Medicinal ethnobotany of the Yakkha community in eastern Nepal

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Ethnobotany Research and Applications 26:59 (2023) - http://dx.doi.org/10.32859/era.26.59.1-34
Manuscript received: 01/08/2023 – Revised manuscript received: 02/11/2023 - Published: 04/11/2023

Research

Abstract

Background: In rural Nepal, a significant population relies on traditional medicinal treatments for their healthcare needs. However, little is known about the ethnobotanical practices of the Yakkha people, a distinct Tibeto-Burman ethnic group following the Kirati religion in Sankhuwasabha district in eastern Nepal. This study examines the use of medicinal plants by the Yakkha community in three remote villages and assesses the ethnobotanical significance of their traditional knowledge.

Methods: The research was conducted in three Yakkha communities with varying levels of modernization, and Yakkha ethnic concentration. Data collection included key informant interviews, informal and structured interviews, focus group discussions, as well as direct and participatory observations. The Informant consensus factor was used to validate knowledge homogeneity.

Results: The study documented 200 medicinal plant species and one fungus species, from 174 genera and 87 families, utilized by the Yakkha people to treat 75 human ailments. Above-ground vegetative parts (34%), reproductive (32%), below-ground (27%), and whole plants (7%) were the main plant parts used for medicinal purposes, primarily administered orally. While no new medicinal plant species were discovered, a few species (n = 10) revealed novel uses. Informant consensus was high for Musculoskeletal, Circulatory, and Nervous system disorders.

Conclusions: The Yakkha community in Sankhuwasabha district possesses valuable traditional knowledge of medicinal plant utilization, with strong consensus among locals. The diverse range of medicinal plant use underscores their effectiveness in treating various ailments. Exploring the bioactive compounds in these plants could lead to the discovery of novel medicines for critical human diseases.

Keywords: Ethnobotany, Himalayan medicine, Kirat, Sankhuwasabha, Tibeto-Burman ethnic group.

Background

Plants have been used as a source of medicines from ancient times to the present day by all cultures around the world. Humans have long depended on their ability to identify and utilize plants as a core strategy for their survival (Cunningham 2001). Indigenous people hold invaluable knowledge for the sustainable management of natural resources as they possess unique knowledge systems and beliefs in terms of their natural environment (UNPFII 2006). The knowledge and participation of indigenous people and local communities is an integral part of strategies to preserve the dwindling biological resources and conserve nature (Brondízio *et al*. 2021, Durning 1992).

Concerns on several economic and social factors for the loss of indigenous knowledge have recently been expressed (Maden *et al.* 2008). Indigenous knowledge can contribute to resolving sustainability problems related to the availability of traditional medicine (Rijal 2008). The management of medicinal and aromatic plants and the knowledge of their utilization, therefore, is of great importance and can only be promoted by documenting the diversity of medicinal plant resources and their indigenous utilization practices (Kunwar *et al.* 2006). Modernization erodes traditional medicine in straightforward and predictable ways as suggested by contemporary conventional wisdom (Quinlan & Quinlan 2007). Although the public awareness of ethnobotany is greater than ever, an increasing number of aged healers are dying along with their knowledge (Quinlan & Quinlan 2007). The ethnobotanical knowledge of a population is differentially affected in different segments of population by modernization. Ethnobotanical treatments might be more likely to change than to disappear due to modernization (Brodt 2001, Pangal *et al.* 2010).

Nepal is endowed with high ethnic diversity (142 castes / ethnicities), and nearly half (60 ethnic groups) of them have been identified as indigenous groups (CBS 2021). The ethnic people residing in different geographical belts of Nepal depend on respective vegetation and possess their own pool of unique ethno-medicinal and ethnopharmacological knowledge about the plants available in their surroundings (Dhami 2008). With an enormous ethnic and floristic diversity, Nepal has extensive and wide-spread ethnobotanical knowledge including various traditions of plants' utilization (Shrestha *et al.* 2000). The northern region of Nepal is influenced by Tibetan culture and its traditional healthcare practices, while the southern region is influenced by Ayurvedic, Sidha and Unani medical practices (Phoboo *et al.* 2008). Local healers and traditional medicinal treatment in various forms and combinations provide services to more than 80 % of the population of Nepal (Rajbhandary & Bajracharya 1994). In addition to therapeutic values, medicinal plants also possess high socio-economic, cultural, symbolic, and economic values in Nepal. Medicinal plants have remained an essential trade commodity for export since the past century, with India and China being the major supply destinations (He *et al.* 2018). Since the past decade, this business has witnessed a substantial increase in the value of traded plants particularly due to increased infrastructure development and government interventions in Nepal as well as higher demand for consumer products due to increase per capita income for India and China (Pyakurel *et al.* 2018, Pyakurel *et al.* 2019).

Yakkha is an underrepresented ethnic group residing in the hills of Sankhuwasabha district in eastern Nepal (NFDIN 2003). The villages along the border of Sankhuwasabha and Dhankuta district at an elevation of 1000-2000 m above sea level (m) are the main settlement areas of Yakkha (Schackow 2012). With gradually decreasing population of merely 17,460 (CBS 2011, CBS 2021) and confined to the mid-hills of eastern Nepal, Yakkha is a distinct Tibeto-Burman ethnic group of Kirati religion. The Yakkha perceive themselves as closest to the Limbu both culturally and linguistically. Marriages between Yakkha and Limbu are more common than between members of other Kirati groups. The closest linguistic relative of Yakkha, however, is not Limbu, but the Belhare language, since Yakkha and Belhare share some innovations and unique features that are not found in any other Kirati language. The Yakkha people primarily practice agriculture, growing crops like maize, rice, millet, and buckwheat, along with various vegetables and fruits. They also raise pigs, buffalos, oxen, chickens, and goats, which hold significance in their rituals. Fishing, hunting, and beekeeping are additional means of subsistence. They engage in activities such as mustard oil production, beer brewing, and liquor distillation, using alcohol for social exchange and religious ceremonies. Cardamom cultivation and trade contribute to their income, and they prepare fermented dishes like *kinama*. Traditional agricultural tools are still essential due to the impracticality of using machines on terraced fields. Some educated individuals maintain both agriculture and other professions. Historically, recruitment in the British Gorkha army provided income, and in recent years, labor migration to Arab countries and Asian nations has become a crucial source of support for Yakkha households (Schackow 2012). According to CBS (2021), the population of Yakkha in Sankhuwasabha district is 5,752 of which 4,889 people speak Yakkha language as their mother tongue with an additional 234 people preferring Yakkha language as their second language. The Yakkha people and their environment are intimately related, not at the material level conceived by most human ecologists, but at the symbolic and cultural levels with which social anthropologists are best equipped to deal (Russel 1992). Russel (1992) also concluded that the Yakkha of Tamafok are subsistence agriculturists, yet much of their cash income comes from work beyond the community.

As an ethnic group, the Yakkha has been mentioned by many researchers (Bista 1980, Jimi *et al.* 2009, Kongren 2007, Linkha 2010, Morris 1936, Russel 1992, Schackow 2012). Apart from anthropological aspects, only a few studies have focused on the medicinal ethnobotany of the Yakkha people. For example, Maden *et al.* (2008) studied Kirat nationalities (Yakkha, Limbu and Rai) from three municipalities and two rural municipalities of three districts in eastern Nepal and documented 198 plant species used for medicinal purpose. The other ethnobotanical studies from Sankhuwasabha district are those of Parajuli (2000), Dahal (2016) and Shrestha *et al.* (2016). However, ethnobotanical knowledge of a large part of this district, especially the southern region and with particular focus on the culturally rich Yakkha community has not been documented and published. The southern part of the Sankhuwasabha district is virtually unexplored and no particularly detailed ethnobotanical study was conducted on this marginalized ethnic group. Therefore, we have undertaken this study with the aim to document the ethnobotany knowledge of the highly marginalized indigenous Yakkha community in the culturally and biologically rich mountainous landscape of eastern Nepal. We explored and enumerated different plant species used in folk medicine by Yakkha communities and analyzed the relationship between the indigenous knowledge on medicinal plants and the demographic characteristics of respondents.

Materials and Methods

Study area

Our study area lies in Sankhuwasabha district in eastern Nepal between 27˚06' N to 27˚55' N and 86˚57' N to 87˚40' N (Fig. 1). The district is located on the lap of Mt. Makalu. Sankhuwasabha district is named after two rivers "*Sankhuwa*" that flow from the western part and "*Sabha*" that flows across the central part of the district. The district covers 5 municipalities and 5 rural municipalities with a total area of 3480 km^2. The district ranges in elevation from 300 to 8463 m asl. The land cover pattern consists of 40.32 % forest, 27.38 % snow-capped mountains, 12.66 % rocky mountains, 11.37 % pastures and 8.27 % agrarian lands (DDC 2010). The vegetation of the district ranges from subtropical evergreen forest at low elevation to alpine scrubs at high elevation. Specifically, we conducted our research at Dharmadevi municipality (three villages – Mamling, Ankhibhui and Tamafok) located at the southernmost part of the district (Fig. 1).

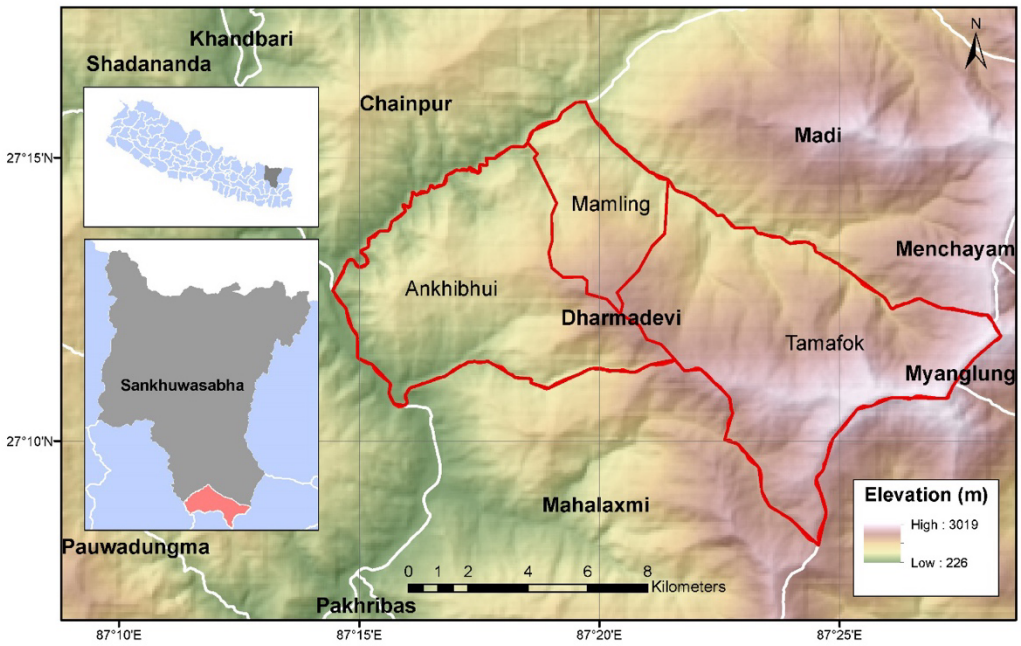

Figure 1. Map of Sankhuwasabha district in eastern Nepal and the three villages, Ankhibhui, Mamling and Tamafok in Dharmadevi municipality (outlined in red).

Of all the municipalities and rural municipalities in Sankhuwasabha, Dharmadevi municipality has the highest population of Yakkha (n = 3259) (CBS 2021). The population who speaks Yakkha language as the mother tongue in Dharmadevi municipality are 2975 (CBS 2021). Three different Yakkha communities (previously three different village development committees) from

each of the above-mentioned villages were studied. The communities in each village represent three different levels of modernization/commercialization. The Yakkha community of Mamling has easy access to transportation, health facilities, market and education and represents the most modernized community. The Yakkha community of Ankhibhui has intermediate access to above-mentioned infrastructures of modernization and represents an intermediately modernized community. The Yakkha community of Tamafok represents culturally and linguistically traditional Yakkha with minimal influence of modernization.

