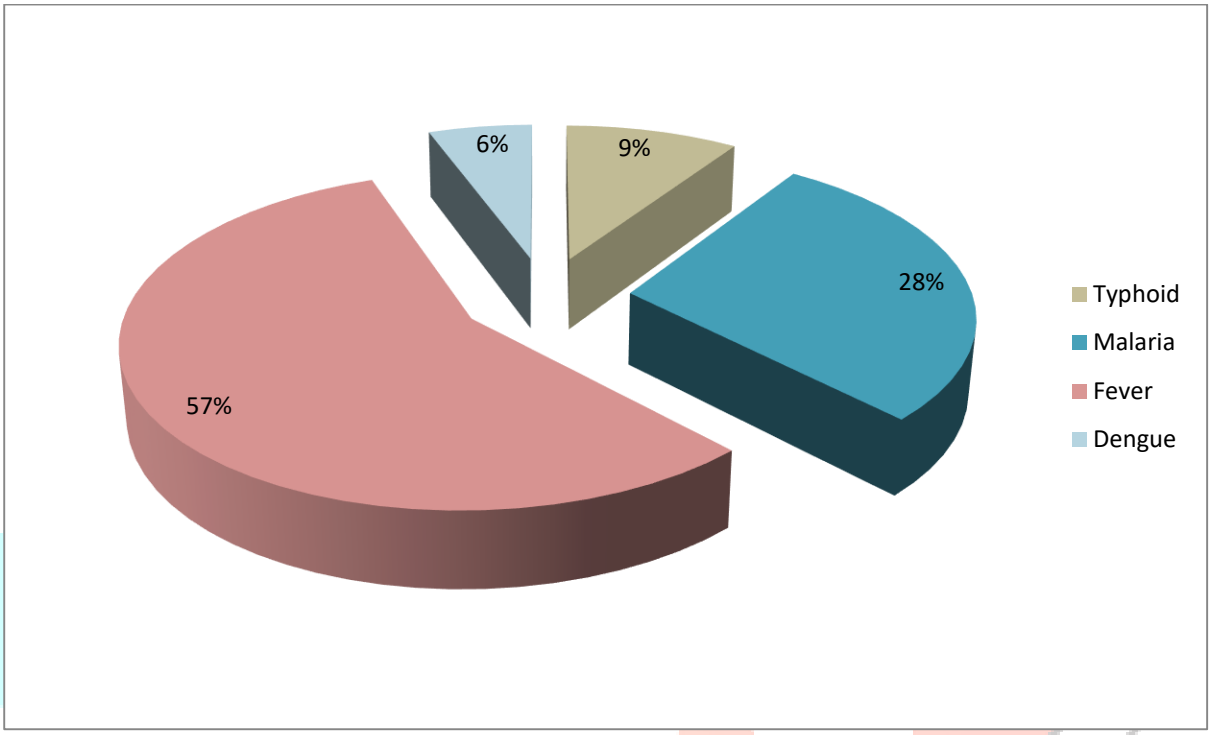


**Figure 4. Ethnomedicinal plants used for different types of febrile illnesses in Sohelwa Wildlife Sanctuary and adjoining areas.**

### 3.4. Number of medicinal plant parts used in the treatment of febrile illnesses

In the study area, a variety of plant parts were reported for the treatment of fever, reflecting diverse ethnomedicinal practices. Leaves were the most commonly utilized plants part, recorded in 14 species. Roots were used in 11 species, followed by bark in 10 species and whole plants in 9 species. The use of fruits was comparatively limited, being reported in only 2 species. Seeds and flowers were the least utilized plant parts, each recorded in a single species. This distribution indicates a clear preference for vegetative plant parts in traditional fever remedies.

