



# Traditional knowledge and practices on utilizing medicinal plants by endangered Kisan ethnic group of eastern Nepal

Neeta Rajbanshi and Lal B Thapa

## Research

### Abstract

**Background:** Nepal has diversity in castes and ethnic groups where the indigenous people whose major population live in rural areas depend on traditional practices of health care system. Among 125 caste/ethnic groups in Nepal Kisan is one of the endangered ethnic group confined at Jhapa district of the country. Several studies have documented traditional knowledge of different indigenous groups of Nepal but such study was lacking in case of Kisan.

**Methods:** Interview and group discussions were conducted in the Kisan communities in three village development committees and one municipality of Jhapa district of eastern Nepal. A total 91 individuals including traditional healers were interviewed. Transect walk survey was conducted to identify the medicinal plants with the key informants during the field study.

**Results:** The study reported 40 species medicinal plants belonging to 32 families traditionally used by Kisan community for the treatment of 34 kinds of diseases. Traditional knowledge is found associated with Kisan's religious practices and believes. The knowledge is confined to the elderly people and traditional healers in the community.

**Conclusion:** Kisan indigenous people have a sound knowledge on medicinal plants of their locality that also reflects their religious practices and believes. As the knowledge is limited to the elderly people and only to the traditional healers there is gap of knowledge transfer to young generations. This study provides a baseline for further research and studies on medicinal plants.

**Key words:** Kisan, Jhapa district, traditional knowledge, medication

## Background

Nepal is rich in both socio-cultural and biological diversity due to having its unique geography and climatic variations. There are 125 caste/ethnic groups, 123 languages and 10 religious groups in Nepal (CBS 2011). Among the ethnic groups there are 59 indigenous groups recognized legally by the government of Nepal comprising 35.8% of the total population of the country (NIWF & UNDP 2018). Most of the indigenous people in Nepal are living near forests and still their livelihood is dependent on the forest resources. Therefore, they are highly knowledgeable on forest products like wild edible and medicinal plants (Manandhar 1998, Thapa *et al.* 2014, Luitel *et al.* 2014, Malla *et al.* 2015).

Globally, different ethnic groups have been practicing traditional means of health care by using medicinal plants (Sheng-Ji 2001). It was also estimated that about 80% of Asian and African populations use traditional medicine for their healthcare needs (WHO 2002, 2008). As Nepal is a developing country having diverse castes/ethnicity and most of the people especially indigenous people whose major population live in rural areas, the people depend on traditional practices of health care system using medicinal plants since long time ago (Manandhar 1993, Thorsen & Pouliot 2015).

## Correspondence

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The Kisans are one of the endangered indigenous people of Nepal as they are confined in Jhapa district of eastern Nepal and their population is only 1,739 (CBS 2011, Pokharel 2013). They are considered as the original cultivators of the land of North-East Jhapa living for more than 150 years and one of the oldest indigenous group of eastern Terai (Kattel 2013, Mahato 2014). They had been utilizing medicinal plants since ancient time but, currently, their traditional knowledge is at risk of extinction due to lacking of appropriate documentation and changed lifestyle.

Literatures are available on traditional uses of medicinal plants by different ethnic groups of Nepal such as Magars, Tamangs, Rai and Limbu, Tharu, Raute, Meche, Raji etc. (examples: Manandhar 1998, Rai 2004, Acharya & Pokhrel 2006, Acharya & Acharya 2009, Ghimire & Bastakoti 2009, Gautam 2011, Thapa 2012, Thapa *et al.* 2013, Thapa *et al.* 2014, Luitel *et al.* 2014, Malla *et al.* 2015) but study on Kisan ethnic group has not been conducted yet. This study aims to fulfill the study gap by documenting Kisan's traditional knowledge on medicinal plants which may contribute providing clues to new areas of research on medicinal plants and conservation.