Data collection and identification of plants

A reconnaissance survey was conducted in February 2013. The final field visit was made between June 2014 and July 2014. Exploratory as well as semi-descriptive approach was applied to cover both qualitative and quantitative themes of the study (Cunningham 2001, Martin 1995). Key informant interview, informal (unstructured) interview, structured interview, focus group discussion and participant observations methods were used as survey techniques to obtain data from the field. We adhered to the ethical principles established by the International Society of Ethnobiology (ICE) and conducted interviews and field observations using established ethnobotanical methodologies outlined in Martin's work from 1995. We provided a clear outline of the purpose of our visit and sought permission from the local community. We conducted interviews to gather data regarding the utilization of plants, the specific plant parts employed, methods of preparation, and administration practices. This information was documented on a questionnaire as preliminary data. To ensure the reliability and validity of the information, we carried out cross-check interviews. These interviews were conducted primarily in Nepali, and, when necessary, in the local Yakkha language with the assistance of an interpreter. For collection of plant specimens and other related information, inventory techniques were used with the key informants or local resource persons. Structured interviews were conducted to collect information on the use of plants, including the parts used, mode of preparation and administration. These plant parts were broadly categorized under (i) reproductive parts and (ii) vegetative parts. Vegetative part was further divided into (a) below ground vegetative part and (b) above ground vegetative part. In some cases, whole plants were used. Interviews were also conducted using the 'specimen display' method following Bhattarai *et al*. (2010). After collecting plant specimens, the specimens were shown to the locals to gather information about their medicinal use. The same plant specimens were shown to our 18 key informants to confirm the validity of the information. Next, we asked some of our participants to accompany us to the natural habitat of the medicinal plants, and information was collected therein. A consensus list of medicinal plants was prepared based on agreement in medicinal plant uses cited by local people.

A total of 150 local informants were selected for structured interview using the purposive and snowball method (Table 1) for data collection. All the respondents had a prevailing knowledge of Yakkha language with 97 % of respondents having a fluent or normal proficiency over the language. The educational attainment of the respondents was clustered under six broad categories (no formal education: 31 %, less than three years of formal education "Literate": 24 %, primary education: 17 %, lower secondary: 7 %, secondary: 13 % and higher secondary: 7 %). Besides the local informants, an additional 18 key informants were interviewed (Table 1). The key informants comprised of shamans, village leaders with knowledge on medicinal plants, allopathic medical personnel, local healer, social mobiliser, and authors of books on Yakkha history and vocabulary. Five focused group discussions were conducted (Mamling: 1, Ankhibhui: 2 and Tamafok: 2) to supplement the outcomes from initial surveys and to cross verify the validity of the collected information.

Table 1. Summary of the respondents and key informants

Description	Mamling	Ankhibhui	Tamafok
Structured interview respondents' number	40	60	50
Average Age of Respondents (in years)	46±19	50±15.5	46±15
Key informants' number	4	6	8

Plants were inventoried in all three villages included in this study. Common species which were easily identifiable in the field were not collected. The localities of these species were recorded, and photos were taken for reference. For those species which could not be directly identified in the field, high resolution photographs of whole plants, flowers, fruits, leaves, etc. were taken along with field notes. These species were identified later using standard botanical literatures widely used to identify flowering plants in Nepal (Baral & Kurmi 2006, Polunin & Stainton 1984, Shrestha & Joshi 1996, Stainton 1988). We standardized the names of the plants according to Plants of the World Online Database (https://powo.science.kew.org/).

Data analyses

Informant consensus factor

The information gathered on the number of responses for each usage categories of ailments were analyzed by Informant Consensus Factor (F_{ic}) proposed by Trotter & Logan (1986) and developed further by Heinrich (2000) to identify the homogeneity of ethnobotanical information for each category of ailments. The standard category of symptoms and ailments has been classified by Cook (1995) and these categories can also be used in the classification of traditional illness. A total of 75 commonly known ailments in the study area were clustered under 16 usage categories following Cook (1995). Cumulative response on the use of each plant was calculated. A single plant species was listed in different groups of indigenous use, whereas for use report, each species was counted once per respondents in a category. The number of use report (n_{ur}) is compared to the number of species (n_{taxa}) in each category of use to calculate the informant consensus factor. The formula is given by:

$$F_{ic} = \frac{n_{ur} - n_{taxa}}{n_{ur} - 1}$$

where, F_{ic} = informant consensus factor, n_{ur} = number of use report in each category and n_{taxa} = number of taxa. The F_{ic} value ranges from 0 to 1. The F_{ic} value of 1 represents a total consensus among the informants on the medicinal plant for that given category, while 0 represents no consensus among the informants.

An ailment refers to a physical or health-related condition, illness, or discomfort experienced by individuals or communities that is addressed through the traditional knowledge, practices, and use of plants.

A use report is a structured documentation or record detailing the traditional or contemporary utilization of specific plant species by a community or culture, typically encompassing information on the plant's purpose, preparation, and administration

Gender and ethnobotanical knowledge

The independent samples t-test was conducted to evaluate the difference in the number of medicinal plant species reported by male and female respondents. The analysis was conducted in SPSS version 16 and the hypothesis was set as follows:

H_0: Mean number of species reported by male and female are equal, i.e., gender does not affect the number of responses on medicinal plants.

H_1: Mean number of species reported by male and female are not equal, i.e., gender affects the number of responses on medicinal plants.

Educational attainment and ethnobotanical knowledge

ANOVA was used to analyze the difference in mean number of medicinal plant species mentioned by the respondents for different levels of educational attainment of respondents. The test was conducted in SPSS version 16 and the hypothesis was set as follows:

H_0: Mean number of species for all levels of educational attainment are equal, i.e., the level of education of respondent does not affect the response on mean number of species.

H_1: Mean number of species for all levels of education attainment are not equal, i.e., level of education of respondent affects the response on mean number of species.

Age and ethnobotanical knowledge

Regression analysis (Ordinary Least Square) was performed between the mean numbers of medicinal plant species reported by the respondents (dependent variable) and age of the respondents (independent variable) using SPSS version 16.

Results and Discussion

Diversity of medicinal plants and indigenous use

A total of 200 medicinal plant species and one fungus species were reported for the treatment of 75 different ailments (Table 2). The highest number of species was reported in Tamafok (145 species), followed by Ankhibhui (108 species) and Mamling (98 species). Interestingly, the number of medicinal plants reported varies with the level of modernization. For example, the Yakkha community of Mamling represents the most modernized community of all and the number of medicinal plants reported was the lowest. On the other hand, the Yakkha community of Tamafok represents culturally and linguistically traditional Yakkha with minimum influence of modernization and the number of medicinal plants reported was the highest

of all. This decrease in ethnobotanical knowledge with increasing modernization has been widely reported (Agelet & Vallès 2001, Arjona-García *et al.* 2021, Benz *et al.* 2000, Blancas 2013). It has been hypothesized that modernized communities have increased access to modern medical facilities, and therefore, they reduce their dependency on local medicinal plants to treat their ailments (Agelet & Vallès 2001, Benz *et al.* 2000). Additionally, it could also be due to decrease in agriculture and agroforestry as modernization decreases the area for medicinal plants collection (Arjona-García *et al.* 2021). The documented plants represented 87 families and 174 genera. The family Poaceae had the highest percentage (8 %) of medicinal plant species followed by Fabaceae (7 %), Asteraceae (4.5 %), Cucurbitaceae (4 %), Lamiaceae (4 %), Rutaceae (3.5 %), Solanaceae (3.5 %), Euphorbiaceae (3 %), Zingiberaceae (3 %), Apiaceae (2.5 %), and Rosaceae (2.5 %). Several ethnobotanical studies in the highlands of eastern, central, and western hills of Nepal (Shrestha *et al.* 2016, Bhattarai *et al.* 2010) found Asteraceae, Rutaceae, Gentianaceae, Ranunculaceae, Rosaceae, Lamiaceae, Fabaceae and Polygonaceae with the highest number of medicinal species and our results are consistent with their findings. Regarding growth forms, 43% were herbs, 22% were shrubs followed by trees (21%), climbers (6.5%), grass (4%), ferns (2.5%), fungi (0.5%) and parasite (0.5%). This order of growth form (herbs, followed by shrubs, trees and other forms) was also documented in previous studies (Shrestha *et al.* 2016, Bhattarai *et al.* 2010, Uprety *et al.* 2010). Among all the species reported from the study, *Rubus ellipticus* Sm., *Justicia adhatoda* L., *Mimosa pudica* L., *Hydrocotyle javanica* Thumb. and *Zanthoxylum armatum* DC. had the highest number of use reports. These species were used in the treatment of 10 ailments. The species with treatment of more than or equal to six ailments (n≥6) are shown in Fig. 2.

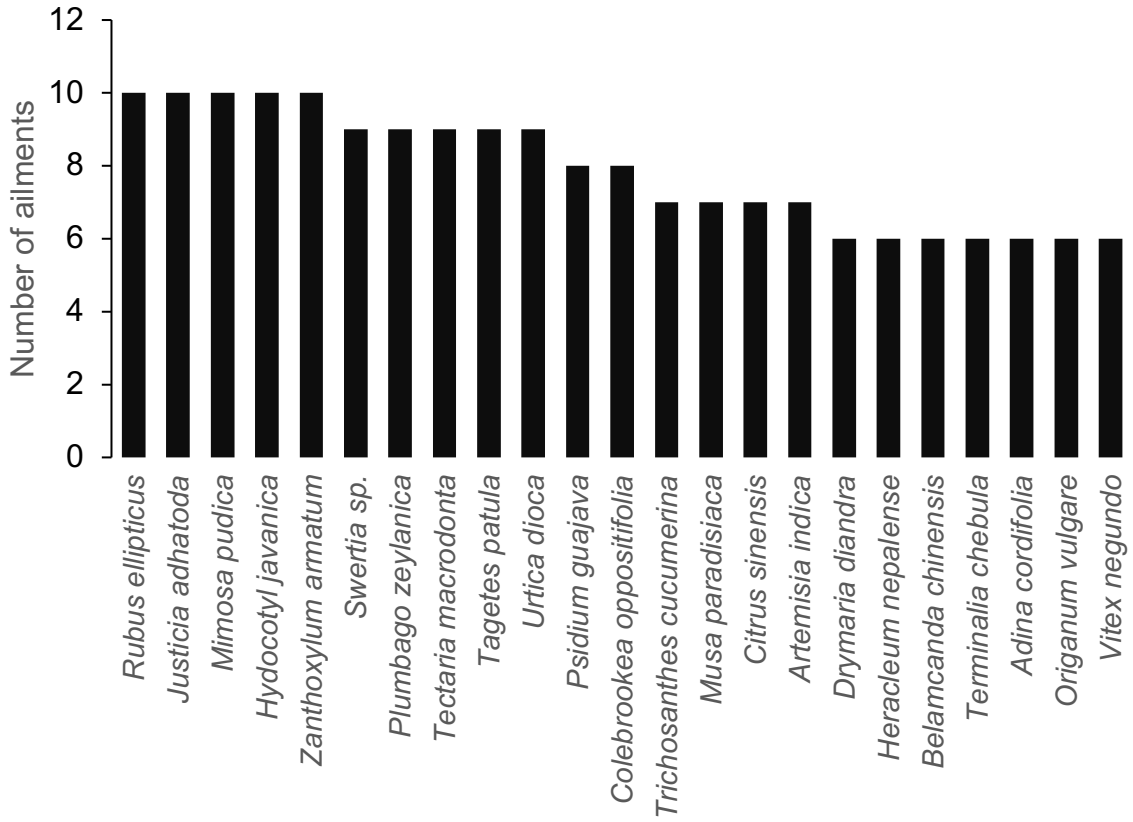

Figure 2. Species used in the treatment of six or more ailments.

However, the uses of ten plant species were found to be uncommon and not very well documented. For example, the use of *Leucosceptrum canum* Sm. for fracture and pneumonia, *Drepanostachyum falcatum* (Nees.) Keng. for dizziness, *Dalbergia stipulacea* Roxb. for jaundice, *Passiflora edulis* Sims for malarial fever, *Phytolacca acinosa* Roxb. for blood impurity and dyspepsia, *Adiantum philippense* L. for otitis media (ear infection), *Crotalaria alata* Buch.-Ham.ex D. Don for diarrhea, *Gonostegia triandra* (Blume) Miq for dyspepsia, *Colebrookea oppositifolia* Sm. for pneumonia and *Mussaenda frondosa* L. for epilepsy are the uses that have not been well documented (cross checked with uses reported by Baral and Kurmi 2006, Dahal 2016, Kunwar *et al.* 2006, Limbu 2008, Maden *et al.* 2008, Manandhar 2002, Parajuli 2000, Shrestha *et al.* 2016).

