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Research article

Traditional use of plants by the Magar community in Arghakhanchi District, Nepal

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Abstract

The ethnobotanical reservoir of local people, which has survived and adapted over the centuries, is usually very rich with precise knowledge about various plants and their use for different purposes. This study aims to document the traditional knowledge related to plant use among the Magar ethnic group of Arghakhanchi District, central Nepal. Fieldwork was carried out to document the plants used by the Magar people of Chhapdanda and Dharapani villages through key informant interviews. The results revealed that the Magar people were using 137 plant species for different purposes, with 102 species identified in Chhapdanda and 100 in Dharapani. A total of 131 species were identified as medicinal. Gastrointestinal disorder was the most common ailment treated by plants. Among other ethnobotanical uses, the Magar people, combining both villages, identified 35 species of plants used as food, 20 as material sources, 15 for religious and spiritual purposes, 7 for alcoholic beverages preparation, 7 as fodder, and 4 as food additives. Sixty-nine plant species were cited for more than one ethnobotanical use category, with *Diploknema butyracea* having the highest number of ethnobotanical uses. Naturally, the Magar people of Arghakhanchi District are rich in their traditional knowledge, particularly concerning the medicinal applications of plants. Safeguarding this knowledge is vital not only to improve the health of the ethnic communities but the entire society in general.

Keywords: Blumeopsis, ethnic group, gastrointestinal disorder, traditional knowledge.

Introduction

In different human societies, the knowledge about plants, gained by experience and passed down orally through generations, reflects a long history of using plants and their derivatives to address their diverse needs. Hershberger (1896) was the first to use the term "ethnobotany" for the study of plants used by indigenous peoples. Martin (1995) defined ethnobotany as the study of the interaction between people and plants. Thus, ethnobotany emerged as a scientific discipline to study the relationships between people and plants, including the associated beliefs, traditions, religions, and cultures. Ethnobotany investigates local knowledge concerning plant use for various purposes such as food, medicine, shelter, and others, offering valuable insights for documenting and preserving this knowledge for societal benefit (Martin 1995).

People have been using plants to treat various diseases since the beginning of civilization. About 80% of people in under-developed countries still rely on traditional medicine for their primary healthcare needs (IUCN 1993). Nevertheless, the World Health Organization has recorded about 21,000 medicinal plant species used in different countries (Penso 1980; De 2016). However, estimates indicate that the total number of medicinal plants utilized globally comprises more than 50000 species (Schippmann *et al.* 2002). Nepal is rich in ethnomedicinal knowledge and plant biodiversity (Koirala and Khaniya 2009; Rajbhandari *et al.* 2017). About 1700–2300 species of plants are utilized in Nepal by different ethnic groups to meet their primary healthcare needs (Baral and Kurmi 2006; Ghimire 2008; Rokaya *et al.* 2012).

The Magar community represents one among 59 indigenous communities of Nepal with a total population of 1,88,733, representing 7.1% of the country's population (CBS 2012). The ancestral home of the Magar people lies west of the Gandaki River. Several ethnobotanical studies have been conducted in Nepal focusing on different ethnic groups, such as Gaine of Arghakhanchi (Nepali 1998), Tharu of east, central and west Nepal (Ghimire and Bastakoti 2009; Chaudhary and Rai 2017; Yadav and Chaudhary 2022), Limbus of east Nepal (Limbu and Rai 2013), and Magars of Palpa (Ale *et al.* 2009), Gulmi (Acharya 2012; Khanal *et*

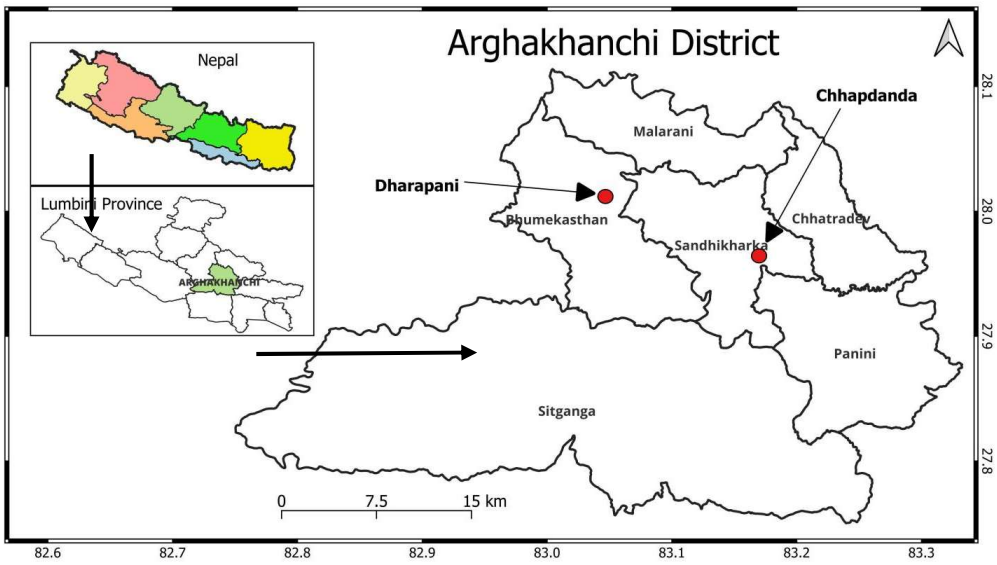

Figure 1. Map of the study area, Arghakhanchi District with two studied Magar villages: Chhapdanda in Sandhikharka Municipality and Dharapani in Bhumikasthan Municipality.