## Materials and Methods

### *Study area*

The study was carried out among the Kisan people of Jhapa district, Nepal (Province No. 1). Two Village Development Committees (VDC) viz. Dhajjan and Shantinagar, and Mechinagar Municipality were selected for the study (Fig. 1). The Dhajjan VDC is the original place of Kishans which is located near Ninda river of the district (Yadav & Uraw 2008). Kisans are scattered in these VDCs and in the municipality forming small community patches. Currently, the Dhajjan VDC is included in Mechinagar Municipality and name of Shantinagar VDC has been changed into Buddhashanti Rural Municipality by the government of Nepal.

### *Interview and group discussions*

For the collection of primary data, field visits were carried out in the study areas during June 2016 to May 2017. Before data collection a meeting was conducted with Kishan Society and written permission for the study was taken. Semi-structured open-ended questionnaires was prepared for the interview. The questionnaire was designed to collect information of the plants used by Kisans such as local names of plants, uses, parts used, methods of medicine preparation and method of application.

A nonprobability sampling (purposive sampling method) was used to select respondents and key informants. A total 91 people were interviewed from the selected VDCs and municipality. Among them 46

were males and 45 were females. The age group ranged from 20 to 70 years old. Old aged people and traditional healers were considered as the key informants. Five group discussions were made, one in each VDC and three group discussions were conducted in Mechinagar municipality. The name of medicinal plants, parts used and method of use were confirmed in the group discussions. Old aged people and traditional healers were participated in the group discussion. There were 5-7 people in each group.

### *Frequency index (FI)*

The frequency index of medicinal plant, which is a numerical expression of the percentage frequency of citation for a single species by the informants, was calculated to know the relative importance of each medicinal plant species (Madikizela *et al.* 2012, Mahwasane *et al.* 2013, Parthiban *et al.* 2016) by using following formula:

$$FI = FC \div N \times 100$$

(where FC = the number of informants who mentioned the use of the species, N = total number of informants).

### *Plant collection and identification*

Survey was conducted along the possible sites of medicinal plants such as home gardens, road sides, agriculture fields, fallow lands and forests. Key informants were requested to take part in the survey. The medicinal plants recognized by the key informants were identified in the field. Unidentified plants were collected as voucher specimens and identified using literature (Polunin & Stainton 1984, Press *et al.* 2000, Manandhar 2002). Kisan names of the medicinal plants were noted in the field. The herbaria are deposited Department of Botany, Mechi Multiple Campus, Jhapa and Tribhuvan University Central Herbarium (TUCH), Kirtipur, Kathmandu, Nepal.

## Results

### *Knowledge of Kisan on traditional medicine*

Fifty percent of the respondents (45 respondents) were from the age group 41 to 70 years old. Both male and females of this group and traditional healers were the major sources of knowledge on traditional uses of medicinal plants. Fifteen respondents of age group 20 to 40 told that they have not practiced medicinal plants for treatment of any diseases yet. As there were 46 respondents of this age group the respondents who have not practiced medicinal plants comprised 32 percent.

Some of the traditional healers believe that the healing power of medicinal plant will be lost if they tell the name of the plant to others. Hence, the knowledge was found to be confined to only the traditional healers without transmission to others and young generations. In addition, collection of

medicinal plants and treatment methods require appropriate rituals. Another belief of healers was that the effectiveness of medicinal plants depends on the day and time. For example, medicinal plants must be collected on Saturday and Tuesday only. According to them full moon or new moon day and very early morning are very important days and time to be considered during collection. Actually, the tradition has become a source of income for traditional healers.

