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## Angiospermic medicinal plants used by Tharu tribes for fevers in Balrampur district, Tarai region of Uttar Pradesh

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### Abstract

Angiospermic plants are very much significant for various diseases of human being, and these medicinal plants are used as folk medicine. Gesture to drugs are frequently found in old literature, namely Athurveda, Charak Samhita and Sushruta Samhita, etc. An extensive survey was undertaken to collect and document folk medicinal plants used by tribal inhabitants, especially the Tharu tribe and their traditional healers in the Balrampur district of the Tarai region of Uttar Pradesh, to cure different kinds of fever. In this study, 44 species have 42 genera belonging to 25 families that are being used for different kinds of fever treatment by Tharu and local tribal community of Balrampur district. The present paper provides botanical names, common names, family, used parts, field number and ethnomedicinal uses in a tabulated form.

**Keywords:** Angiospermic plants, ethnobomedicinal, fever, Balrampur district, Tarai region

### Introduction

Balrampur district is one of the districts of Uttar Pradesh and it is a part of the Devipatan division. It is situated on the bank of the “Rapti River”. This district is situated in the Northern part of Uttar Pradesh between 27°43' N latitude and 82°18' E longitude. It covers 3,457 km<sup>2</sup>, which is a proportion of the total area of Uttar Pradesh. This district shares its national and international boundary, with its north and northeast border touching Nepal, its east border by Siddharthnagar district, its southeast Basti district, its south and southwest by Gonda district, and its west by Shravasti district. North of this district is lies the Shivalik range of the Himalayas, which is known as the Tarai region. The main tribal community in the Balrampur district of the tarai region is the “Tharu” tribe. This is one of the largest tribes in Uttar Pradesh. Additionally, the “Kol” tribe also has a presence in Balrampur, alongside other districts.

Angiospermic plants are one of the most important sources of medicines. The relevance of plants as medicines dates back to prehistoric periods. Medicinal plants are extensively utilized throughout the world, basically by two means of healthcare system management that is traditional and modern. The local inhabitants of this district depend on the ethnobotanical plants of their surrounding to cure different types of fevers like Malaria, Typhoid, Dengue, Chronic fever and viral fever. This traditional knowledge about plants and their uses is transmitted orally from one generation to another generation by ancestors. Herbal folk medicine has always been attractive, and its remedies remain very effective, particularly in rural areas of India, for treating various diseases (Singh and Singh, 2009) [19].

In India, currently, the work on ethnobotany has been done by many workers such as Chopra *et al.* (1956) [2], Jain and Rao (1976) [10], Jain (1991) [9], Dastur (1996) [3], Kirtikar and Basu (1999) [12], Dubey *et al.* (2004) [5] and Bajapai *et al.* (2016) [1]. Ethnobotany in Uttar Pradesh has been studied by many researches, such as Dixit and Pandey (1984) [4], Singh and Maheshwari (1989) [21], Narain and Narain (1999) [15], Pandey and Verma (2002) [17], Singh *et al.* (2002) [20], Khanna (2002) [11], Singh *et al.* (2007) [22], Singh *et al.* (2010a) [23], Singh *et al.* (2010b) [24], Dubey (2012) [18], Kumar *et al.* (2013) [13], Narayan and Singh (2017) [16] and Srivastav and Shukla (2018) [25] etc. in different study areas. In the present study, an attempt has been made to document the traditional medical system of ethnic groups of the area so that the knowledge of thousands of years of evolution could be saved for future generations.



**Map 1:** Showing the study area of Balrampur district, Uttar Pradesh

### Materials and Methods

Field trips were regularly arranged to cover the entire area of the Balrampur district, and plant samples were collected from different areas in different seasons with the help of local inhabitants and identified on the basis of their uses in tribal life. During the collection notes should be kept in a notebook under the collection number, accepted name, family, vegetation type and photographs of each specimen. The levels that should be attached to the mounting sheet and used to document the botanical name of the plant, habitat, place, colour, collector name, the specimens collections number and any information which is necessary for plant identification, (Jain and Rao, 1977) [8]. Identification of specimens was done with the help of different important books and floras (Hooker, 1872 - 1897) [7]. These specimens, properly processed and poisoned, were mounted on Herbarium sheets and deposited in the Department of Botany, Prof. B. K. Verma Herbarium, Maharaja Bijli Pasi Gov. P.G. College, Lucknow, of Uttar Pradesh.

