

# Traditional Uses of Medicinal Plants of Tharu Ethnic-community of Banke District, Mid-Western Nepal

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## Abstract

The present study had been conducted in the Tharu community of Rapti-Sonari and Duduwa Rural Municipalities of Banke district, which is rich in tradition, culture and ethnobotanical knowledge. The main aim of this study was to document the native medicinal plants and their uses in the treatment of human ailments/problems among the Tharu community of Banke, District. This study was carried out in March, 2021. The ethnomedicinal data were collected using structured and semi-structured questionnaire interview with 20 key informants, older peoples, local healers, and Guruwas. Altogether 28 traditionally used medicinal plants species were recorded belonging to 27 genera and 21 families, among them Fabaceae was the most dominant family. The most frequently used plants parts were leaves and juice which is the most widely preferred mode of remedy. Older peoples, Guruwa and the traditional healers have high knowledge on the medicinal plants and their uses as compared to younger. Different parts of the same plant species were used for the treatment of more than one ailment using a different mode of remedies; it means single plant species was used in the treatment of multiple ailments. Further study should also be carried out on the documented plant species from study area to utilize them in drug development.

**Keywords:** Ethnic group, Ethnobotany, Native medicinal plants, Traditional knowledge

## Introduction

Nepal is one of the smallest but ecologically diversified countries. The country comprises a wide range of unique and valuable plants resources (Thapa, 2020). In Nepal altogether, 10,167 plant species are found (Shrestha et al., 2000). Out of which, over 7000 species are flowering plants among them over 1,600 species are found to be used as medicinal and aromatic plants (Bhaila et al., 2020; Shrestha et al., 2000). The use of plant and its resources for a medicinal purpose has a long history in Nepal and its use is rapidly spreading all-over the world due to having no side-effects, easily available at affordable prices and sometime the only one source of health care available to the poor (Acharya & Acharya, 2009).

The diversified use of plant and its resources are deeply rooted in the various ethnic groups of the country (Bhattarai, 2018). About 23% of flowering plants are used by different ethnic groups as medicinal plants to treat various types of health problems (Shrestha et al., 2000). The various ethnic

group of the country has developed their own knowledge systems for the use of plants in food, clothing, shelter, medicine and their spiritual needs (Bhattarai, 2018; Rajbhandari & Wrinkler, 2015). In Nepal, about 80-90% populations are living in the rural areas (Bhattarai, 1992), where it is difficult to access governmental health care facilities and they are still dependent on the traditional system of medicine for their basic health care needs (Ignacimuthu et al., 2006). Traditional healers and elderly people of the community have learned folklore through apprenticeships to treat common health disorders based on their traditional knowledge (Chaudhary et al., 2021; Quave & Pieroni, 2015). Some ethnic groups have developed their own traditional healing systems and they transfer their knowledge orally through generation to generation (Chaudhary et al., 2021; Malla & Chhetri, 2009).

Nepal is one of the multi-ethnic, multi-lingual and multi-cultural countries where, about 26.5 million people, under 125 caste or ethnic groups, speak 123 different kinds of languages (Central Bureau of Statistics [CBS], 2013). Among 125 different

ethnic groups, the Tharu is one of the major ethnic groups, mostly inhabiting along entire Tarai and inner Tarai region, over the 20 different districts of Nepal (Thapa, 2020). They are recognized as the marginalized indigenous people by the Government of Nepal. They are culturally and linguistically diverse ethnic group and are also believed to be the first people to occupy the Tarai region (Meyer & Deuel, 1998). Among all ethnic groups, the Tharu is one of the largest ethnic group representing 6.8% of National population and 13.47% of the Tarai (CBS, 2001). They have a distinct language, culture, folklore, rituals, customs, lifestyles as well as traditional knowledge about medicinal plants and their uses. They have a best known person of the society known as Guruwa and healers for the use of plant and its resources to treat various types of health problems. They communicate their ethnobotanical knowledge orally from generation to generation. But at the present time, their ethnobotanical knowledge and traditional healing systems is at risk because of lack of written document, time of modernization and a decrease in the practice of using plant resources as medicine (Shrestha, 1985). The documentation of ethnobotanical information and traditional healing systems in the Tharu community of Rapti-Sonari and Duduwa Rural Municipality of Banke district are still undocumented. Therefore, the present study was devised to document the traditional knowledge on medicinal plants with their indigenous uses and practices for the conservation and proper utilization of these plant resources. This paper attempts to document traditional ethnomedicinal indigenous knowledge about medicinal plants used by ethnic Tharu community.