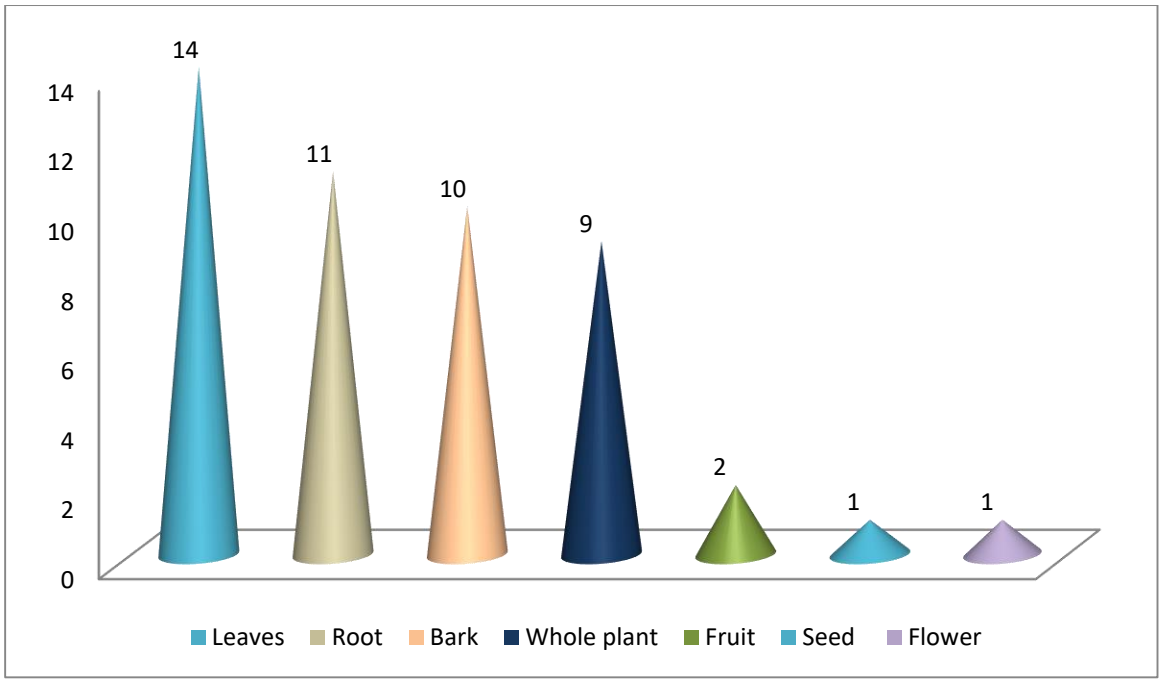


**Figure 5. Plants part used in different types of febrile illnesses in Sohelwa Wildlife Sanctuary and adjoining areas.**

## 4. Discussion

The predominance of families such as Fabaceae and Asteraceae is consistent with previous ethnobotanical investigations and may be attributed to their wide distribution and rich phytochemical profiles, including compounds with documented antipyretic, anti-inflammatory, and antimicrobial properties. The representation of numerous families by one or two species further indicates a diversified and adaptive ethnomedicinal framework, likely developed to address a range of fever aetiologies. These findings underscore the importance of preserving traditional medicinal knowledge and highlight the potential of the documented plant species for future pharmacological and phytochemical investigations.

## Conclusion:

The present study documents the ethnomedicinal use of plant resources in the Sohelwa Wildlife Sanctuary and adjoining areas of the Tarai region of Uttar Pradesh, revealing significant floristic diversity utilized in the treatment of febrile illnesses. A total of 48 plant species belonging to 44 genera and 27 families were recorded, indicating the continued dependence of local communities on traditional plant based healthcare. The predominance of Fabaceae and Asteraceae reflects their ecological abundance and medicinal relevance in the region.

Traditional knowledge was found to be largely confined to elderly informants, suggesting a gradual decline in intergenerational knowledge transmission due to modernization and increased reliance on allopathic medicine. Leaves and roots were the most frequently used plant parts, highlighting their accessibility and perceived therapeutic efficacy. The documented species provide valuable leads for future phytochemical and pharmacological investigation. Preservation of both medicinal plant

diversity and associated traditional knowledge in therefore, essential for sustaining indigenous healthcare practices and biodiversity conservation.

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**References:**

1. Abat J K, Kumar S, and Mohanty A, Ethnomedicinal, phytochemical and ethnopharmacological aspects of four medicinal plants of Malvaceae used in Indian traditional medicines*: A review*. *Medicines (Basel)*, 4(4) (2017) 75.
2. Bajapai O, Pandey J & Chaudary L B, Ethno medicinal uses of tree species by Tharu tribes in the Himalayan terai region of India. *Research Journal of Medicinal Plants*, 10 (1) (2016) 19 – 41.
3. Champian H G & Seth S K, *A Revised Survey of the Forest Types of India*. Government of India Press, New Delhi, 1968.
4. Chopra, R N, Nayar S L & Chopra I C, *Glossary of Indian Medicinal Plants*. C.S.I.R. New Delhi, 1956.
5. Dastur J F, *Medicinal plants of India and Pakistan*. B. D. Taraporewala Sons & Co. Pvt. Ltd. Mumbai, 1996.
6. District Gazetteer, Gonda. *Uttar Pradesh District Gazetteers: Gonda*. Lucknow: Government of Uttar Pradesh, 1988.
7. Dixit R D & Pandey H C, Plants used as folk medicine in Jhansi and Lalitpur sections of Bundelkhand, U.P. *Int. J. Crude Drug Res*, 22 (1984) 48 – 51.
8. Dubey N K, Kumar R & Tripathi P, Global Promotion of Herbal Medicine in India's opportunities. *Curr. Sci*, 86(1) (2004) 37 – 41.
9. Duthie J F, *Flora of Upper Gangatic Plain and of the adjacent Siwalik & Sub-Himalayan tracts.* 3 Vol. Govt. Press, Calcutta, 1903-1929.
10. Forest Department, Government of Uttar Pradesh. *Management Plan of Sohelwa Wildlife Sanctuary*. Uttar Pradesh Forest Department, Lucknow.
11. Forest Survey of India, *India state of forest report*. Dehradun: Forest Survey of India, 2021.
12. Gerique, An introduction to ethnoecology and ethnobotany: the ory and methods. In: Advanced Scientific Training, editor. Integrative assessment and planning methods for sustainable agroforestry in humid and semiarid region. Loja, Ecuador, (2006) p 20.
13. Hooker J D, *The Flora of British India*. 7 London, 1872-1897.
14. Jain S K & Rao R R, *A Hand book of field and herbarium methods.* Today and Tomorrow Printers and Publisher, New Delhi, 1976, p. 33 – 58.