### Data collection

Collection and documentation of ethnomedicinal plants of Balrampur district with respect to different kinds of fever involved an extensive field survey conducted from December 2024 - July 2025. The basic work plan adapted and information collected from the traditional healers, specifically the elderly who had a lot of experience with the plants and their uses, was gathered through a pretested questionnaire in the format given in the supplementary information, direct observation, and through methods of preparations, consumption, self-life, and discussion and interview with traditional healers, knowledgeable persons, and local Vaidya's of the tribal community.

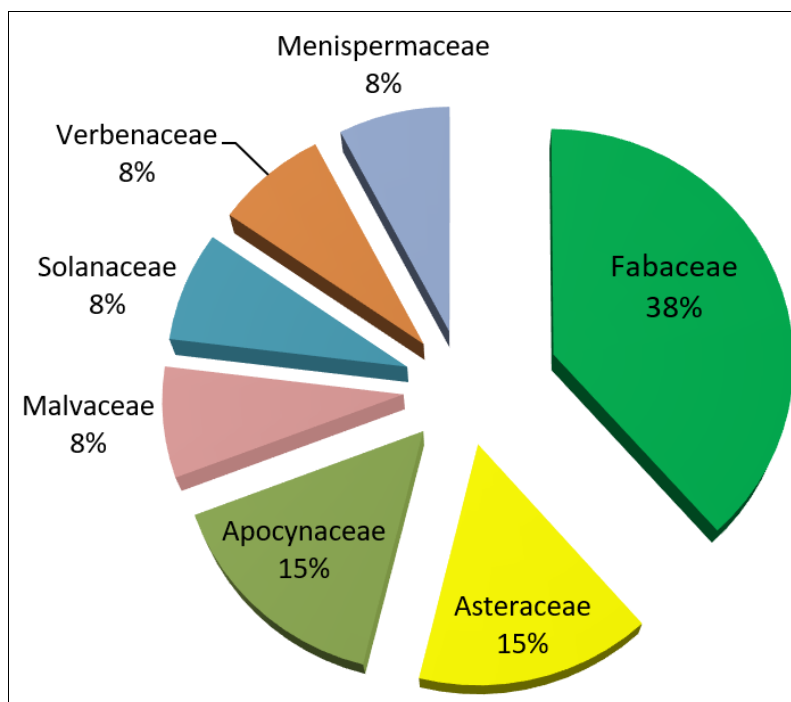
### Results and Discussion

During an ethnomedicinal study of Balrampur district, total collected 44 angiospermic plant species occupying 42 genera and belonging to 25 families, these were emphasized by local tribal community for their uses in treating various fever conditions (Table 1). An extensive survey of the study area revealed that the most commonly used medicinal plants for different kinds of fever belong to the family Fabaceae, which includes have 8 genera with 10 species. This is followed by Asteraceae (4 species), Apocynaceae (4 species), Malvaceae (2 species), Solanaceae (2 species), Verbenaceae (2 species) and Menispermaceae (2 species). The rest of the families such as Acanthaceae, Rutaceae, Rubiaceae, Meliaceae, Nyctaginaceae, Asclepiadaceae, Loranthaceae, Cannabaceae, Cariaceae, Anacardiaceae, Moraceae, Moringaceae, Musaceae, Oleaceae, Lamiaceae, Oxalidaceae, Combretaceae, and Scrophulariaceae, each have only one species (Fig 1).