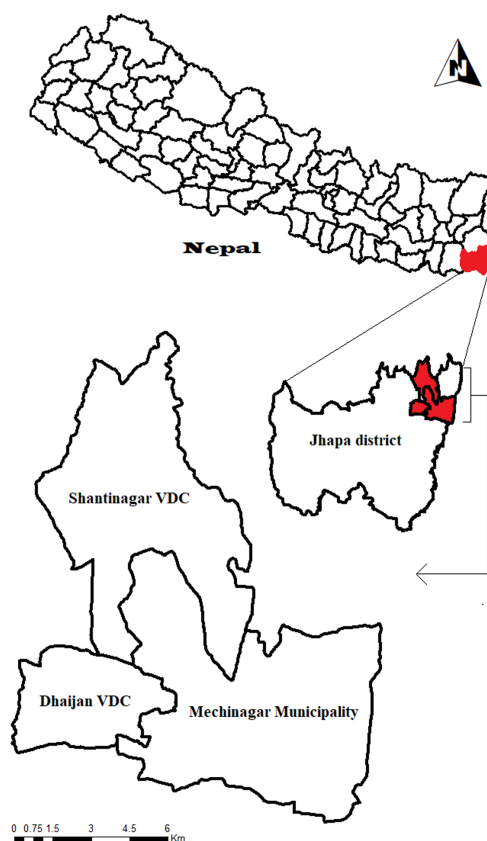


Fig. 1. Study area

#### Diversity and habit of medicinal plants

The study recorded 40 species medicinal plants belonging to 32 families traditionally used by Kishan tribe of Jhapa district, Nepal (Table 1). Among the species, 32 species were Dicots and 8 species were monocots. According to the habits, 18 species were herbs (45%), 9 species trees (22%), 7 species climbers (18%) and 6 species were shrubs (15%) (Fig. 2).

A total of 13 species, *Colocasia antiquorum* Schott, *Ipomoea batatas* (L.) Poir., *Trigonella foenum-graceum* L., *Psidium guajava* L., *Camellia sinensis* (L.) Kuntze, *Apium graveolens* L., *Zingiber officinale* Rosc., *Jatropha curcas* L., *Ocimum sanctum* L., *Azadirachta indica* A. Juss., *Tagetes patula* L., *Citrus limon* (L.) were the plant species belonging to domesticated and cultivated categories and rest of others were wild species.

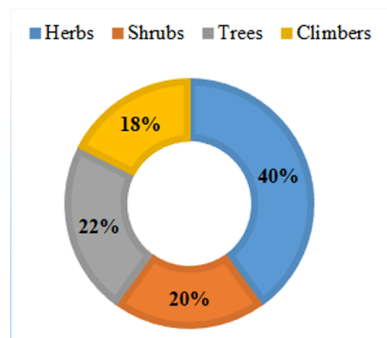


Fig. 2. Habit of medicinal plants used

#### Parts used and forms of medication

A total 34 types of diseases were reported by the respondents treated by different medicinal plants (Table 1). Different plant parts such as leaves, stem, root, flower, fruit and seeds were used either to extract juice or making paste for application on the affected parts or for given orally (Fig. 3). Leaves of 13 species such as *Centella asiatica* (L.) Urb., *Ageratum conyzoides* L., *Tagetes patula* L., *Eclipta prostrata* L., *Drymeria diandra* Blume etc. were used for making paste or extraction of juice (Table 1). Similarly, roots of *Achyranthes aspera* L., *Rauvolfia serpentina* (L.) Benth. ex Kurz, *Cyperus rotundus* L., *Mimosa pudica* L. and aerial stems of *Terminalia chebula* Retz., *Cissus quadrangularis* L., *Shorea robusta* Gaertn., *Jatropha curcas* L. etc. were used for treatment of different diseases either in the form of paste or juice (Table 1). Root of *R. serpentina* was recommended for treatment of fever and stomach problem by chewing raw. Aerial branch of *S. robusta* and *J. curcas* were used as toothbrush which were recommended beneficial for mouth diseases such as gingivitis, bleeding gums and bad breath.

Interestingly, for the treatment of tonsil dried stem of *T. chebula* can be chewed. In case of *Oroxylum indicum* (L.) the stem is burnt to make coal and coal paste is applied in the cut and wounds. Similarly, bulbs of *Crinum asiaticum* L. are burnt in coconut oil and paste is applied on wound and burns. *Ipomoea batatas* (L.), a common cultivated climber, was given to women after post-delivery for lactation in the form of vegetable. Tuber of *Dioscorea bulbifera* L. is bitter in taste and to remove its bitterness half-cooked tubers are cut into small slices and left overnight in running water, then it can be eaten as food which is beneficial for loss of appetite and blood pressure. Rhizome paste of *Zingiber officinale* Rosc. was used for cough, cold, tonsillitis and hair fall but it is mixed with *O. sanctum* leaf and *P. nigrum* seed to make effective for fast recovery. It was interesting to know that the rhizome juice treats effectively the hair fall problems.