Table 2. Medicinal plants and their mode of use in three Yakkha communities in Sankhuwasabha district, east Nepal.

Scientific Name	English (E)/ Nepali (N)/ Yakkha (Y) names	Family	Ankhibhui	Mamling	Tamafok	No. of ailments
Achyranthes aspera L.	Prickly chaff flower (E)/**Ulte jhar or Ulte kuro or Apaamarg** (N)/Ulte Pohmey (Y)	Amaranthaceae	1.Stomach-ache: Root juice orally 2.Throat pain: Root juice orally 3.Pneumonia: Root/whole plant juice orally	1.Dyspepsia: Root juice orally 2.Anorexia: Root juice orally	1.Pneumonia: Root/whole plant juice orally	4
Achyranthes bidentata Blume	**Datiwan or Raato apaamaarg** (N)/ Otreysang (Y)	Amaranthaceae			1.Pneumonia: Root raw orally	1
Aconitum sp.	Aconite (E)/ **Bikhuma** (N)	Ranunculaceae	1.Diarrhoea: Root paste orally 2.Dyspepsia: Root paste orally	1.Diarrhoea: Root paste orally	1.Dyspepsia: Root paste orally	2
Acorus calamus L.	Sweet flag rhizome (E)/ **Bojo** (N)	Araceae	1.Cough: Root orally	1.Cough: Root raw orally	1.Dyspepsia: Root raw orally 2.Cough: Root raw orally	2
Adiantum philippense L.*	Walking Maidenhair fern (E)/ **Kaane Unyu** (N)	Adiantaceae			1.Otitismedia (ear infection): Leaf paste applied #	1
Adina cordifolia (Roxb.) Brandis	Yellow wood (E)/**Karam or Kadam** (N)	Rubiaceae	1.Diarrhoea: Seed orally 2.Dyspepsia: Seed orally 3.Toothache: Sap from stem orally 4.Blisters: Seed/leaf oil applied 5.Boils: Seed/leaf oil applied	1.Dyspepsia: Seed raw orally	1.Dyspepsia: Seed raw orally 2.Toothache: Brush teeth with stem 3.Wounds: Stem sap applied	6
Aegle marmelos (L.) Corrêa	**Bel chana** (N)	Rutaceae	1.Diarrhoea: Seed pod juice orally 2.Dysentry: Flower juice orally		1.Cholera: Flower juice orally	3
Aerides multiflora Roxb.	**Taaki ko sunakhari** (N)	Orchidaceae	1.Fracture: Flower paste applied	1.Fracture: Flower paste applied		1
Ageratina adenophora (Spreng.) R.M. King & H. Rob.	Crofton weed (E)/**Kaali jhar or Ban Mara or Kaali Ban Mara**(N)/ Lik-ling-fung (Y)	Asteraceae	1.Cut: Leaf juice applied 2.Typhoid fever: Leaf juice applied	1.Cut: Bud and leaves juice applied	1.Cut: Bud and leaves juice applied	2
Ageratum conyzoides L.	Goat weed (E)/ **Bokey Jhar or Ganhaaune ghaans** (N)	Asteraceae	1.Cut: Leaf paste applied 2.Jaundice: Leaf juice orally	1.Cut: Leaf juice applied	1.Cut: Leaf paste applied	2

Alangium salviifolium (L. f.) Wangerin	Alangium (E)/ **Amphi or Anurukh** (N)/	Alangiaceae			1.Scabies: Root/bark juice applied	1
Allium cepa L.	Onion (E)/**Pyaz** (N)/ Beyju (Y)	Amaryllidaceae		1.Otitismedia (ear infection): Bulb juice applied		1
Allium sativum L.	Garlic (E)/ **Lasun** (N)/ Mang-kha (Y)	Amaryllidaceae	1.Gastric: Bulb orally	1. Gastric: Bulb orally	1.Ring worm: Bulb paste applied 2.Common cold: Bulb paste orally	3
Alnus nepalensis D. Don	Alder or Nepal black cedar (E)/**Uttis** (N)/ Saaksingbu or Chekchibu (Y)	Betulaceae			1.Headache: Bark of stem smell nasal 2.Muscular pain: Bark of stem smell nasal	2
Aloe vera (L) Burm. f.	Indian Aloe (E)/ **Ghiu kumari** (N)/ Paarisang (Y)	Liliaceae	1.Burn: Sap applied	1.Burn: Leaf sap applied	1.Burn: Leaf sap applied	1
Amaranthus viridis L.	Chinese spinach (E)/**Latte sag or Lunde** (N)	Amaranthaceae		1.Toothache: Root decoction orally		1
Amomum subulatum Roxb.	Cardamom (E)/ **Alaichi** (N)/ Chokcheru or Feyreyrengmaa (Y)	Zingiberaceae			1.Toothache: Seed raw orally	1
Anethum graveolens L.	Dill (E)/**Saup or Soyaa** (N)	Apiaceae/ Umbelliferae			1.Pregnancy diet: Shoot cooked orally	1
Antidesma acidum Retz.	Chinese laurel (E)/ **Archal** (N)	Euphorbiaceae	1.Pneumonia: Root juice orally 2.Typhoid fever: Root juice orally	1.Fever: Root juice orally 2.Pneumonia: Root juice orally		3
Arctium lappa L.	Great burdock (E)/**Kuro** (N)/ Popmey or Popyang (Y)	Poaceae			1.Headache: Root paste applied	1
Artemisia indica Willd.	Mugwort (E)/**Titey paati** (N)	Asteraceae	1.Stomach-ache: Leaf raw orally 2.Cut: Leaf juice applied 3.Fever: Leaf juice orally 4.Headache: Leaf scent nasal	1.Cut: Leaf paste applied 2.Stomach-ache: Leaf paste orally 3.Fever: Leaf paste orally 4.Headache: Leaf scent nasal 5.Bruises: Leaf fomentation applied	1.Headache: Leaf scent nasal 2.Cut: Leaf juice applied 3.Scabies: Leaf paste applied 4.Blood pressure: Leaf decoction orally	7

Artocarpus heterophyllus Lam.	Jack Fruit (E)/ **Katahar or Rukh Katahar** (N)/ Faanaabu (Y)	Moraceae	1.Yeast cake: Bark fermentation orally			1
Artocarpus lacucha Buch.-Ham.	Monkey jack (E)/ **Badhar** (N)/ Mubu (Y)	Moraceae	1.Pneumonia: Bark paste orally	1.Gastric: Bark paste applied 2.Pneumonia: Bark powder orally		2
Asparagus racemosus Willd.	Asparagus (E)/**Kurilo** (N)/ Nalumang (Y)	Liliaceae			1.Cardiovascular disease: Root paste orally 2.Dyspepsia: Root paste orally 3.Lactation stimulation: Root decoction orally	3
Astilbe rivularis Buch.-Ham.ex D. Don	**Thulo dabai or Thulo ausadhi or Budho okhati** (N)	Saxifragaceae	1.Fracture: Root powder orally	1.Fracture: Root paste orally	1.Fracture: Root paste orally 2.Weakness: Root paste orally 3.Muscular pain: Root paste orally 4.Pregnancy diet: Root cooked orally	4
Azadirachta indica A. Juss.	Neem (E)/**Nim** (N)	Meliaceae		1.Fever: Leaf juice orally 2.Blood pressure: Leaf juice orally	1.Fever: Leaf juice orally	2
Piliostigma malabaricum (Roxb.) Benth.	Malabar ebony (E)/**Taanki** (N)/Chigen (Y)	Fabaceae	1.Dyspepsia: Fruit's seed roast orally 2.Gastric: Fruit's seed roast orally			2
Phanera vahlii (Wight & Arn.) Benth.	Camel's foot climber (E)/ **Bhorlaa** (N)/ Maagaavaak (Y)	Fabaceae	1.Dyspepsia: Roast fruit and ingest inner seed 2.Gastric: Roast fruit and ingest inner seed		1.Dyspepsia: Roast fruit orally	2
Iris domestica (L.) Goldblatt & Mabb.	Blackberry lilly (E)/ **Fachayang or Tyaang patre or Twaake phul** (N)/ Mayaum (Y)	Iridaceae	1.Gout: Root paste applied 2.Muscular pain: Root paste applied 3.Headache: Root juice orally	1.Headache: Root paste applied 2.Muscular pain: Root paste applied 3.Nausea: Root paste applied	1.Dyspepsia: Root paste orally 2.Cholera: Paste orally 3.Headache: Root paste orally	6
Berberis sp.	Berberry (E)/ **Chutro** (N)	Berberidaceae			1.Jaundice: Fruit/leaf/root decoction orally	1
Bergenia ciliata (Haw.) Sternb.	Rock foil (E)/**Paakhanved** (N)	Saxifragaceae		1.Fracture: Rhizome paste orally 2.Muscular pain: Rhizome paste applied	1.Fracture: Rhizome paste applied 2.Muscular pain: Rhizome paste applied	3

					3.Weakness: mix along with salt, sugar, flour, *Viscum articulatum* and *Astilbe rivularis* orally intake	
Boehmeria virgata var. *scabrella* (Dalzell & A.Gibson) Friis & Wilmot-Dear	Chinese grass (E)/ **Kaamle** (N)/ Leyghimaa (Y)	Urticaceae		1.Cut: Leaf paste applied		1
Bombax ceiba L.	Silk cotton tree (E)/**Simal** (N)/Teng-gu-sing (Y)	Bombacaceae	1.Pneumonia: Bark powder orally	1.Pneumonia: Bark powder orally	1.Pneumonia: Bark infusion orally	1
Brassica juncea (L) Czern.	Brown mustard or Indian mustard (E)/**Raayo** (N)/ Yaaro (Y)	Brassicaceae			1.Scabies: Seed juice applied	1
Brassica napus L.	Mustard (E)/ **Tori** (N)/ Toraya (Y)	Brassicaceae			1.Muscular pain: Seed oil applied over the pain	1
Butea buteiformis (Voigt) Grierson	**Bhuletro** (N)	Fabaceae	1.Worm infestation: Seed raw orally			1
Caesalpinia decapetala (Roth) Alston	Bahama sappan (E)/**Uttaaney Jhar or Ulto kaandaa** (N)	Fabaceae	1.Pneumonia: Root paste orally			1
Callicarpa arborea Roxb.	**Gualo or Maas gedaa** (N)	Verbenaceae		1.Jaundice: Root juice applied	1.Pneumonia: Root sap orally	2
Callicarpa macrophylla Vahl	**Dahi chaamal or Gualo or Maas gedaa** (N)	Verbenaceae	1.Jaundice: Root juice orally	1.Jaundice: Root juice orally		1
Calotropis gigantea (L.) W.T.Aiton	Madaar (E)/ **Aank or Barahmaase aank** (N)	Asclepiadaceae	1.Fracture: 2.Sprains (muscular swellings): Stem's milky juice applied	1.Fracture: 2.Sprains (muscular swellings): Leaf paste/shoot's milky juice applied	1.Fracture: 2.Sprains (muscular swellings): Stem's milky juice applied	2
Calvatia gigantea (Batsch) Lloyd	Giant Puffball or Puffball Mushroom (E)/**Thulo Cheu or Foshfosey cheu** (N)	Agaricaceae/ Lycoperdaceae			1.Cut: Whole plant Powder applied	1
Cannabis sativa L.	Indian hemp (E)/**Gaanjaa or Bhaang** (N)	Cannabaceae		1.Dyspepsia Seed/leaf decoction orally		1
Capsicum annuum L.	Cherry Pepper (E)/**Dalley khursaani**	Solanaceae	1.Common cold: Fruit orally 2.Cough: Fruit orally	1.Cough: Fruit raw orally 2.Common cold:	1.Snake bite: Fruit paste applied	4