15. Jain S K & Rao R R, *A handbook of field and Herbarium Methods.* Today and Tomorrow's Print and Publ. New Delhi, 1977.
16. Jain S K, *Dictionary of Indian Folk Medicine*. Ethnobotany, 1991, p. 1 – 31.
17. Khanna K K, Unreported ethnomedicinal uses of plants from the tribal and rural folklores of Gonda district, Uttar Pradesh. *Ethnobotany*, 14 (2002) 52 – 56.
18. Kirtikar K R & Basu B D, *Indian medicinal plant*, Delhi, 1999 Vol. I-IV.
19. Kumar A, Pandey V C, Singh A G, & Tewari D D, Traditional uses of medicinal plants for dermatological healthcare management practices by the Tharu tribal community of Uttar Pradesh, India. *Genet Resour. Crop Evol*, 60(1) (2013) 203 – 224.
20. Kumar A, Tewari D D & Pandey Y N, Ethnophytothereputics among Tharus of Beerpur Semra forest range of Balrampur district. U. P. *J. Econ. Taxon. Bot. Infor. Serv*. Lucknow, India: NBRI, 2003.
21. Narain S, & Narain H, *Ethnoveterinary plants of Gonda region*. UP India, 1999.
22. Narayan D, & Singh P K, Ethno-botanical importance and herbal medicines in the Vindhyan region of Eastern; Uttar Pradesh. *Journal of Medicinal plants Research*, 11(25) (2017) 403 – 413.
23. Pandey H P & Verma B K, *Plants in oral health care among the aborigines of Gonda and Balrampur Regions*. U.P., 2002.
24. Prajapati V K, Singh M P V V, Kumar S & Rahul, Angiospermic medicinal plants used by Tharu tribes for fevers in Balrampur district, Tarai region of Uttar Pradesh. *Journal of Medicinal Plants Studies*, 13(5) (2025) 236-240.
25. Prajapati V K, Singh M P V V, Kumar S & Rahul, Diversity of Fever disease in the Tarai Region of Uttar Pradesh. *World Journal of Pharmaceutical Research*, 14(21) (2025) 1707 – 1716.
26. Rodgers WA, Panwar H S & Mathur V B, *Wildlife Protected Area Network in India: A Review*. Wildlife Institute of India, Dehradun, 2002.
27. Singh A & Singh P K, An ethnobotanical study of medicinal plants in Chandauli district of Uttar Pradesh, India. *J. Ethnomharmacol*, 121 (2009) 324 – 329.
28. Singh A K, Raghubanshi A S & Singh J, S, Medical ethnobotany of the tribals of Sonaghati of Sonbhadra district, Uttar Pradesh, India. *J. Ethnopharmacol*, 81(1) (2002) 31 – 41.
29. Singh A, Hussain J, Mehta J P, Bagria A S, Singh H, Nautiyal M C, & Bussmann R W, Ethno-medicinal plants of indigenous people: a case study in Khatling valley of Western Himalaya, India. Ethnobot Res Appli, 25: (2023) 1 – 19.
30. Singh K K & Maheshwari J K, Traditional Herbal Remedies among the Tharus of Bahraich district, U.P. India. *Ethnobotany*, 1 (1989) 51 – 56.
31. Singh P K, Singh R H & Kumar V, Medicinal plants used by Gond tribe of 'Duddhi' District Sonbhadra, Uttar Pradesh, India. *Flora and Fauna*, 13(1) (2007) 50 – 54.

32. Srivastav N & Shukla A K, Diversity and uses of medicinal plants in Chandraprabha Wild Life Sanctuary, Chandauli district, Uttar Pradesh. *Tropical plants Research*, 5(3) (2018) 405 – 418.
33. United Nations Educational, Scientific and Cultural Organization, *Convention for the Safeguarding of the Intangible Cultural Heritage*. Paris: UNESCO, 2003.
34. World Health Organization, *WHO global report on traditional and complementary medicine*. Geneva: World Health Organization, 2019.
35. World Health Organization, *WHO global traditional medicine strategy*. Geneva: World Health Organization, 2023.