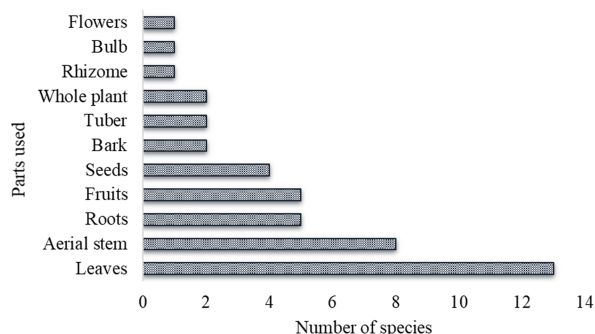


Fig. 3. Plant parts used in treatment of diseases

#### Frequency index (FI)

According to the frequency index, *Ricinus communis* was the most used plant species having a frequency index of 86.41% followed by *Dioscorea bulbifera* (FI 74%), *Centella asiatica* (FI 31%) and *Sida cordifolia* (FI 25%). Six species *Oroxylum indicum*, *Ocimum sanctum*, *Achyranthes aspera*, *Azadirachta indica*, *Mimosa pudica* and *Musa balbisiana* had the frequency index 10 to 20% while 30 species had the index less than 10% (Table 1).

## Discussion

Results show that old aged people (41 to 70 years old) are well-informed on utilization of medicinal plants comparing to the young aged people. The traditional healers have been using this knowledge for their income. The knowledge is confined to them as they have a belief that the medicinal properties of plants will be lost if they transfer their knowledge to others. It might be one of the causes of knowledge gap between old and young aged people. There are other causes affecting knowledge transfer to young generation such as urbanization and modernization. For example, the land-based occupation of Kisans has been changed to other occupations like working in tea gardens and construction works (Kattel 2013). Ritual activities and belief on days while collecting plants and application of medicine shows their cultural devotion. It may have significance on making diseased people psychologically stronger against particular diseases. Collection of medicinal plants on full moon or new moon day and very early morning might have scientific practices as the medicinal plants may accumulate higher amount of effective chemicals which should be confirmed by further studies.

Use of the most of herbaceous species indicates that herbal medicines are commonly practiced by the Kisans. Mostly the wild plants and a total of 13 species of domesticated and cultivated plants have medicinal values contributing health care system in the Kisan communities. Traditional practice of using medicinal plants against 34 types of diseases in

different forms show that Kisans have indigenous knowledge on disease diagnosis and effectiveness of formulations also.

The most known and valuable species *R. communis* has actually no medicinal value but the plant was considered as a holy plant which can save the family from evil spirits. Therefore, the plant twig is kept on the roof of house. Although, the respondents did not tell about direct use of this plant to cure any diseases the plant is highly medicinal. The aerial parts of the plant such as leaves contain essential oils having various constituents like  $\alpha$ -thujone, 1,8-cineole,  $\alpha$ -pinene, camphor and camphene (Kadri *et al.* 2011). The essential oil of the plant shows strong antimicrobial activity against pathogenic microorganisms (Zarai *et al.* 2012). Elimam *et al.* (2009) has reported that the aqueous extracts from leaves of *R. communis* is highly toxic to the larvae of malaria causing mosquitoes (*Anopheles* and *Culex*) and the plant has been recommended as a biological control means of the mosquitoes. These might be the reasons behind using this plant as protective plants by Kisan community.

*Dioscorea bulbifera* was the second most known plant among the Kisans. The plant is used against loss of appetite and blood pressure. Thapa *et al.* (2013) reported that the plant is used as anti-helminthic properties to kill pin worms by Raji indigenous people of Nepal. There might be correlation between use of *D. bulbifera* against loss of appetite by Kisans and pinworms by Rajis. Use of *D. bulbifera* against blood pressure has scientific reasons. Large number of steroid saponins are found in *D. bulbifera* which help to lower blood cholesterol (Milgate & Roberts 1995, Ogbuagu 2008, Liu *et al.* 2009).