	or Jyanmara khursaani (N)/ Buchimbaak (Y)			Fruit raw orally	2.Spider bite: Fruit paste applied	
Carica papaya L.	Papaya (E)/Mewaa (N)	Caricaceae	1.Jaundice: Fruit orally	1.Jaundice: Fruit orally	1.Jaundice: Fruit orally	1
Cassia fistula L.	Pudding stick (E)/ **Raajbriksha or Laalbriksha** (N)/ Hangbu (Y)	Fabaceae	1.Diarrhoea: Fruit orally		1.Cholera: Fruit seed raw orally 2.Diarrhoea: Seed raw orally	2
Cautleya spicata (Sm.) Baker	**Gagleto** (N)/ Khaalabu (Y)	Zingiberaceae			1.Stomach-ache: Whole plant Cooked orally	1
Centella asiatica (L.) Urb.	Water pennywort (E)/ **Braahmi or Ghortaapre** (N)/ Kongochii (Y)	Apiaceae/ Umbelliferae			1.Snake bite: Leaf paste applied	1
Ceropegia pubescens Wall.	Milk weed (E)/**Mirgey jhar or Mirkey laharo** (N)	Asclepiadaceae	1.Mud wound: Leaf paste applied		1.Mud wound: Leaf paste applied	1
Cicer arietinum L.	Bengal gram (E)/ **Chanaa** (N)	Fabaceae			1.Stone: Seed decoction orally	1
Cirsium verutum (D. Don) Spreng.	Silvery Russian thistle (E)/**Sungure kaandaa** (N)/ Ripachiwaa (Y)	Poaceae			1.Cardiovascular disease: Bud/root paste orally 2.Dyspepsia: Bud/root paste orally	2
Cissampelos pareira L.	Velvet-leaf (E)/**Gujur gaano** (N)	Menispermaceae	1.Fracture: Rhizome paste applied 2.Sprains (muscular swellings): Rhizome paste applied	1.Cut: Rhizome paste applied 2.Fracture: Rhizome paste applied 3.Sprains (muscular swellings): Rhizome paste applied	1.Fracture: Rhizome paste applied 2. Sprains (muscular swellings): Rhizome paste applied	3
Citrus limon (L) Osbeck	Lime or Lemon (E)/ **Kaagati or Nibuwaa** (N)/ Sumilyang (Y)	Rutaceae	1.Anorexia: Root juice orally		1.Diarrhoea: Fruit (chuk) cooked orally	2
Citrus medica L.	Citrous (E)/ **Bimira** (N)/	Rutaceae		1.Diarrhoea: Root paste orally 2.Worm infestation: Root paste orally		2
Citrus sinensis (L.) Osbeck	Orange (E)/**Suntala** (N)/Saam-yang-lyaang (Y)	Rutaceae	1.Stomach-ache: Fruit peel juice orally 2.Fever: Fruit peel juice orally	1.Throat pain: Fruit's peel decoction orally 2.Pneumonia: Fruit's peel juice orally	1.Diarrhoea: Fruit's peel juice orally 2.Epilepsy: Fruit's peel juice orally	7

			3.Pneumonia: Fruit peel powder orally 4.Throat pain: Fruit peel decoction orally	3.Typhoid fever: Fruit's peel juice orally	3.Penumonia: Fruit's peel juice orally	
Citrus sp.	**Naitey Jhyamir** (N)/ Pokchukma (Y)	Rutaceae		1.Diarrhoea: Fruit juice (in form of chuk) cooked orally		1
Clematis buchananiana DC.	Clematis (E)/**Ghyaampirash or Abijalo or Junge laharaa** (N)/ Sammarikoppa (Y)	Ranunculaceae			1.Gout: Whole plant paste applied 2.Cut: Leaf juice applied 3.Wounds: Leaf juice applied 4.Stomach-ache: Leaf juice orally ingest 5.Toothache: Stem paste orally kept in mouth	5
Cleyera japonica var. *wallichiana* (DC.) Sealy	**Baakal paate** (N)	Theaceae		1.Fracture: Bark juice applied 2.Bruise: Leaf fomentation applied		2
Colebrookea oppositifolia Sm.*	**Dhusure** (N)/ Dhusuryaa or Waachambu (Y)	Lamiaceae	1.Cut: Bark fiber applied 2.Muscular pain: Root paste add with powder of *Tectaria macrodonta*'s root, and made paste of one teaspoon and applied 3.Headache: Tobacco is filled inside the leaf of *Dhusure* and smoked 4.Pneumonia: Root juice orally 5.Fever: Root juice orally 6.Eye cataract: Bud juice is applied 7.Typhoid fever: Root juice orally	1.Pneumonia: Root raw orally 2.Typhoid fever: Bud/root juice orally	1.Conjuctivitis: Bud paste applied	8
Crotalaria alata Buch.-Ham. ex D. Don *	**Runche jhar or Singe-singe** (N)/	Fabaceae		1.Diarrhoea: Leaf powder orally #		1
Cucumis sativus L.	Cucumber (E)/ **Kaankro or Khiraa** (N)/ Baabika (Y)	Cucurbitaceae		1.Pneumonia: Seed juice orally	1.Pneumonia: Seed juice orally	1

Cucurbita maxima Duchese	Pumpkin (E)/**Pharsi** (N)/ Chhaabok (Y)	Cucurbitaceae	1.Common cold: Seed orally 2.Jaundice: fruit orally 3, Pneumonia: Seed orally	1.Pneumonia: Seed juice orally	1.Jaundice: Fruit raw orally 2.Pneumonia: Seed raw orally	3
Curculigo crassifolia (Baker) Hook. f.	**Dhoti Saro** (N)	Hypoxidaceae			1.Boil: Root paste applied 2.Mump: Root paste applied	2
Curcuma caesia Roxb.	Black zeodary (E)/ **Kaalo haldi** (N)/ Mak-sam-phi (Y)	Zingiberaceae	1.Anorexia: Rhizome paste orally 2.Dysentry: Root paste orally	1.Dyspepsia: Rhizome raw orally 2.Jaundice: Rhizome raw orally 3.Anorexia: Rhizome raw orally	1.Dyspepsia: Rhizome raw orally 2.Anorexia: Rhizome raw orally	4
Curcuma longa L.	Turmeric (E)/ **Beshar or Haldi or Haledo** (N)	Zingiberaceae	1.Throat pain: Rhizome raw orally		1.Cough: Root paste orally 2.Throat pain: Rinse well with decoction 3.Jaundice: Root powder orally	3
Cuscuta reflexa Roxb.	Dodder (E) /**Paheley** (N)	Convolvulaceae	1.Dyspepsia: Whole plant paste orally 2.Jaundice: Whole plant infusion orally	1.Jaundice: Whole plant juice orally	1.Jaundice:Whole plant juice orally 2.Fracture: Whole plant paste applied 3.Muscular pain: Whole plant paste applied	4
Cynodon dactylon (L.) Pers.	Conch grass or Bermuda grass or Bahama grass (E)/ **Dubo** (N)/ Saambok (Y)	Poaceae			1.Syphilis: Whole plant paste applied	1
Cyperus rotundus L.	**Mothe** (N)	Cyperaceae		1.Cut: Whole plant paste applied	1.Cut: Whole plant paste applied	1
Dactylorhiza hatagirea (D.Don) Soo	Marsh orchid (E)/**Paach aunle** (N)	Orchidaceae			1.Cut: Root paste applied 2.Wounds: Root paste applied	2
Dalbergia stipulacea Roxb.*	**Taatebir** (N)	Fabaceae	1.Jaundice: Bark juice orally #		1.Jaundice: Bark juice orally	1
Dendrocalamus strictus (Roxb.) Nees	Solid bamboo (E)/ **Baans or Taaru baans or Latthi baans** (N)/ Faabu (Y)	Poaceae	1.Cut: Stem powder applied 2.Fracture: Stem raw applied	1.Otitismedia (ear infection): Flower paste applied	1.Stone: Root powder orally 2.Fracture: Stem raw applied 3.Weakness: Leaf raw orally	4
Didymocarpus albicalyx C. B. Clarke	**Kumkum paatey or Kumkum** (N)	Gesneriaceae	1.Toothache: Leaf paste applied			1

Dioscorea bulbifera L.	Bulb tearing yam (E)/**Gittaa or Ban tarul or Gite phul** (N)/ Suchibaa (Y)	Dioscoreacea		1.Common cold: Fruit raw orally 2.Cough: Fruit raw orally 3.Headache: Fruit raw orally	1.Headache: Fruit raw orally 2.Cough: Fruit raw orally 3.Common cold: Fruit raw orally	3
Dioscorea deltoidea Wall. ex Griseb.	Yam (E)/ **Bhyaakur** (N)/ Swaalek (Y)	Dioscoreacea			1.Worm infestation: Tubers (root) cooked and eaten	1
Diploknema butyracea (Roxb.) H. J. Lam	Butter tree (E)/ **Chiuri phool** (N)/ Embu (Y)	Sapotaceae			1.Diarrhoea: Fruit raw orally 2.Bruises: Seed oil applied	2
Drepanostachyum falcatum (Nees.) Keng f *	Blue Bamboo or Himalayan Bamboo or Nepalese Blue Bamboo (E)/**Diu Nigalo or Go Nigalo or Phurke Ghaans** (N)	Poaceae			1.Dizziness: Stem paste orally # 2. Sprains (muscular swellings): Stem decoction orally	2
Drymaria diandra Blume	Clematis (E)/ **Abijalo or Junge laharaa** (N)/ Sammarigek (Y)	Caryophyllaceae	1.Headache: Root Scent, nasal	1.Diarrhoea: Leaf/bud juice orally 2.Headache: Leaf scent nasal	1.Child sickness: Leaf paste orally 2.Jaundice: Leaf paste orally 3.Sinusitis: Leaf boiled steam nasal 3.Muscular pain: Leaf paste orally 4.Headache: Leaf scent nasal	6
Dryopteris cochleata (D. Don) C. Chr	Male shield fern (E)/**Thaado Unyu** (N)/Yaarapmang (Y)	Dryopteridaceae	1.Cut: Leaf juice applied	1.Cut: Leaf juice applied 2.Wounds: Leaf juice applied 3.Stomach-ache: Leaf juice orally	1.Cardiovascular disease: Stem paste orally 2.Stomach-ache: Leaf rub and smell nasal	4
Duhaldea cappa (Buch.-Ham. ex D.Don) Pruski & Anderb.	Golden Samphire (E)/ **Gaai tihare** (N)	Asteraceae			1.Cough: Root raw orally 2. Muscular pain: Leaf and root applied over	1
Elephantopus scaber L.	Prickly-leaved elephant foot (E)/**Mulaa paate or Bhende kuro** (N)	Asteraceae		1.Cough: Root orally raw 2.Common cold: Root orally raw 3.Cut: Leaf paste applied		3
Eleusine coracana (L.) Gaertn.	Millet (E)/ **Kodo** (N)/ Pangey (Y)	Poaceae	1.Typhoid fever: Fermented seed (grains) orally	1.Diarrhoea: Fermented grains orally	1.Diarrhoea: Fermented grains orally	2

Emilia sonchifolia (L.) DC.	**Marchaa jhar or Chaulaane jhar or Hiran khuri** (N)	Asteraceae		1.Dyspepsia: Whole plant decoction orally 2.Yeast cake: Fermented root orally		2
Entada rheedei Spreng.	Mackary Bean (E)/**Pangra** (N)/ Ongolyaak (Y)	Fabaceae	1.Mumps: seed paste applied			1
Equisetum sp.	Horse tail (E)/**Ghod puchare** (N)	Equisetaceae			1.Cardio-vascular disease Root paste orally	1
Eulaliopsis binata (Retz.) C. E. Hubb.	Sawai grass (E)/ **Babiyo** (N)/	Poaceae	1.Worm infestation: Bud infusion orally			1
Euphorbia hirta L.	Snake Weed (E)/ **Dudhe jhar** (N)	Euphorbiaceae	1.Cut: Sap from whole plant can be used to apply	1.Cut: Sap from whole plant applied	1.Boils: Whole plant paste applied	2
Euphorbia royleana Boiss.	Cactus spurge (E)/ **Siudi or Bijju** (N)/ Kaanaachii (Y)	Euphorbiaceae	1.Diarrhoea: Stem sap orally 2.Dyspepsia: Bud/leaf orally 3.Conjuctivitis: Stem sap applied 4.Toothache: Sap is applied	1.Dyspepsia: Bud raw orally	1.Dyspepsia: Pith raw orally 2.Toothache: Sap stem orally	4
Ficus semicordata Buch.-Ham. ex Sm.	Fodder fig (E)/ **Khanyu** (N) / Khokpu (Y)	Moraceae	1.Pneumonia: Shoot sap orally	1.Pneumonia: Milky sap is mixed with bark of *Bombax ceiba* and *Artocarpus lakoocha*, taken orally		1
Fragaria nubicola (Lindl. ex Hook. f.) Lacaita	Alpine strawberry (E)/ **Bhui ainselu** (N)	Rosaceae			1.Wounds: Leaf paste applied	1
Galium hirtiflorum Req. ex DC.	**Lute jhaar or Marchey jhar or Otheng** (N)	Rubiaceae			1.Yeast cake: Leaf fermented orally	1
Glycine max (L.) Merr.	Soybean (E)/ **Bhatmash** (N)/ Chembek or Chembya (Y)	Fabaceae			1.Dyspepsia: Seed fermented orally	1
Gonostegia triandra (Blume) Miq *	**Chiple jhar** (N)	Urticaceae			1.Dyspepsia: Shoot cooked orally # 2.Blood pressure: Shoot cooked orally #	2
Helicteres isora L.	East Indian screw tree (E)/**Kapaase or Marorphali** (N)	Sterculiaceae			1.Fracture: Root paste applied 2.Muscular pain: Root paste applied	2
Tetrataenium nepalense (D. Don)	**Chimphing or Phaaki or Bhote jiraa** (N)	Apiaceae/ Umbelliferae	1.Dyspepsia: Seed orally	1.Cough: Seed/flower paste orally	1.Dyspepsia: Seed orally 2.Common cold: Seed orally	6