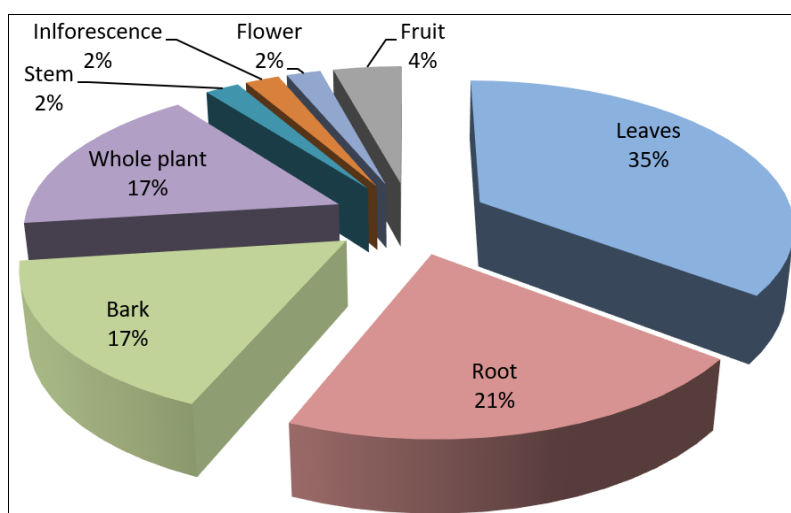
The ethnomedicinally most used part in different types of fever is leaves, followed by root, bark, whole plants, stems, inflorescence, flowers and fruits, and subsequently other medicinal plant fragments (Fig 2). These medicinal plants are also used by Vaidya's for different formulations. Due to the effect of modern culture and charm of allopathic drugs, the indigenous traditional knowledge of ethnomedicinal plants and their practices are gradually disappearing day by day among the young generation. Due to the dwindling interest in medicinal plants among youth generations of local inhabitants and their tendency to migrate to urban areas for lucrative jobs, the knowledge of ethnomedicinal plants is decreasing very fast in this day and age among the tribal society of Balrampur district of the Tarai region of Uttar Pradesh. Hence, it is necessary to document of indigenous traditional knowledge of useful ethnomedicinal plants and their therapeutic uses for

future generations before it is forever lost from the tribal community. Even these ethnomedicinal plants (Table 1) need to

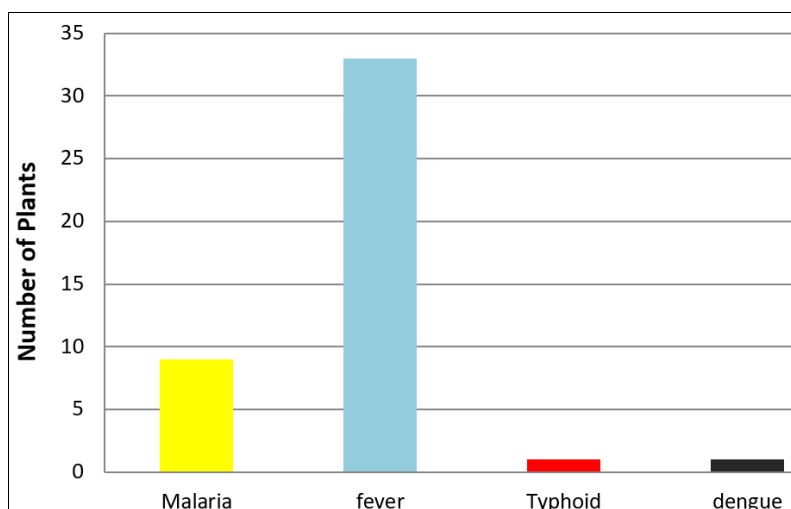
be conserved for future.