*Centella asiatica* and *Sida cordifolia* were also moderately known plants according to the frequency index (Table 1). *C. asiatica* was used for headache, loss of appetite, diarrhea and as the tonic while *Sida cordifolia* was found useful for the treatment of boils. This indicates that the frequency index is high for the medicinal plants used against the most common health problems in low land of Nepal where Kisans are inhabited. According to the respondent other plants are also highly significant for the treatment of various kinds of diseases (Table 1) but they are the least known for all respondents. It is due to confinement of knowledge to only traditional healers and old aged people.

The Kisans are placed in endangered category of indigenous nationalities of Nepal as their population is only 1,739 (Census 2011, Pokharel 2013). As the modernization and urbanization has changed the lifestyle of Kisans there was an urgent need to gather and protect the knowledge before extinction. This study has documented some information on valuable medicinal plants which could be the first attempt for the Kisan community. It would contribute to provide some valuable clues to new areas of research on medicinal plants and conservation.

**Table 1.** Medicinal plants used by Kishan tribe of Jhapa district, Nepal (*habit, parts used, diseases treated and method of application; N: Nepali name, K: Kisan name, VC: Voucher Code, FI: Frequency index*)

Family and Scientific names	Habit	Parts used	Diseases	Method of application	FI
<b>Amaranthaceae</b>					
<i>Achyranthes aspera</i> L. <b>N/K:</b> Datiwan/Chirchithi <b>VC:</b> NR-J13	Herb	Root	Fever	A glass of root juice for adult and a spoonful for children is given orally	14.81
<b>Amaryllidaceae</b>					
<i>Crinum asiaticum</i> L. <b>N/K:</b> Jungali Pyaaj	Herb	Bulb	Wounds and burns	Bulb is burnt in coconut oil and paste is applied	2.46
<b>Apiaceae</b>					
<i>Apium graveolens</i> L. <b>N/K:</b> Juwano	Herb	Seed	Fever	Decoction is mixed with Turmeric powder and <i>Ocimum sanctum</i> leaf juice with salt is given orally for two days.	2.46
<i>Centella asiatica</i> (L.) Urb. <b>N/K:</b> Ghodtapre/Beng saag; <b>VC:</b> NR-J04	Herb	Leaf	Headache, loss of appetite, diarrhea, tonic	Leaf paste is applied in forehead thrice per day and eaten as vegetable	30.86
<b>Apocynaceae</b>					
<i>Alstonia scholaris</i> (L.) R. Br. <b>N/K:</b> Chhatian	Tree	Latex	Mumps	Latex is used. Shoots are also feed to pigs to increase weight	9.87
<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz <b>N/K:</b> Sarpagandha/Nagbayal	Herb	Root	Fever, stomach problems	Juice is taken orally or root is chewed raw. It is also used to chase away snake	6.17
<b>Araceae</b>					
<i>Colocasia antiquorum</i> Schott <b>N/K:</b> Karkalo/Kalo mane	Herb	Latex	Cuts	Latex is applied in cuts	8.64
<b>Apocynaceae</b>					
<i>Calotropis gigantea</i> (L.) W.T. Aiton <b>N/K:</b> Ank/Veluwa <b>VC:</b> NR-J03	Shrub	Leaf	Earache	Leaf is softened by heating and extracted juice is dropped in ear	4.93
<b>Asparagaceae</b>					
<i>Asparagus racemosus</i> Willd. <b>N/K:</b> Kurilo/Kargi <b>VC:</b> NR-J14	Shrub	Tuber	Boost immunity, lactation, urinary tract problem	Juice is given to post-delivery woman to boost up immunity and increase lactation.	8.64
<b>Asteraceae</b>					
<i>Ageratum conyzoides</i> L. <b>N/K:</b> Ilame jhar <b>VC:</b> NR-J12	Herb	Leaf	Cuts	Leaf paste or juice is applied in cuts.	3.70
<i>Tagetes patula</i> L. <b>N/K:</b> Sayapatri/Genda phool	Shrub	Leaf	Cuts and fever	Leaf paste is applied in cuts Leaves of ( <i>Tagetes</i> , <i>Ocimum</i> and <i>Cynodon</i> ) are crushed to extract juice and given orally for three days	7.40
<i>Eclipta prostrata</i> L. <b>N/K:</b> Bhiringijhar <b>VC:</b> NR-J11	Herb	Leaf	Cuts	Leaf paste or juice	8.64
<b>Bignoniaceae</b>					
<i>Oroxylum indicum</i> (L.) Benth. ex Kurz <b>N/K:</b> Tatala/Dagdegwaa	Tree	Bark, Stem	Cuts and wounds	Stem is burnt and its coal is applied in cuts	18.51
<b>Caryophyllaceae</b>					
<i>Drymaria diandra</i> Blume <b>N:</b> Abhijalo; <b>VC:</b> NR-J10	Herb	Leaf	Acute sinusitis, headache	Crushed leaves are wrapped in banana leaf, half cooked and smelled	8.64
<b>Combretaceae</b>					
<i>Terminalia chebula</i> Retz. <b>N/K:</b> Harro	Tree	Stem	Tonsil	Dried stem is chewed	4.93
<b>Convolvulaceae</b>					
<i>Cuscuta reflexa</i> Roxb. <b>N/K:</b> Aakasbeli/Peheli lahar; <b>VC:</b> NR-J09	Climber	Whole plant	Jaundice, skin diseases	Juice is given orally. Skin disease is treated by taking bath with decoction	8.64
<i>Ipomoea batatas</i> (L.) Poir. <b>N/K:</b> Sakhar-khand/Kanchi saag	Climber	Shoot	Lactation	Young shoot is eaten as vegetables	3.70