				2.Common cold: Seed/flower paste orally 3.Headache: Seed paste applied	3.Gastric: Seed orally 4.Dizziness (ailment due to ill spirit): Seed orally	
Hibiscus rosa-sinensis L.	Chinese hibiscus (E)/ **Ghanti phul** (N)	Malvaceae	1.Sinusitis: Root powder nasal 2.Headache: Root powder nasal		1.Burn: Flower paste applied	3
Hodgsonia macrocarpa (Blume) Cogn.	**Ban pharsi or Ghyu phal** (N)	Cucurbitaceae			1.Dyspepsia: Seed roast/decoction orally	1
Holarrhena pubescens Wall. ex G. Don.	Conessi or Tellicherry bark (E) / **Besi khirra or Khirra or Bhaate khirra** (N)/	Apocynaceae		1.Gastric: Bark paste orally		1
Holoptelea integrifolia (Roxb.) Planch.	Indian elm (E)/**Khamaari** (N)	Ulmaceae	1.Fracture: Leaf Juice applied 2. Sprains (muscular swellings): Leaf juice applied	1.Fracture: Leaf juice applied 2.Sprains (muscular swellings): Leaf juice applied		2
Hordeum vulgare L.	Barley (E)/**Jau or Uwaa** (N)/ Chichaama or Saamya (Y)	Poaceae			1.Menstrual disorder: cooked and ingested as meal	1
Hydrocotyle javanica Thunb.	**Ghodtapre** (N)	Apiaceae/ Umbelliferae	1.Dyspepsia: Root powder orally 2.Cut: Leaf juice applied	1.Diarrhoea: Leaf/bud juice orally 2.Stomach-ache: Root powder orally 3.Dyspepsia: Root powder orally 4.Mouth ulcer: Leaf raw orally 5.Cough: Leaf raw orally 6.Toothache: Leaf raw orally chew 7.Pneumonia: Leaf raw orally 8.Anorexia: Leaf paste orally 9.Cut: Leaf paste orally 10.Throat pain: Leaf raw orally	1.Dyspepsia Root paste orally	10

Hypericum japonicum Thunb.	Hypericum (E)/ **Belauti jhar or Kanike ghaans or Chalak jhaar** (N)	Hypericaceae			1.Stomach-ache: Whole plant decoction orally	1
Imperata cylindrica (L.) Raeusch.	Cogon grass (E)/**Siru** (N)/Chhonsang (Y)	Poaceae	1.Jaundice: Leaf/root paste orally 2.Worm infestation: Root orally	1.Worm infestation: Root raw orally	1.Throat pain: Root raw orally 2.Worm infestation: Root raw orally	3
Ipomoea sp.	**Asame jhar** (N)	Convolvulaceae			1.Dyspepsia: Root paste orally	1
Justicia adhatoda L.	Malabar nut (E)/ **Asuro** (N)/ Paa-kaa-saa or Taarchipmang (Y)	Acanthaceae	1.Dyspepsia: Root juice orally 2.Stomach-ache: Root juice orally 3.Fever: Root raw orally 4.Malaria fever: Smoke nasal 5.Typhoid fever: Root raw orally 6. Sprains (muscular swellings): Leaf fomentation applied 7.Headache: Stem burn smell nasal 8.Pneumonia: Root powder orally	1.Cough: Root raw orally	1.Child sickness: Root paste orally	10
Kaempferia rotunda L.	Indian crocus (E)/ **Bhui champaa** (N)/ Kham-bet-laa (Y)	Zingiberaceae	1.Fracture: Whole plant paste applied 2.Sprains (muscular swellings): Whole plant paste applied	1.Fracture: Whole plant paste applied 2.Sprains (muscular swellings): Whole plant paste applied	1.Fracture: Root paste applied 2.Sprains (muscular swellings): Root paste applied	2
Lepidium sativum L.	Garden cress (E)/ **Chamsur** (N)	Brassicaceae	1.Fracture: Whole plant paste applied	1.Fracture: Seed powder orally	1.Muscular pain: Leaf/seed paste applied	2
Leucosceptrum canum Sm.*	**Ghurbish or Bhusure or Gurpis**(N)/ Opchik (Y)	Lamiaceae	1.Fracture: Root paste applied #		1.Pneumonia: Root paste orally #	2
Litsea cubeba (Lour.) Pers.	Nepal cubeb (E)/**Sil timur or Kaalo timur** (N)/Hoksing (Y)	Lauraceae	1.Diarrhoea: Seed orally		1.Dyspepsia: Seed decoction orally 2.Gastric: Seed decoction orally 3.Fever: Seed decoction orally 4.Tonsil: Seed decoction orally	5
Lobelia pyramidalis Wall.	Lobelia (E)/ **Eklebir** (N)	Companulaceae			1.Fever: Leaf decoction orally	1

Luffa cylindrica (L) M.Roem.	Gourd (E)/ **Ghiraula** (N)/ Toreng(Y)	Cucurbitaceae	1.Pneumonia: Fruit fiber juice orally 2.Typhoid fever: Fruit fiber juice orally			2
Solanum lycopersicum L.	Tomato (E)/**Tamaatar** (N)/Waaringbaa (Y)	Solanaceae	1.Burn: Fruit juice applied			1
Lyonia ovalifolia (Wall.) Drude	**Angeri** (N)	Ericaceae		1.Scabies: Leaf/bud paste applied	1.Scabies: Leaf/bud paste applied	1
Lysimachia alternifolia Wall.	**Pinaase jhar** (N)	Primulaceae			1.Sinusitis: Whole plant Inhaled	1
Macrotyloma uniflorum (Lam.) Verdc.	Horse gram (E)/**Gahat or Kulathaa** (N)/ Fekmyaa (Y)	Fabaceae			1.Stone: Seed decoction orally	1
Mangifera indica L.	Mango (E)/ **Aamp** (N)/ Aambibu (Y)	Anacardiaceae	1.Jaundice: Inner part of the fruit peel taken orally	1.Jaundice: Inner part of the fruit peel taken orally	1.Jaundice: Inner part of fruit peel taken orally	1
Mentha arvensis L.	Mint (E)/**Pudinaa** (N)/ Naamchulaa (Y)	Lamiaceae	1.Gastric: Leaf orally	1.Blood impurity: Leaf decoction orally 2.Stomach-ache: Leaf decoction orally	1.Blood impurity: Leaf decoction orally 2.Cough: Leaf decoction orally 3.Common cold: Leaf decoction orally	5
Mimosa rubicaulis Lam.	**Boksi kaada or Boksi ghaans** (N)	Fabaceae	1.Typhoid fever: Root juice orally		1.Fever: Root raw orally	2
Mimosa pudica L.	Sensitive plant (E)/ **Buhari kaada** (N)/ Pomrekmayaksang (Y)	Fabaceae	1.Child sickness: Root orally 2.Diarrhoea: Root/thorn paste orally 3.Dyspepsia: Root/thorn paste orally 4.Dysentry: Root juice orally 5.Worm infestation: Root paste orally 6.Fever: Root paste orally 7.Cut: Leaf juice applied 8.Pneumonia: Root paste orally	1.Diarrhoea: Root paste orally 2.Worm infestation: Root paste orally 3.Lost appetite: Root paste orally	1.Dyspepsia: Bud/root juice orally 2.Stone: Root juice orally 3.Diarrhoea: Root paste orally 4.Dysentry: Root paste orally 5.Jaundice: Root paste orally	10
Mirabilis jalapa L.	Marvel of Peru (E)/ **Lankaa sani or Maalati phul** (N)/ Kuchibhung (Y)	Nyctaginaceae			1.Fracture: Root/tuber paste applied 2.Pregnancy ease: Root/tuber tied on hair expedites easy delivery (faith healer) 3.Retention of placenta: Root juice orally	3

Momordica charantia L.	Carella fruit (E)/**Karela or Tite karelaa** (N)	Cucurbitaceae			1.Blood pressure: Fruit cooked orally	1
Morus australis Poir.	Black mulberry (E)/**Kimbu** (N)/ Mangmeru (Y)	Moraceae			1.Jaundice: Bark decoction orally 2.Throat pain: Root decoction orally	2
Musa balbisiana Colla	Wild banana (E)/ **Athey Kera or Athey kola** (N)/ Tel-laa (Y)	Musaceae	1.Diarrhoea: Fruit orally 2.Dysentry: Fruit orally	1.Diarrhoea: Fruit orally 2.Dysentry: Fruit orally	1.Diarrhoea: Fruit raw orally	2
Musa paradisiaca L.	**Kera** (N)/ Banana (E)/ Chomoklaa (Y)	Musaceae	1.Diarrhoea: Fruit orally 2.Bruises: Leaf fomentation applied 3.Muscular pain: Leaf Fomentation applied 4.Blisters: Pod sap applied 5.Boils: Pod sap applied	1.Diarrhoea: Fruit raw orally	1.Pneumonia: Stem sap orally 2.Retention of placenta: Stem paste applied	7
Mussaenda frondosa L.*	Damran (E)/ **Dhobi** (N)/ Maachukalaamifung (Y)	Rubiaceae	1.Jaundice: Root juice orally 2.Pneumonia: Root juice orally 3.Typhoid fever: Root juice orally 4.Yeast cake: Root fermentation orally	1.Pneumonia: Root juice orally	1.Epilepsy: Root decoction orally # 2.Pneumonia: Flower juice orally	5
Myrica esculenta Buch.-Ham.ex. D. Don	Box myrtle (E)/**Kaaphal** (N)	Myricaceae		1.Gastric: Bark decoction orally 2.Stomach-ache: Bark paste orally		2
Nardostachys jatamansi (D.Don) DC.	Spikenard (E)/**Jataamasi** (N)	Valerianaceae			1.Dyspepsia: Root paste orally	1
Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong	Picrorhiza (E)/**Kutki** (N)	Scrophulariaceae	1.Dyspepsia: Root paste orally		1.Cut: Root paste applied	2
Nicotiana tabacum L.	Tobacco or Tobacum (E)/**Khaini or Surti** (N)	Solanaceae			1.Toothache: Leaf paste applied 2.Snake bite: Leaf paste applied	2
Ocimum basilicum L.	Sweet basil (E)/ **Babari** (N)/ Andonglafung (Y)	Lamiaceae	1.Gout: Bud paste applied 2.Muscular pain: Bud leaf paste applied	1.Headache: Leaf paste applied		3
Ocimum tenuiflorum L.	Sacred basil (E)/**Tulasi** (N)	Lamiaceae	1.Pneumonia: Leaf paste orally	1.Pneumonia: Leaf paste orally		2