## Materials and Methods

### Study area

Banke is one of the famous districts with diverse casts and cultures. It lies in the south-western part of the Tarai region of Lumbini Province of Nepal. Nepalgunj as its district headquarter, covers an area of 2,337 km<sup>2</sup> (902 sq. m.) and had a population of 491,313 in 2011 with various casts like Brahmin, Magar, Tharu, Muslim, Yadav and Chhetri. Geographically, this district is divided into three regions i.e. lower tropical region (below 300 m), upper tropical region (between 300 to 1000 m) and subtropical region (between 1000 to 2000 m). The lower tropical region covers 79.1% of the total land area, while the upper tropical region covers 20.6%, and only 0.3% land area are covered by subtropical region. Banke district has one sub-metropolitan city (Nepalgunj), one municipality (Kohalpur) and six rural municipalities (Rapti-Sonari, Narainapur, Duduwa, Janaki, Khajura, and Baijanath). Out of these municipalities, the Rapti-Sonari and Duduwa Rural Municipality were selected for the collection of data because highest numbers of ethnic Tharu peoples are found to live there. The study sites are located in the lower plain parts of Banke district (Figure 1).

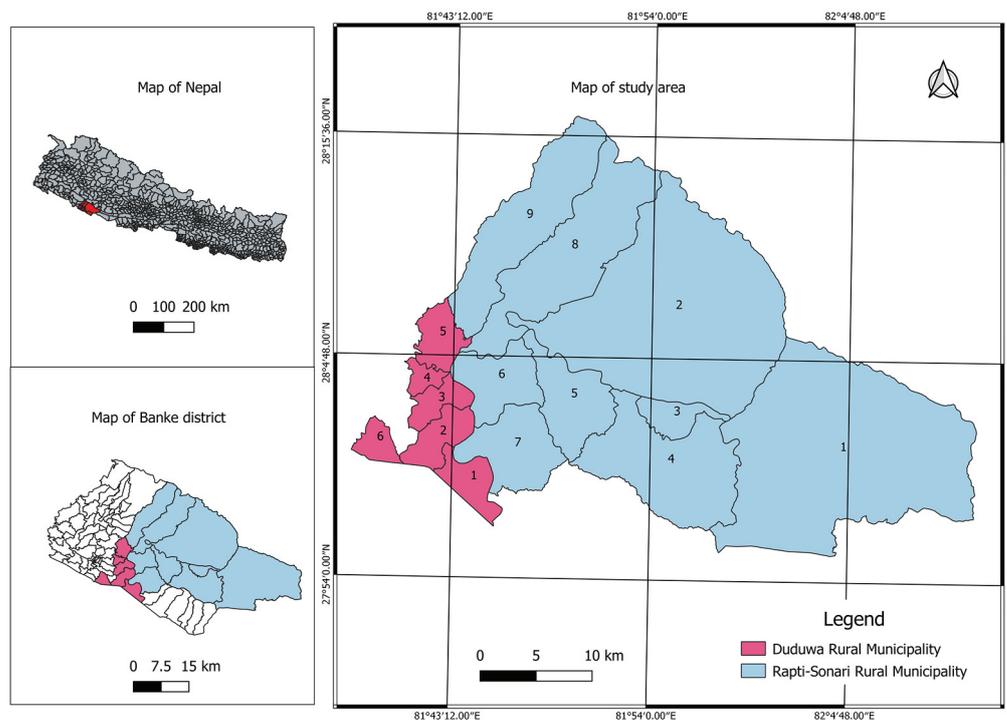


Figure 1: Map of study area

### ***Selection of informants***

Prior to the documentation of ethnobotanical information on common medicinal plants used by the ethnic Tharu community of this area, first a meeting was conducted with selective pre-informed peoples of Rapti-Sonari and Duduwa Rural Municipality and listed then collected various medicinal plants available in these areas and their uses in the community. 28 common medicinal plants specimens were selected randomly to document detail traditional ethnobotanical information. Among the participants, 20 peoples (Males=12, Females=8) of three age groups (20-40, n=5; 40-60, n=8 and 60 above, n=7) with different occupations were selected inclusively as key informants to compare their traditional ethnobotanical knowledge.