<b>Cucurbitaceae</b>					
<i>Luffa echinata</i> Roxb. M.Roem. N/K: Jungali ghireula	Climber	Seed	Malaria, headache, acute sinusitis	Seeds are soaked in water for ten minutes and extract is taken orally or seeds are chewed directly	3.70
<b>Cyperaceae</b>					
<i>Cyperus rotundus</i> L. N/K: Mothe/Mothe jhar VC: NR-J08	Herb	Root	Intestinal worms	Root is crushed and extract is taken orally	2.46
<b>Dioscoreaceae</b>					
<i>Dioscorea bulbifera</i> L. N/K: Githa	Climber	Tuber	Loss of appetite, Blood pressure	Half-cooked tuber is cut into small slices and left overnight in running water to remove bitter taste, then eaten as food	74
<b>Dipterocarpaceae</b>					
<i>Shorea robusta</i> Gaertn. N/K: Saal	Tree	Branch	Gingivitis	Small branches are used as tooth brush	2.46
<b>Euphorbiaceae</b>					
<i>Jatropha curcas</i> L. N/K: Sajivan/Andri	Shrub	Branch	Gingivitis, bad breath, bleeding gums	Branches are used as tooth brush	7.40
<i>Ricinus communis</i> L. N/K: Adir/Andri VC: NR-J07	Shrub	Whole plant	Religious value	The twigs are kept in roof of house to prevent from evil spirits	86.41
<i>Trewia nudiflora</i> Wight N/K: Pitali/Pitharu	Tree	Fruits	Ringworm	Fruits are burnt in coal and paste is applied in affected parts	2.46
<b>Fabaceae</b>					
<i>Mimosa pudica</i> L. N/K: Lajwati jhar/Lajani kata; VC: NR-J01	Herb	Root	Diarrhea, boils	Root is crushed and extract is taken orally. Roots paste is applied to boil	13.58
<i>Dolichos lablab</i> L. N/K: Simi	Climber	Leaf	Dandruff	Leaf paste is applied in hairs; leave overnight and wash	1.23
<i>Trigonella foenum-graceum</i> L. N/K: Methi	Herb	Seed	Running nose, cold	One spoon full mild fried seed powder is taken with luke warm water	2.46
<b>Lamiaceae</b>					
<i>Ocimum sanctum</i> L. N/K: Tulsi/Tulsi patra	Herb	Leaf	Fever, cough, tonsil	Five rice grains are raped in <i>Ocimum</i> leaf and chewed to cure tonsil; fresh leaves and leaf juice are taken orally	17.28
<b>Malvaceae</b>					
<i>Sida cordifolia</i> Forssk. N/K: Kharato/Baryari VC: NR-J05	Shrub	Leaf	Boil	Leaf paste is applied in affected part.	24.69
<b>Meliaceae</b>					
<i>Azadirachta indica</i> A. Juss. N/K: Neem	Tree	Leaf	Fever, urinary tract problem, skin diseases	Decoction is taken orally for fever and UTI. Bathing with leaf juice treats skin diseases	14.81
<b>Moraceae</b>					
<i>Artocarpus lakoocha</i> Roxb. N/K: Bahadar/Dallu	Tree	Latex	Mumps	Latex is spread over the affected parts	1.23
<b>Moringaceae</b>					
<i>Moringa oleifera</i> Lam. N/K: Sajiwani VC: NR-J15	Tree	Leaves and fruits	Tonic	Young leaves and fruits are consumed as vegetables	1.23
<b>Musaceae</b>					
<i>Musa balbisiana</i> Colla N/K: Aathiya kera		Root, Fruits	Cholera	½ glass of root juice is mixed with ½ glass of curd and sugar, and given orally	12.34
<b>Myrtaceae</b>					
<i>Psidium guajava</i> L. N/K: Ambaa	Tree	Bark	Diarrhea	Bark extract is given orally three times a day	8.64