				2.Throat pain: Leaf paste oral		
Origanum vulgare L.	Pot marjoram (E)/**Sajiwan or Satya jiwan** (N)	Lamiaceae	1.Pneumonia: Leaf juice orally 2.Diarrhoea: Leaf juice orally 3.Urine infection: Leaf decoction orally 4.Common cold: Flower/leaf juice orally	1.Cough: Leaf raw orally 2.Common cold: Leaf raw rub and smell 3.Pneumonia: Leaf paste orally	1.Vomitting: Leaf juice orally 2.Diarrhoea: Leaf juice orally	6
Oroxylum indicum (L.) Kurz	Indian Trumpet Flower (E)/**Totela or tatelo** (N)	Bignoniaceae	1.Jaundice: Bark powder orally	1.Jaundice: Bark/flower paste orally 2.Pneumonia: Bark/flower paste orally 3.Tonsil: Bark/flower paste orally	1.Jaundice: Bark powder orally	3
Osbeckia nepalensis Hook.	**Chuwaa** (N)/Yanglaa or Yangdoklaa(Y)	Melastomataceae	1.Toothache: Bud sap applied 2.Dental carries: Bud sap applied 3.Dyspepsia: Flower's resin mixed with Siudi's and taken orally			3
Osbeckia nutans Wall. ex C.B.Clarke	**Chillo angeri or Saano angeri** (N)	Melastomataceae		1.Dyspepsia: Root juice orally		1
Oxalis acetosella L.	Wood sorrel (E)/**Chari amilo** (N)	Oxalidaceae			1.Cardiodynia: Leaf raw orally 2.Fever: Leaf raw orally	2
Passiflora edulis Sims *	Stinking passion flower (E)/**Lahare aanp or Ghadi phool** (N)	Passifloraceae			1.Malarial fever: leaf/bud raw orally as pickle # 2.Blood pressure: leaf/bud raw orally as pickle #	2
Perilla frutescens (L.) Britton	Acute common perilla (E)/**Silaam** (N)/Naamowaa (Y)	Lamiaceae	1.Boils: Leaf paste applied			1
Persicaria nepalensis (Meisn.) H.Gross	**Amil paate** (N)	Polygonaceae		1.Cut: Root paste applied 2.Fever: Leaf pickle or root juice orally	1.Cut: Root paste applied 2.Fever: Leaf pickle or root juice orally	2
Phyllanthus emblica L.	Gooseberry (E)/ **Amlaa or Auraa** (N)/ Aangoraa (Y)	Euphorbiaceae	1.Cough: Fruit raw orally 2.Throat pain: Fruit raw orally		1.Cardio-vascular disease: Root paste orally	3
Phytolacca acinosa Roxb. *	Sweet belladonna (E)/**Jaringo or Jaringo saag** (N)	Phytolaccaceae		1.Blood impurity: Bud cooked orally #	1.Dyspepsia: Root paste orally #	2

Pinus roxburghii Sarg.	Three leaved pine (E)/**Salla or Khote sallo** (N)	Pinaceae	1.Pregnancy wellbeing: Resin sap applied		1.Dizziness: Resin sap applied as tike 2.Pregnancy wellbeing: resin is burnt as wax candle around pregnant woman	2
Piper nigrum L.	Black pepper (E)/ **Marich**(N)	Piperaceae	1.Headache: Seed pastes orally	1.Cough: Fruit/seed decoction orally 2.Fever: Fruit/seed decoction orally	1.Conjuctivitis: Seed powder orally 2.Throat pain: Fruit/seed decoction orally 3.Cough: Seed orally raw	5
Plantago centralis Pilg.	Ripple grass (E)/**Ishabgol or Saphagol** (N)	Plantaginaceae			1.Cut: Leaf/root paste applied 2.Indigestion: Root juice orally	2
Plumbago zeylanica L.	Ceylon leadwort (E)/ **Chittu** (N)	Plumbaginaceae	1.Cut: Root juice applied 2.Child sickness: Root juice orally 3.Dyspepsia: Root juice orally 4.Diarrhoea: Root juice orally 5.Anoreixa: Root juice orally 6.Jaundice: Root powder orally 7.Fracture: Root juice applied 8.Otitismedia (ear infection): Root juice applied	1.Dyspepsia: Leaf orally raw 2.Jaundice: Root paste orally 3.Fracture: Root paste applied	1.Fracture: Root juice applied 2.Yeast cake: Root fermentation orally 3.Dyspepsia: Root paste orally 4.Jaundice: Root paste orally	9
Pogostemon benghalensis (Burm. f.) Kuntze	**Rudilo** (N)	Lamiaceae	1.Child sickness: Root paste orally 2.Muscular pain: Root/stem powder applied	1.Pneumonia: Rhizome raw orally		3
Dinetus grandiflorus (Wall.) Staples	**Chamero laharo** (N)	Convolvulaceae			1.Fracture: Root paste applied	1
Portulaca oleracea L.	Common purslane (E)/ **Nun dhiki** (N)/ Bhusudey (Y)	Portulacaceae	1.Fracture: Stem/leaf/seed paste applied 2. Sprains (muscular swellings): Stem/leaf/seed paste applied			2
Prunus persica (L.) Batsch	Peach (E)/ **Aaru** (N)/ Khambucchii (Y)	Rosaceae	1.Contaminated wounds: Leaf juice applied		1.Contaminated wounds: Leaf juice applied	1
*Pseudognaphalium affine (*D.Don) Anderb.	Golden cud weed (E)/ **Buke phul or Bokre phul or Khairo jhaar** (N)/ Nunaamaphung (Y)	Poaceae		1.Cut: Leaf paste applied		1

Psidium guajava L.	Guava (E)/ **Ambak or Ambaa** (N)/ Belauti (Y)	Myrtaceae	1.Diarrhoea: Bark paste orally 2.Dyspepsia: Bark juice orally 3.Stomach-ache: Bark juice orally 4.Dysentry: Bark juice orally 5.Throat pain: Fruit peel juice orally 6.Typhoid fever: Bark juice orally	1.Diarrhoea: Bark raw orally 2.Dysentry: Bark powder orally 3.Gastric: Bark powder orally	1.Stomach-ache: Bark raw orally 2.Throat pain: Bud and leaf raw orally 3.Pneumonia: Bark raw orally 4.Diarrhoea: Bark powder orally	8
Pteris biaurita L.	**Haade Unyu** (N)	Pteridaceae	1.Child sickness: Leaf paste orally 2.Cut: Leaf juice applied 3.Blisters: Leaf juice applied 4.Boils: Leaf juice applied			4
Punica granatum L.	Pomegranate (E)/**Daarim or Anaar** (N)	Punicaceae	1.Diarrhoea: Fruit orally	1.Diarrhoea: Bark paste orally		1
Pyrus pashia Buch-Ham.ex.D.Don	Wild pear (E)/**Mel or Mayal** (N)	Rosaceae	1.Dysentry: Fruit orally		1.Diarrhoea: Fruit(chuk) orally 2.Cholera: Fruit(chuk) orally 3.Vomitting: Fruit(chuk) cooked orally	4
Quercus lanata Sm.	Wooly oak (E)/ **Baanjh or Baanjhey** (N)/	Fagaceae	1.Fracture: Bark paste applied			1
Rheum sp.	Rhubarb (E)/**Padamchal** (N)	Polygonaceae	1.Cut: Root paste applied			1
Rhododendron L.	Tree Rhododendron (E)/**Lali guraans** (N)	Ericaceae			1.Fish bone obstruction: Flower/leaf raw orally	1
Rhododendron falconeri Hook.f.	Rhododendron (E)/**Gurash or Korlingaa** (N)/ Faamfungbulaa (Y)	Ericaceae			1.Diarrhoea: Flower paste orally 2.Pneumonia: Bud raw orally	2
Ricinus communis L.	Castor oil plant (E)/ **Aderi** (N)/ Tingifung (Y)	Euphorbiaceae	1.Pneumonia: Fruit juice orally	1.Pneumonia: Fruit juice orally	1.Fracture: Root juice applied	2
Nasturtium officinale W.T.Aiton	Water cress (E)/**Sim raayo or Sim saag or Paani sag** (N)/ Waajindrik (Y)	Brassicaceae			1.Dyspepsia: Leaf cooked orally	1
Rubus ellipticus Sm.	Yellow raspberry (E)/ **Ainselu** (N)/ Khambuamaang (Y)	Rosaceae	1. Cardio-vascular disease: Root paste taken orally	1.Gastric: Root paste taken orally	1.Cardio-vascular disease: Root paste orally 2.Uric acid: Root juice orally	10

			2.Uric acid; gout: Root powder orally 3.Diarrhoea: Root juice taken orally 4.Stomach-ache and indigestion/Dyspepsia: Root juice taken orally 5. Throat pain: Root/bud's juice orally 6.Tonsil: Raw bud orally	2.Stomach-ache: Root paste taken orally 3.Pneumonia: Root paste taken orally	3.Gout: Root juice orally 4.Diarrhoea: Root juice orally 5.Dyspepsia: Root juice orally 6.Throat pain: Root, bud juice orally 7.Tonsil: Bud raw orally	
Rubus rugosus Sm.	Raspberry (E)/ **Bipem Kanta or Ban ainselu or Goru ainselu** (N)	Rosaceae	1.Child sickness: Leaf is applied 2.Pneumonia: Root powder orally			2
Rumex dentatus L.	Curled dock (E)/ **Baans paate** (N)	Polygonaceae			1.Wounds: Leaf powder applied 2.Measles: Leaf powder applied	2
Rumex nepalensis Spreng.	Yellow dock (E)/ **Halhale or Hali** (N)	Polygonaceae		1.Cut: Sap/leaf extract applied 2.Wounds: Sap/leaf extract applied 3.Sprains (muscular swellings): Sap/leaf extract applied		3
Saccharum arundinaceum Retz.	Sugarcane (E)/**Ukhu** (N)/ Chhaawaa (Y)	Poaceae	1.Jaundice: Stem orally	1.Jaundice: Stem raw orally	1.Jaundice: Stem raw orally	1
Sapindus mukorossi Gaertn.	Soapnut tree (E)/ **Rithaa** (N)/ Phimphruwa (Y)	Sapindaceae		1.Pneumonia: Fruit juice orally		1
Falconeria insignis Royle	Twallo tree (E)/ **Khirro or Khirrah or Dudhey Khirroh** (N)/ Hochengbu (Y)	Euphorbiaceae			1.Dysentry: Bark juice taken orally	1
Saussurea laniceps Hand.-Mazz.	Costus (E)/ **Bhut kesh or Kapase phul** (N)	Poaceae			1.Cut: Flower paste applied	1
Schima wallichii (DC.) Korth.	Needle wood (E)/ **Chilaaune** (N)/ Yangsingbu (Y)	Theaceae	1.Worm infestation: Bark powder orally	1.Gastric: Bark powder orally 2.Worm infestation: Bark powder orally	1.Worm infestation: Bark powder orally	2
Sesamum indicum L.	Sesame or Gingelly seeds (E)/ **Til or**	Pedaliaceae			1.Burn: Seed oil applied	1

	Pavitra (N)/ Pheytaawa (Y)					
Shorea robusta C.F.Gaertn.	Sal Tree (E)/**Saal** (N)/Chhubu (Y)	Dipterocarpaceae	1.Pneumonia: Leaf fomentation applied 2.Fracture: Leaf fomentation applied 3.Muscular pain: Leaf fomentation applied			3
Sigesbeckia orientalis L.	**Gopre jhar or Dudhe jhar** (N)	Poaceae		1.Foot irritation: Leaf paste applied		1
Solanum betaceum Cav.	**Rambheda or Rukh tamatar** (N)/ Waarimbaa or Tokorokwaa(Y)	Solanaceae	1.Pneumonia: Bud/leaf juice orally			1
Solanum stramoniifolium Jacq.	Turkey berry (E)/ **Bihi or Kacher** (N)/ Khiwatgawa (Y)	Solanaceae			1.Fever: Fruit juice orally 2.Headache: Fruit juice orally	2
Solanum tuberosum L.	Potato (E)/ **Aalu** (N)/ Sambaakhi (Y)	Solanaceae			1. Burn: Tubers mixed with seed of *Til* and *Ghanti phul* and applied	1
Solanum virginianum L.	Yellow berried nightshade (E)/**Kantakaari** (N)	Solanaceae	1.Toothache: fruit or seed is deep fried in oil, applied over the pain			1
Solena amplexicaulis (Lam.) Gandhi	**Ban Kaakro or Ban kaankri or Gol Kaankri** (N)	Cucurbitaceae			1.Dyspepsia: Root paste orally	1
Sonchus asper (L.) Hill	**Dudhe jhar or Dudhe kaandaa** (N)	Poaceae			1.Skin irritation (allergy): Whole plant grind and apply paste 2.Boils: Whole plant grind and apply	2
Blainvillea acmella (L.) Philipson	**Maraate or Marethi** (N)	Asteraceae		1.White coating of tongue (tongue's plague): Leaf/bud raw orally		1
Swertia sp.	Chiretta (E)/**Chiraito** (N)/ Yek-khen or Sungdhing (Y)	Gentianaceae	1.Dyspepsia: Whole plant decoction orally 2.Blood pressure: Leaf decoction orally 3.Fever: Leaf decoction orally 4.Malaria fever: Leaf decoction orally	1.Fever: Whole plant raw orally 2.Headache: Leaf decoction orally 3.Fracture: Whole plant paste applied	1.Fever: Whole plant juice orally 2.Cough: Whole plant juice orally 3.Common cold: Whole plant juice orally	9