### ***Data collecton***

The traditional ethnobotanical information on common medicinal plants was collected in March 2021 by using structured and semi-structured questionnaire method with key informant interview. Altogether, 20 key informants were interviewed from the area by showing the fresh plant specimens that were collected from study area. Questionnaire survey method was carried out in order to compare traditional ethnobotanical knowledge among the various age groups of informants, habit and habitat of plant, flowering period, local status, uses, mode of remedy, dose and mode of administration. The collected medicinal plant specimens were photographed, pressed in newspapers and dried in the field using a natural drying technique (Forman & Bridson, 1989).

### ***Nomenclature***

The plants specimens were identified by using different books: Baral & Kurmi, 2006; Chaudhary, 1998; Grierson & Long, 1983-2001; Hara et al., 1982; Hooker, 1872-1897; Manandhar, 2002; Polunin & Stainton, 1984; Stainton, 1988. The nomenclature follows the Catalogue of life (<https://www.catalogueoflife.org>) and online version of Annotated Checklist of Flowering Plants of Nepal (<http://www.efloras.org>).

### ***Data analysis***

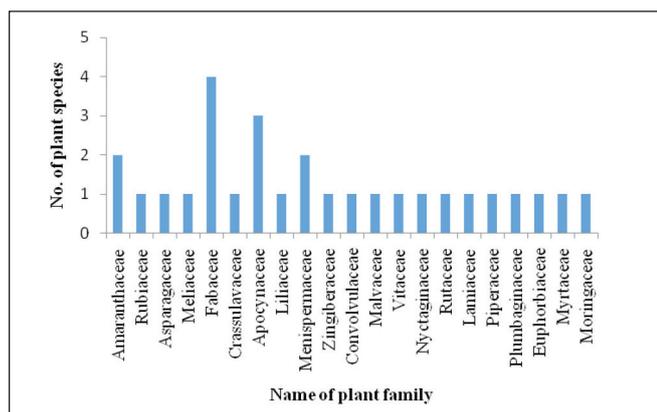
All the collected traditional ethnobotanical information about the common medicinal plants in the study area were analyzed by using Microsoft Excel 2007 program for plants family, plants parts used, mode of remedy and types of ailments.

### **Results and Discussion**

The present research revealed that, 28 common plant species, belonging to 21 families and 27 genera are used by the Tharu community of Banke district as traditional ethnomedicinal plants to treat and cure various types of human ailments. The detailing of their scientific name, family name, Nepali name, Tharu name, plant part used, ailments treated and mode of remedy are summarized in Table 1. Out of 21 plant families, Fabaceae was the most dominant family (4 spp.), followed by Apocynaceae (3 spp.), Menispermaceae (2 spp.) and rest 17 families were represented by single species (Figure 2). Other researchers have also reported that Fabaceae was the most dominant family in their research (Bhattarai & Acharya, 2013; Chaudhary et al., 2021; Kumar et al., 2013; Thapa, 2020). The results of this study showed more or less similarities on the plant species used, parts used, ailments and mode of remedy with the report results of previous studies done by Acharya & Acharya (2009), Bhattarai (2018), Dangol & Gurung (1991), Ghimire & Bastakoti (2009), Joshi & Singh (2010), Manandhar (1985), Mueller-Boker (1993) and Thapa (2020). In this study it is found that different parts of the same plant species were used for different ailment/problems which show similarities with the previous studies of Acharya & Acharya (2009), Chaudhary et al. (2021), Malla et al. (2015) and Mallik et al. (2020). Among 28 reported plant species, two species (*Achyranthes aspera* and *Andrographis paniculata*) were entirely used as traditional medicine in the study area. The roots of *Asparagus racemosus* was found to be used as tonic, stomach ache in childhood, pain, diabetes and anxiety. The leaves of *Cissampelos pareira* were used in fever, jaundice, asthma, cholera and roots in diarrhea. In this area the flowers of *Curcuma longa* were found to be used in tuberculosis and rhizome