**Fig 1:** Major plant families used in ethnomedicine.



**Fig 2:** Uses parts of the angiospermic plants



**Fig 3:** Different kind of Fever conditions in Balrampur district treated with ethnomedicinal plant.

**Table 1:** Documentation of various Herbal and Local plants used by local inhabitants of Balrampur district.

S. No.	Botanical Name	Local name	Family	Uses	Used Part	Field No.
1	<i>Aegle marmelos</i> (L.) Corr.	Bel	Rutaceae	Fever, night fever	Leaves	3009
2	<i>Alstonia scholaris</i> (L.) R. Br.	Chhatian	Apocynaceae	Malaria fever and fever	Bark	3012
3	<i>Alysicarpus vaginalis</i> (L.) DC.	Akranti	Fabaceae	Fever	Whole plant	3031
4	<i>Andrographis paniculata</i> (Burm. f.) Wall.	Chirata	Acanthaceae	Malaria fever and fever	Whole plant	3054
5	<i>Anthocephalus chinensis</i> (Lamk.) Rich. Ex Walp.	Kadam	Rubiaceae	Fever	Bark	3050
6	<i>Azardirachta indica</i> Juss.	Neem	Meliaceae	Malaria Fever	Leaves and Inflorescence	3006
7	<i>Bacopa monnieri</i> (L.) Penn.	Jalnaveri	Scrophulariaceae	Fever	Whole plant	3051
8	<i>Bauhinia variegata</i> L.	Kachnar	Fabaceae	Malaria fever	Bark	3021, 3035
9	<i>Boerhaavia diffusa</i> L.	Patharchatta	Nyctaginaceae	Fever	Root	3024
10	<i>Blumea lacera</i> (Burm. f.) DC.	Purroh	Asteraceae	Fever	Whole plant	3052
11	<i>Bombax ceiba</i> L.	Semal	Malvaceae	Fever	Brak	3042
12	<i>Calotropis procera</i> Br.	Madar	Asclepiadaceae	Fever	Root	3005
13	<i>Cannabis sativa</i> L.	Bhang	Cannabaceae	Fever	Root, leaves	3002
14	<i>Cariaca papaya</i> L.	Papista	Cariaceae	Dengue	Leaves	3043
15	<i>Sena occidentalis</i> L.	Chakunda	Fabaceae	Fever	Leaves	3037
16	<i>Sena tora</i> L.	Chakonda	Fabaceae	Fever	Root	3034
17	<i>Cassia fistula</i> L.	Amaltas	Fabaceae	Fever	Root	3054
18	<i>Catheranthus roseus</i> L.	Sadabahar	Apocynaceae	Malaria fever	Leaf, Root	3047
19	<i>Cissamples pareira</i> L.	Patha	Manispermaceae	Fever	Root, Leaves	3016
20	<i>Clerodendrum viscosum</i> Vent.	Addakajo	Verbenaceae	Fever, Malaria fever	Leaves	3001
21	<i>Datura metel</i> L.	Dhatura	Solanaceae	Fever	Fruit	3053
22	<i>Dalbergia sisso</i> DC	Sheesso	Fabaceae	Fever	Bark	3013
23	<i>Dendrophthoe falcata</i> (L.f.) Etting	Banda	Loranthaceae	Fever	Stem	3052
24	<i>Desmodium dichotomum</i> (Willd.) DC.	Chirota	Fabaceae	Fever	Whole plant	3057
25	<i>Desmodium heterocarpon</i> (L.) DC.	Sarivan	Fabaceae	Fever	Root	3012
26	<i>Eclipta prostrata</i> L.	Bhringraj	Asteraceae	Fever	Leaves	3004
27	<i>Hibiscus rosa-sinensis</i> L.	Betjongnaro	Malvaceae	Fever	Flower	3025
28	<i>Lantana camara</i> L.	Galphusia	Verbenaceae	Malaria fever	Leaves	3032, 3033
29	<i>Mangifera indica</i> L.	Aam, Amba	Anacardiaceae	Fever	Leaves	3048
30	<i>Moringa oleifera</i> Lam.	Saijana	Moringaceae	Fever	Bark	3030
31	<i>Morus alba</i> L.	Toot	Moraceae	Fever	Leaves	3019
32	<i>Musa paradisiaca</i> L.	Kela	Musaceae	Typhoid	Root	3045
33	<i>Nyctanthes arbor-tristis</i> L.	Gargad, Harsingar	Oleaceae	Malaria fever	Leaves	3026
34	<i>Ocimum sanctum</i> L.	Babri-biol, tulsi	Lamiaceae	Malaria fever	Leaves	3010
35	<i>Oxalis corniculata</i> L.	Amrul	Oxalidaceae	Fever	Leaves, Whole plant	3011
36	<i>Rauwolfia tetraphylla</i> L.	Chandrabhaga	Apocynaceae	Fever	Leaves, Bark	3018
37	<i>Saraca asoca</i> (Roxb.) Willd.	Sita ashok	Fabaceae	Fever	Bark	3055
38	<i>Solanum nigrum</i> L.	Bhambhola	Solanaceae	Fever	Fruits	3007
39	<i>Sonchus wightianus</i> DC.	Dudoribon	Asteraceae	Fever	Whole plant	3003
40	<i>Tabernaemontana divaricata</i> (L.) Br. ex Roem. & Schult.	Chandni	Apocynaceae	Fever	Leaves	3027
41	<i>Tamarindus indica</i> L.	Amli, Imli	Fabaceae	Fever	Leaves	3028
42	<i>Terminalia alata</i> Roxb.	Asan	Combretaceae	Fever	Bark	3008
43	<i>Tinospora codifolia</i> (L.) Merr.	Athervel, Giloe	Menispermaceae	Fever	Whole plant	3014, 3029
44	<i>Tridax procumbens</i> L.	Bellamaku	Asteraceae	Fever	Roots	3022

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