			5.Typhoid fever: Root juice orally 6.Fracture: Mix plant's paste with kerosene, needle, goat's milk and pear and apply over the fracture 7.Headache: Root raw orally		4.Malarial fever: Whole plant juice orally 5.Headache: Whole plant juice orally 6.Blood pressure: Whole plant juice orally	
Symplocos ramosissima Wall. ex G.Don	**Rajgante or Gujur gaano or Kharaane** (N)	Symplocaceae			1.Fracture: Rhizome paste applied 2.Muscular pain: Rhizome paste applied	2
Syzygium aromaticum (L.) Merr. & L.M.Perry	Clove (E)/**Lwang** (N)	Myrtaceae			1.Toothache: Bud raw orally	1
Tagetes erecta L.	Marigold (E)/**Sayapatri** (N)/Latola (Y)	Asteraceae	1.Dyspepsia: Flower juice orally 2.Pneumonia: Flower powder orally 3.Throat pain: Flower powder orally 4.Diarrhoea: Flower juice orally	1.Tonsil: Flower powder orally 2.Pneumonia: Fruit powder orally	1.Dyspepsia: Flower paste orally 2.Tonsil: Bud/flower powder orally 3.Burn: Bud flower mix with egg yolk and apply over the infected area 4.Cut: Bud flower mix with egg yolk and apply over the infected area 5.Typhoid fever: Flower infusion orally 6.Epilepsy: Flower raw orally 7.Pneumonia: Flower raw orally	9
Tamarindus indica L.	Tamarind (E)/**Titri or Tetair or Imli** (N)	Fabaceae			1.Diarrhoea: Fruit raw orally	1
Tectaria coadunata (J. Sm.) C. Chr.	**Kaalo or Odaarey niguro** (N)/ Lung-dang Niguryak (Y)	Dryopteridaceae	1.Dysentry: Root juice orally 2.Fracture: Leaf paste applied 3.Muscular pain: Root paste applied 4.Diarrhoea: Root paste intake 5.Worm infestation: Root juice orally 6.Fever: Root juice orally	1.Dysentry: Rhizome paste orally 2.Diarrhoea: Rhizome paste orally 3.Dyspepsia: Rhizome paste orally	1.Cut: Root Paste applied 2.Diarrhoea: Rhizome paste orally 3.Throat pain: Rhizome paste orally	9

Terminalia alata B.Heyne ex Roth	Myrobalan or Laurel tree (E)/**Saaj or Asnaa** (N)	Combretaceae	1.Skin disease: Bark juice applied	1.Cut: Bark juice applied 2.Wounds: Bark juice applied 3. Sprains (muscular swellings): Bark juice applied 4.Skin diseases: Bark juice applied		4
Terminalia bellirica (Gaertn.) Roxb.	Myrobalan (E)/ **Barro or Trifalaa** (N)/ Kisok (Y)	Combretaceae	1.Cough: Fruit orally 2.Throat pain: Fruit orally	1.Cough: Fruit raw orally 2.Throat pain: Fruit raw orally		2
Terminalia chebula Retz.	Myrobalan (E)/**Harra or Harro** (N)/ Tunguwaa (Y)	Combretaceae	1.Asthama: Fruit juice orally 2.Common cold: Fruit juice orally 3.Cough: Fruit raw orally 4.Throat pain: Fruit raw orally	1.Gastric: Fruit paste orally 2.Cough: Fruit raw orally 3.Throat pain: Fruit raw orally 4.Pneumonia: Fruit raw orally	1. Cough: Fruit raw orally 2.Common cold: Fruit juice orally	6
Thelypteris sp.	**Pirey unyu** (N)	Thelypteridaceae			1.Insecticide: Whole plant paste applied	1
Azanza lampas (Cav.) Alef.	**Ban Kapaas** (N)/ Fungdasaakhi (Y)	Malvaceae		1.Boils: Root paste applied 2.Jaundice: Root decoction orally		2
Thysanolaena latifolia (Roxb. ex Hornem.) Honda	Broom grass (E)/ **Amriso** (N)/ Sulu (Y)	Poaceae			1.Throat pain: Root decoction orally 2.Worm infestation: Root juice orally 3.Retention of placenta: Leaf raw orally	3
Trichosanthes cucumerina L.	**Ban ghiraula** (N)/ Tutumbi or Pungdaawaabik (Y)	Cucurbitaceae	1.Blood pressure: Dried fruit fiber orally 2.Diarrhoea: Fruit orally 3.Dyspepia: Fruit orally 4.Jaundice: Dried Fruit juice orally 5.Fever: Dried fruit juice orally 6.Malaria fever: Dried fruit juice orally	1.Jaundice : Dried fruit juice orally	1.Blood pressure: Fruit/root juice orally 2.Jaundice: Fruit (dried fiber) juice orally 3.Anorexia: Fruit juice orally	7
Trichosanthes tricuspidata Lour.	**Indreni** (N)	Cucurbitaceae	1.Jaundice: Fruit/root juice orally			1

Urtica dioica L.	Stinging nettle (E)/**Sisnu** (N)/Chii-waa (Y)	Urticaceae	1.Chid sickness: Root paste orally 2.Dyspepsia: Root decoction orally 3.Dog bite: Root paste applied 4.Mouse bite: Root paste applied 5.Fracture: Root paste applied	1.Weakness: Leaf/stem cooked orally 2.Dog bite: Root paste applied	1.Dyspepsia: Root decoction orally 2.Blood pressure: Root decoction orally 3.Cardiovascular disease: Root paste orally 4.Bruises: Root paste applied 5.Dog bite: Root paste applied	9
Cyanthillium cinereum (L.) H.Rob.	Ash coloured fleabane (E)/**Marchaa jhar or Jhur jhure** (N)	Asteraceae		1. Dyspepsia: Decoction of whole plant taken orally		1
Viburnum erubescens Wall. ex DC.	**Asaare** (N)/ Yanchiling (Y)	Sambucaceae			1.Dyspepsia: Bud and leaf paste orally	1
Viscum articulatum Burm. f.	Mistletoe (E)/ **Hadchur** (N)/ Aa-waachamching (Y)	Loranthaceae	1.Cut: Stem paste applied 2.Fracture: Stem paste applied 3. Sprains (muscular swellings): Stem paste applied	1.Fracture: Stem paste applied	1.Fracture: Whole plant paste applied 2.Muscular pain: Whole plan paste applied 3.Weakness: Grind stem and mix with *Astilbe rivularis* and *Berginia ciliata*, salt, sugar, flour, taken orally 4.Pregnancy diet: mix with *Astilbe rivularis* and *Anethum graveolens* and cooked and then take orally	5
Vitex negundo L.	Three-leaved chaste tree (E)/**Simaali** (N)	Verbenaceae	1.Headache: Leaf scent nasal 2.Sinusitis: Bud scent nasal	1.Cough: Leaf/stem decoction orally 2.Common cold: Leaf/stem decoction orally 3.Typhoid fever: Leaf/stem decoction orally 4.Bruises: Leaf fomentation applied		6
Zanthoxylum acanthopodium DC.	**Boge or boke timur** (N)/ Aenumang or Aenumaak (Y)	Rutaceae	1.Dyspepsia: Seed orally 2.Gastric: Seed orally		1.Dyspepsia:Seed raw orally 2.Fever: Seed raw orally 3.Malarial fever: Seed raw orally 4.Tonsil: Seed raw orally	5

Zanthoxylum armatum DC.	Prickly Ash (E)/**Timur** (N)/Aenu-maak or Aenumang (Y)	Rutaceae	1.Cough: Seed raw orally 2.Common cold: Seed raw orally 3.Fever: Seed raw orally 4.Stomach-ache: Seed raw orally 5.Gastric: Seed raw orally	1.Gastric: Seed decoction orally 2.Cough: Seed raw orally 3.Common cold: Seed raw orally 4.Fever: Seed raw orally 5.Stomach-ache: Seed raw orally 6.Malarial fever: Seed/fruit raw orally	1.Gastric: Seed raw orally 2.Dyspepsia: Seed raw orally 3.Common cold: Seed decoction orally 4.Cough: Oil obtained from seed applied over chest or seed taken directly 5.Wounds: Oil obtained from seed applied over infected area 6.Cut: oil obtained from seed applied over infected area	10
Zea mays L.	Maize (E)/ **Makai** (N)/ Chaalong (Y)	Poaceae	1.Gastric: Grains fry or parch orally 2.Cough: Grains fry orally			2
Zingiber officinale Roscoe	Ginger (E)/ **Aduwa** (N)/ Samfi (Y)	Zingiberaceae	1.Cough: Rhizome roast orally or paste applied over chest 2.Common cold: Rhizome (raw) orally taken 3.Throat pain: Rhizome paste applied	1.Common cold: Rhizome paste orally 2.Cough: Rhizome paste orally taken 3.Fever: Rhizome decoction orally 4.Throat pain: Rhizome paste orally	1.Cough; Rhizome orally raw 2.Throat pain; Rhizome (raw) orally taken	4
Ziziphus mauritiana Lam.	Plum (E)/ **Bayar** (N)	Rhamnaceae	1.Pneumomia: Fruit paste orally			1

(E) = English Name; (N) = Vernacular Name/Nepali Name; (Y) = Plant name in Yakkha;

** = species with uncommon and not very well documented in terms of its use; # = the uncommon and not very well documented ethnobotanical use*

The documented medicinal plant species were used for treating 75 ailments. The application of prepared or raw medicinal plants had maximum response for the treatment of "cut" followed by "pneumonia", "dyspepsia", "jaundice", "fracture", "cough", "diarrhea", and other ailments. Of the total responses, 30 % were documented for infection, 22 % for digestive system disorder, 13 % for injuries, 12 % for muscular skeletal system disorder, 9 % for respiratory system disorder and other usage categories (see Table 3).

Table 3. Informant consensus factor (F_{ic}) for different ailment categories at three communities.

Usage Category	Mamling			Ankhibhui			Tamafok		
	No of Taxa	No of use report	F_{ic}	No of Taxa	No of use report	F_{ic}	No of Taxa	No of use report	F_{ic}
Circulatory system disorder	1	1	0	2	11	**0.9**	18	29	0.39
Culture-bound syndromes	-	-	-	8	9	0.13	5	7	0.33
Digestive system disorder	33	105	0.69	42	163	**0.75**	51	142	0.65
Genito-urinary system disorder	2	4	0.67	1	1	0	3	4	0.33
Infection	38	134	**0.72**	48	229	**0.79**	51	195	**0.74**
Injuries	18	61	**0.72**	25	81	**0.70**	25	95	**0.74**
Musculo-skeletal system disorder	14	47	**0.72**	26	84	0.69	21	92	**0.78**
Nervous system disorder	7	23	**0.73**	10	16	0.4	11	21	0.50
Nutritional disorder	5	6	0.20	3	4	0.33	6	7	0.17
Others	1	1	0.00	2	3	0.5	2	4	0.67
Poisoning disorder	1	1	0.00	3	3	0	5	18	**0.76**
Respiratory system disorder	20	55	0.65	27	74	0.64	15	39	0.63
Sensory system disorder	3	7	0.67	5	23	**0.81**	5	8	0.43
Skin/ subcutaneous cellular tissue disorder	7	9	0.25	6	15	0.64	12	29	0.61
Poison	-	-	-	-	-	-	1	1	0
Pregnancy/ birth/ puerperium disorder	-	-	-	-	-	-	7	11	0.40

Homogeneity of informant's knowledge

The overall value of F_{ic} for the ailments categorized under 16 broad usage categories from this study represents a moderate significance of consensus among the respondents about the medicinal plants usage for treating different ailments. The F_{ic} was calculated for each of the three communities. At Mamling, usage categories with F_{ic} value equal to or more than 0.7 were "Nervous system disorder", "Infection", "Injuries" and "Musculo-skeletal system disorder" (Table 3). At Ankhibhui, five categories had F_{ic} equal to or more than 0.7; they were "Circulatory system disorder", "Sensory system disorder", "Infection", "Digestive system disorder", and "Injuries". At Tamafok, only four usage categories had F_{ic} value equal to or more than 0.7. The categories were "Musculo-skeletal system disorder", "Poisoning", "Infection" and "Injuries". The high F_{ic} represents the commonness of the ailment in the study area or in another words the usage of those species is well known in the area. "Infection" and "Injuries" had high Fic in all three communities.This consensus might be attributed to the predominant presence of a single ethnic group, the Yakkha, within the studied community, increasing the likelihood of effective communication and information exchange among individuals in the region (Shrestha *et at.* 2016). The low F_{ic} could be the result of lack of communication among people in different areas (Rokaya *et al.* 2010, Kunwar & Bussmann 2008). The values of F_{ic} were relatively lower than those in the studies of Singh *et al.* (2012) and Kunwar and Bussmann (2008) but higher than those in Rokaya *et al.* (2010).