<b>Piperaceae</b>					
<i>Piper longum</i> Blume N/K: Pipla/Pirpera	Climber	Leaf and Fruit	Tuberculosis	Leaves and fruits are chewed	2.46
<b>Poaceae</b>					
<i>Dendrocalamus sp.</i> N/K: Baas/Phor baas	Shrub	Young leaves	Skin problem	Young leaves of bamboo and rubber plant are burned to make coal. It is mixed with Sulphur and coconut oil. The paste is applied in affected parts	2.46
<b>Rutaceae</b>					
<i>Citrus limon</i> (L.) Osbeck N/K: Kagati/Kakji	Shrub	Fruits	Cholera	Three lemons are squeezed to extract juice and mixed with 1/2 cup of curd and taken orally.	1.23
<b>Theaceae</b>					
<i>Camellia sinensis</i> (L.) Kuntze N/K: Chiya	Shrub	Flower, Seed	Blood pressure, removing lice	Flowers are consumed as vegetables and seed paste is applied in hair	1.23
<b>Vitaceae</b>					
<i>Cissus quadrangularis</i> L. N/K: Harjod; VC: NR-J06	Climber	Stem	Fracture	Paste is applied in affected parts	9.87
<b>Zingiberaceae</b>					
<i>Zingiber officinale</i> Rosc. N/K: Aaduwa	Herb	Rhizome	Cough & cold, tonsillitis, hair fall	Rhizome in combination with <i>Ocimum sanctum</i> leaf and <i>Piper nigrum</i> seed. Paste is taken orally. Juice of rhizome is applied in hair	3.70

Overall, Kisan indigenous people of Nepal has a sound knowledge on medicinal plants of their locality which also reflected their religious practices and believes. Knowledge is limited to the elderly people and only to the traditional healers in the community

## Declarations

**List of abbreviations:** Not applicable.

**Ethics approval and consent to participate:** Permission to conduct the study was taken from Kisan Society, Jhapa district, Nepal. Oral consent was taken from interviewee before interview.

**Consent for publication:** Not applicable.

**Availability of data and materials:** The data was not deposited in public repositories.

**Competing interests:** The authors do not have any competing interests.

**Funding:** There was no funding received from any institution.

**Authors' contributions:** Neeta Rajbanshi carried out fieldwork, data analysis and drafted the manuscript. Lal B Thapa configured the research project, supervised the work and improved the manuscript. All authors read, reviewed and approved the final version of the manuscript.

it is important to explore and document properly for future generation. This study will be helpful to provide baseline for further research and studies with wide applications.

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