in cold and muscle ache etc. The use of different plant parts of same species for the treatment of different ailments indicates that the older peoples and traditional healers of the Tharus community have high knowledge about the different parts of the same plant that possess different useful components for the treatment of a particular problem/ailment (Chaudhary et al., 2021; Thapa, 2020).

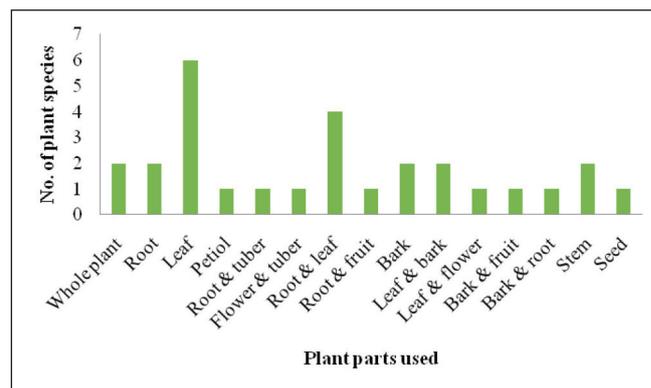
According to the key informants, many common medicinal plants species have been disappearing from their local habitats and nearby forests. This is due to high habitat destruction, rapid deforestation, expansion of agricultural area, land use change, high and destructive collection of medicinal plants at local level for the commercial purpose. Based on them, some time they need to walk so far for the collection of common medicinal plants that had been easily available at their villages in earlier days. This study also showed that the elder persons i.e. Over 40 years (40-60 years, n=8 and >60 years, n=7) and traditional healers have greater knowledge on the common medicinal plants as compared to younger generation (20-40 years, n=5) out of total 20 respondents. Similar type of results was also found by Acharya and Acharya (2009), the research conducted on Tharu community of Parroha Village Development Committee of Rupandehi District.



**Figure 2:** Number of plant species used by Tharu community according to family

The Tharu community of the study area uses different mode of remedy such as juice, paste, powder, raw leaf and oil for the treatment of different ailments/problems. The most frequently and commonly used mode of remedy was juice (15 spp.) followed

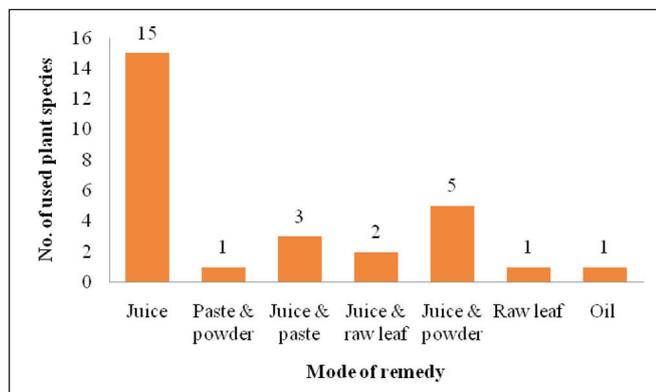
by juice and powder (5 spp.), juice and paste (3 spp.) and so on (Figure 4). Even a single part of the same plants and different parts of same plants were used in different ailment with different ways like: flower-juice, tuber powder in *Curcuma longa*; leaf-juice, bark paste of *Dalbergia sissoo*; bark-juice, fruit-powder of *Holarrhena pubescens*; leaf-juice, bark-paste in *Pterocarpus marsupium*, based on the nature of the plant parts and ailments.