Plant parts used

Out of the 14 various plant parts employed in ailment treatments, the Yakkha communities primarily utilized above-ground vegetative parts (comprising 34%), followed by reproductive parts (32%), below-ground vegetative parts (27%), and the entire plant (7%). (Fig. 3). The medicinal plant extracts were administered orally for most cases. Leaf was the most frequently utilized parts for the treatment of diseases (22 % ailments) followed by root (21 % ailments) and fruits (14 % ailments). The

finding is consistent with that of Rokaya *et al.* (2012), Xiong *et al.* (2020) who found that leaves were the most used plant parts (733 ailments), followed by roots (721 ailments) and fruits/seeds (582 ailments). Harvesting of leaves, fruits, or flowers clearly has far less impact on individual plants than damage to roots, bark, stems, or removal of the whole plant (Cunningham 2001, Limbu 2008). While grouping the harvesting of different plant parts into low-impact uses (leaves, flowers, fruits) and high-impact uses (bark, roots, stems, whole plant), we found that the low-impact harvesting (54%) dominated the high-impact harvesting (46%) practices in the study area. However, in the context of Nepal, underground parts of 36 % medicinal plants and whole plants of 35 % species are used (Ghimire 2008).

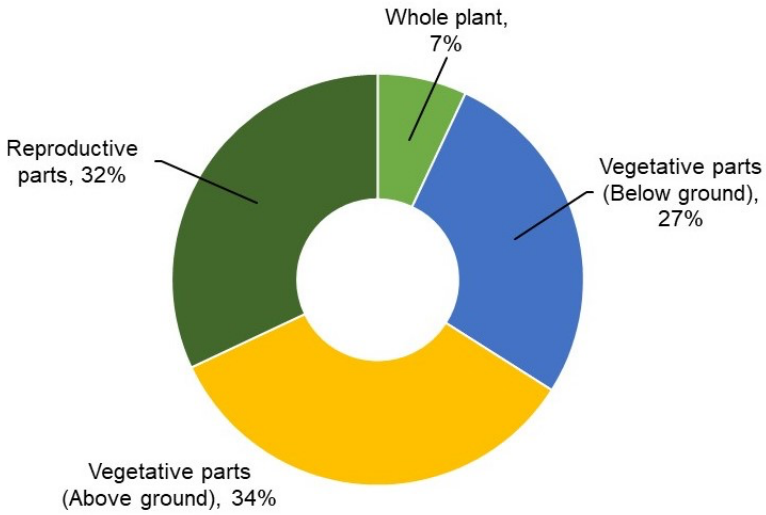

Figure 3. Proportion of plant parts used for treating different medical ailments.

The number of responses was the highest for "Oral" mode of use (63 %), followed by "Direct application on skin" (35 %) and "Nasal" (2 %). The most common forms of use were paste (28 %), juice (25 %) and raw application (20 %) with no preparation. Other forms of use were decoction (7 %), powder (7 %), sap (3 %) and infusion (2 %). Similar findings were reported by Bhattarai *et al.* (2010), Shrestha et al. (2014) and Uprety *et al.* (2010), where the most common form of uses was paste, juice and direct intake of raw plants.

Relationship between demographic factors and ethnobotanical knowledge

There was no significant difference in the number of species reported by individual respondents between male and female (Independent sample t-test; $p>0.05$). The factors that may have contributed to this homogenization include equal access to knowledge for both men and women, active participation by both genders in activities related to medicinal plant collection and application, close collaboration and sharing of medicinal plant knowledge, and gender-neutral ethnobotanical knowledge transmission among the Yakkha people. Tibeto-Burmese communities are much more gender-egalitarian than their orthodox Hindu Indo-Aryan neighbors (Srithi *et al.* 2009) and this might have homogenized the knowledge levels of males and females in the Yakkha community. Thapa (1994) documented similar results while working with male and female members of a community in the village of Solma, eastern hills of Nepal, and found no significant differences in male and female knowledge domains. However, some studies have revealed an unequal dissemination of indigenous knowledge in terms of gender. For example, Rijal (2008) revealed that male indigenous knowledge dominates homogenous communities, whereas female indigenous knowledge dominates heterogenous communities due to socio-economic influences. Similarly, Limbu (2008) revealed that women possessed higher wealth of knowledge about medicinal plants than males at Panchthar (east Nepal) because of patri-local residence system.

There was no significant difference in the number of species reported by individual respondents and the educational attainment of the respondents (ANOVA; $p>0.05$). In general, the number of species reported from respondent declines with the increased literacy status as reported by various studies (Pangal *et al.* 2010, Srithi *et al.* 2009, Quinlan & Quinlan 2007, Voeks & Leony 2004). Less educated residents are less prone to acculturation, which therefore enhances their knowledge of local traditions. On the other hand, educated people are highly prone to acculturation and therefore, they tend to seek western medical treatment over traditional medicine. Quinlan and Quinlan (2007) discussed that although medicinal plant

knowledge decrease with education, if it is associated with the parental status (i.e., parents versus non-parents), the parents tend to know on average 4.7 more plants for each additional year of education.

There was no difference in the number of species reported by individual respondents and the age of the respondents ($p>0.05$) in Mamling and Ankhibhui However, for Tamafok, the relationship was significant ($p= 0.006$; $R^2 = 0.15$) and the respondent's age accounts for 15% of the response on the number of medicinal plants (Fig. 4). As culturally and linguistically traditional Yakkha only exists at Tamafok with very rich indigenous knowledge (Maden *et al.* 2008, Russel 1992), the increase in indigenous knowledge with age in Tamafok can be justified. This finding aligns with the finding from Kunwar and Bussmann (2008). The people of ages between 40–60 possess greater knowledge on identification and uses of medicinal and aromatic plants in the Nepal Himalaya as the indigenous knowledge and practice of medicinal plants use in rural areas of Nepal is passed down through oral tradition and personal experiences, which is also backed by the observation of Phillips and Gentry (1993).

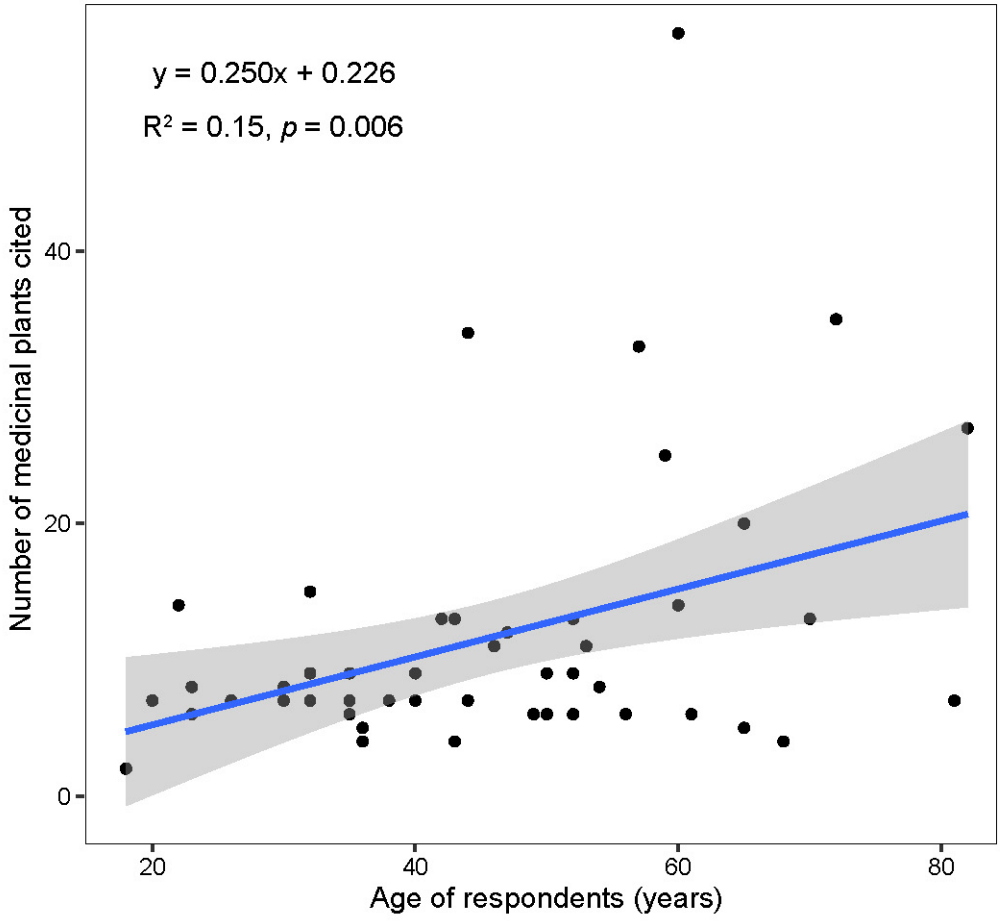

Figure 4. Relationship between the age of respondents and the number of medicinal species reported at Tamafok. The blue line represents the regression line fitted with ordinary least square regression. The gray region surrounding the line is the 95% confidence interval.

Conclusions

The study reveals Yakkha communities' extensive indigenous knowledge, with an average of 11 medicinal plants per respondent. They demonstrate profound knowledge with 200 plant species and one fungus used in the treatment of 75 ailments. These numbers increased with the decreasing level of modernization in three different Yakkha communities and could represent the loss of traditional knowledge with increasing modernization. Despite its importance to biodiversity conservation, environmental management, food production, health enhancement, culture and resilient livelihood, traditional and indigenous knowledge is rapidly eroding due to factors such as knowledge holders' integration into market economies, lack of indigenous knowledge-sensitive biodiversity conservation regulations, and lack of inter-generational transmission, a process reinforced by transculturation and de-contextualized schooling. The few use reports (n=10) of

medicinal plants identified in the current study are uncommon and not very well documented. The knowledge on the utilization of medicinal plants were found to be same for both the genders suggesting homogeneity of information between males and females. The knowledge on medicinal plants utilization was higher among elders in the least modernized community, which is a worrying trend worldwide. The traditional medicine practice-sharing program under the apprenticeship of Yakkha shamans, particularly targeting younger generation, could be pivotal in preserving the age-old traditions on medicinal plants utilization. Furthermore, encouragement of primary health care by locally available medicines could greatly enhance their utility as well as conservation. Similar documentation of indigenous knowledge in other marginalized communities are meaningful for effectively conserving the dwindling plant resources and the indigenous knowledge thereof. Careful screening of bioactive compounds from the species documented herein, particularly those with high utility, could be subsequently used as an opportunity for discovering novel medicines to cure life threatening human diseases.

Declarations

Ethics approval and consent to participate: Included in the method section.
Consent for publication: Not applicable
Availability of data and materials: All data, materials, and information are collected from the study sites. The dataset supporting the conclusions of this article is included within the article.
Competing interests: The other authors declared no potential conflicts of interests.
Funding: This study was supported by the Small Higher Education Project Grant, University Grants Commission, Nepal.
Author contributions: K.D., B.B.S. and R.P.S. designed the research, K.D., N.S. and B.B.S. analyzed the dataset, and K.D., N.S., S.L. and B.B.S. wrote the manuscript; K.D and J.R. collected and curated data from the field, K.D and S.L. compiled data, All authors discussed the results and commented on the manuscript.

Acknowledgements

We would like to thank the local people of Mamling, Ankhibhui and Tamafok for sharing their rich cultural knowledge. We are very grateful to Mr. Tejhang Linkha and Mr. Magman Jimi for their assistance in field work.

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