**Figure 3:** Different plant parts used for medicinal purpose

In this area, the juice was most frequently used mode of remedy for the treatment of different ailments/problems. This result shows similarities with the previous studies of Adhikari et al., (2019), Malla & Chhetri, (2009), Shrestha & Dhillion (2003) and Thapa, (2020). Bhattarai (2018) reported that, underground parts (roots and rhizomes) and leaves were the most frequently used plant parts for the preparations of drugs in his study. Another recent study by Chaudhary et al. (2021) in Kanchanrup, Saptari was supported the result in the case of leaf used highly for the medication purposes. The extraction of juice from plants or plants parts is easier and it does not require any sophisticated tools. It can be prepared at any concentration and at any time by simply mixing with other ingredients. This method of drug preparation is more simpler and highly effective at the local level and it does not destroy plants thus it helps in the conservation (Thapa, 2020). The preparation of drug by this method was simply done by grinding and sieving of plants leaves with water or other solvents. The preference of juice may be due to the ease of preparation and its effectiveness as compared to other mode of remedy (Adhikari et al., 2019; Singh et al., 2017). It may also

be used due to the presence of a greater amount of active principles extracted in juice than other mode of remedy (Yaseen et al., 2015).



**Figure 4:** Different plant parts used for medicinal purpose

In the present research it is found that almost all the parts of the plants were used for the preparation of medicine (root, leaf, petiole, rhizome, tuber,

flower, fruit, bark, stem, seed and whole plant). The most dominant and common plant parts used as the traditional medicine in the study area were leaves (6 spp.) and followed by root and leaf (4 spp.), whole plant (2 spp.), root (2 spp.), bark (2 spp.), leaf and bark (2 spp.), stem (2 spp.) and so on (Figure 3). The research results of several researchers (Acharya & Acharya, 2009; Chaudhary et al., 2020; Chaudhary et al., 2021; Singh, 2017; Thapa, 2020) also indicates that the most frequently and highly used plant parts were leaves in their study area. Leaves of the plants have been vigorously used for the preparation of traditional medicine directly or indirectly might be due to easy availability, less destructive and as a major part of nutrients synthesis in the plants (Bhaila et al., 2020). The leaves contain more active compounds and it has higher biochemical activity as compared to other parts of plants thus it is highly used in medicine (Faruque et al., 2018; Thapa, 2020).

**Table 1:** Common medicinal plants used by Tharu community in Banke district, Nepal

S.N.	Scientific name (family)	Family	Nepali/Tharu name	Diseases	Parts used	Mode of remedy
1	<i>Achyranthes aspera</i> L.	Amaranthaceae	Chirchiri/ Lohochichira	Vomiting, malarial fever, diabetes	Whole plant	Juice
2	<i>Andrographis paniculata</i> Burm.f.	Acanthaceae	Kalpanath/ Chiraita	Stomachache, high blood pressure, cancer, diabetes, ulcer	Whole plant	Juice
3	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Kurilo/ Santawar	Tonic, stomachache in childhood, pain, diabetes, anxiety	Root	Paste and powder
4	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Neem/ Nib	Warmth, stomach upset, loss of appetite	Leaf	Juice
5	<i>Bauhinia vahlii</i> Wight & Arn.	Fabaceae	Malu/ Mauraini	Urinary tract infection, skin diseases	Petiole	Juice and paste
6	<i>Bryophyllum pinnatum</i> (Lam.) Kurz.	Crassulaceae	Pattharchurna/ Ajurba	Tuberculosis, kidney stone, burns, earache	Leaf	Juice and raw leaf
7	<i>Catharanthus roseus</i> (L.) G Don	Apocynaceae	Sadabahar/ Baramasephool	Sugar, muscle pain, gastritis	Leaf	Juice
8	<i>Chlorophytum arundinaceum</i> Baker.	Liliaceae	Setomushali/ Setomushal	Tonic, asthma, joint pain, physical weakness	Root and tuber	Juice
9	<i>Cissampelos pareira</i> L.	Menispermaceae	Batulpate/ Batuliya	Fever, jaundice, asthma, cholera, diarrhea	Root and leaf	Juice
10	<i>Curcuma longa</i> L.	Zingiberaceae	Besar/ Hardi	Tuberculosis, cold, muscle ache	Flower and tuber	Juice and Powder
11	<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	Akasbeli/ Aakashlati	Jaundice, muscle-ache	Stem	Juice

S.N.	Scientific name (family)	Family	Nepali/Tharu name	Diseases	Parts used	Mode of remedy
12	<i>Dalbergia latifolia</i> Roxb.	Fabaceae	Satisal/ Satisal	Hysteria, diarrhea, indigestion	Bark	Juice
13	<i>Dalbergia sissoo</i> Roxb.	Fabaceae	Sisau/ Sisuwa	Gonorrhea, eye and skin ailments	Leaf and bark	Juice and paste
14	<i>Haldina cordifolia</i> (Roxb.) Ridsdale	Rubiaceae	Karma/Kalam	Fever, stomachache, jaundice, indigestion, vomiting, malaria	Leaf	Juice
15	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Ghantiphool/ Jibrephool	Stomachache, excessive and painful menstruation	Flower and leaf	Juice
16	<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. ex G Don	Apocynaceae	Indrajau/ Kachari	Fever, cough, boils, ulcer, diarrhea	Bark and fruit	Juice and powder
17	<i>Leea macrophylla</i> Roxb. ex Hornem	Vitaceae	Galena/ Danga	Muscles-ache, sexual disability, boils	Root and leaf	Juice
18	<i>Mirabilis jalapa</i> L.	Nyctaginaceae	Malatiphool/ Ghodesa	Hysteria, inflammation	Root and leaf	Juice
19	<i>Moringa oleifera</i> Lam.	Moringaceae	Sitalchini/ Sitalchini	Syphilis, contraception, asthma, diabetes, obesity	Bark	Juice and powder
20	<i>Murraya koenigii</i> L.	Rutaceae	Kadipatta/ Mithkaneem	Spices, piles, insecticides	Leaf	Juice and raw leaf
21	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Tulsi/ Tulsi	Cold, insect bites, skin diseases,	Leaf	Raw leaf
22	<i>Piper longum</i> L.	Piperaceae	Pipla/ Pherhipiar	Fever, cough, asthma, tumor	Fruit and root	Juice and Powder
23	<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Chitu/ Chiti	Skin diseases, tumors growth	Root and leaf	Juice
24	<i>Pterocarpus marsupium</i> Roxburgh	Fabaceae	Vijaysal/ Vijaysal	Hysteria, treat boils, sores, blood sugar, diarrhea	Leaf and bark	Juice and paste
25	<i>Rauwolfia serpentina</i> (L.) Benth ex Kurz	Apocynaceae	Sarpagandha/ Jharbiruwa	Stomachache, skin diseases, depression, high blood pressure	Root	Juice and powder
26	<i>Ricinus communis</i> L.	Euphorbiaceae	Anir/ Leru	Paralysis, headache, backache, muscle ache	Seed	Oil
27	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Jamun/ Jam	Diarrhea, sore throat, bronchitis, asthma	Bark	Juice
28	<i>Tinospora sinensis</i> (Lour.) Merr.	Meniepermeaceae	Gurjo/ Gurich	Jaundice, piles, liver complaints	Stem	Juice

## Conclusion

The present study reveals that the Tharu community of Rapti-Sonari and Duduwa Rural Municipality of Banke district have high traditional knowledge on medicinal plants and they use them to cure various types of human ailments/diseases. The peoples of this area have been using a variety of plants for treating various types of human ailments. They

possess traditional knowledge about medicinal plant, plant collection, plants part use, modes of drugs preparation and dosage of drugs for a particular ailment. However, their understanding and uses of these plants are based on traditional beliefs. So, the documented plant species must be chemically investigated for correct identification of bioactive compounds which can be further used for designing

drugs. This will give great contribution to the pharmaceutical and herbal industries of Nepal.

### Author Contributions

All the authors were involved in concept development, research designing, defining of intellectual content and literature research. Gyan Bahadur Yadav and Vijay Kumar Chaudhary collected and analyzed data, and prepared manuscript.

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