al. 2020), Parbat (Magar 2008; Thapa 2013), and Rolpa (Budha-Magar *et al*. 2020). Several other ethnobotanical works focused on the particular district in Nepal, such as Arghakhanchi (Poudel *et al.* 2010; Panthi and Singh 2013; Acharya *et al*. 2015), Dolakha (Shrestha and Dhillion 2003), Dolpa (Lama *et al*. 2001), Gulmi (Khanal *et al.* 2020), Humla (Rokaya *et al*. 2010), Kaski (Acharya and Acharya 2010; Rana *et al.* 2015; Subedi 2017; Adhikari *et al.* 2019), Kavrepalanchok (Ambu *et al*. 2020), Morang (Raut and Shrestha 2012), Manang (Bhattarai *et al*. 2006), and Parbat (Malla *et al.* 2014, 2015). These studies have documented the use of medicinal plants by specific communities, revealing a wealth of traditional knowledge, and demonstrated strong relationships between local people and plant resources.

Traditional medicinal practices remain integral to ethnic societies, supported by learned practitioners such as local healers (Lama *et al*. 2001; Manandhar 2002; Shrestha and Dhillion 2003; Ghimire *et al.* 2021). The traditional knowledge and practices related to medicinal plants have direct implications for human well-being and may contribute to pharmaceutical advancements (Ghimire and Bastakoti 2009; Panthi and Singh 2013; Tshikalange *et al*. 2016). However, the lack of comprehensive documentation of traditional knowledge covering different societies and involving learned people is a constraint in preserving this valuable knowledge, particularly as there is a lack of a proper system of knowledge transformation.

Most of the ethnobotanical studies in Nepal have focused on particular ethnic groups from isolated locations. Comparative studies examining plant knowledge within the same ethnic group across different areas are lacking. Arghakhanchi District, which is highly diverse in Magar culture, biodiversity, and plant use traditions provides an ideal context for ethnobotanical study. This study, therefore, aims to document traditional knowledge related to plant use in two Magar communities, Chhapdanda and Dharapani in the Arghakhanchi District, Nepal. The objectives were (1) to enumerate the plant species used by the Magar people, and (2) to compare the ethnobotanical knowledge related to plant use between the two villages.

Materials and methods

STUDY AREA

Arghakhanchi is a hilly district located in the Lumbini Province, central Nepal, between 27°45' to 28°06' N latitude and 80°45' to 83°23' E longitude. The district covers an area of 1,193 km², with an elevation range of 205 to 2,515 m above sea level. It is bordered by six districts: Palpa to the east, Pyuthan and Dang to the west, Gulmi to the north, and Kapilvastu and Rupandehi to the south (Figure 1). About 68% of the area of the district lies within the Mahabharat Range, and the remaining area is in the Siwalik region. Forests cover 54.37% of the total district area (CBS 2021).

The present study was focused on the Magar communities of Chhapdanda (Sandhikharka Municipality-3) and Dharapani (Bhumikasthan Municipality-4) villages in the district (Figure 1). The climate of the district ranges from tropical to temperate. Climatic data recorded between 2016 and 2019 in the nearest meteorological station (Khanchikot station; elevation: 1760 m asl) revealed that the area receives an average maximum and minimum temperature of 21.56°C and 12.92°C, respectively (DHM 2020). The monsoon begins in May, peaks in August, and lasts until late October (DHM 2022). Annual rainfall ranges from 1,300 to 1,600 mm (DHM 2020).

The vegetation is mainly comprised of *Shorea robusta* forests, particularly below 1,000 m asl on the southern slopes of the mountains. Above this elevation, *S. robusta* forests are replaced by *Schima–Castanopsis-Diospyros* dominated woodland vegetation and *Pinus roxburghii* forests. *P. roxburghii* occurs in the west, while *Schima-Castanopsis* woodlands stretch to the east (DOF 2002). A total of 501 flowering plant species have been reported from the district (Panthi and Chaudhari 2002). Additionally, the district hosts 75 species of pteridophytes (Nepali *et al*. 2020).

In 2011, the district had a total population of 197,632 in 46,835 households (CBS 2012). In 2021, the total district population was 177,086 (80,672 men and 96,414 women) with 48,449 households. The population density was 148.4 people per

square kilometer, with a sex ratio of 83.67 males per 100 females (CBS 2021). The low birth rate and migration are the main causes of the population decline in the district. Hinduism is the most common religion practiced in the district, followed by Islam. Local people rely on forest products for fuel, timber, fodder, medicine, and hunting. The primary sources of peoples' income are agriculture, livestock rearing, and selling of forest resources.

METHODS OF DATA COLLECTION

We collected primary data on the plants used by the Magar communities in Chhapdanda and Dharapani using key informant interviews, selecting 25 elderly individuals (aged above 50) in each village. Informants included local healers, farmers, teachers, elderly women, and ex-army personnel. Before actual fieldwork, we obtained permission to interview locals from the respective ward offices of the study villages. We finished our work after being granted permission to investigate the ethnobotanical knowledge of the Magar community in the region. All participants provided their prior informed consent and participated voluntarily.

We used a pretested questionnaire related to plant uses. Questionnaires were pretested among five informants and adjusted as necessary before conducting in-depth interviews. While many traditional healers had migrated, passed away, or ceased practicing, the remaining elders with significant ethnobotanical expertise served as critical sources of information.

We collected voucher specimens of plant species following standard protocol and ethical guidelines. The specimens were identified with the help of literature (Grierson and Long 1983–2001; Fraser-Jenkins *et al.* 2015; Fraser-Jenkins and Kandel 2019; Kandel and Fraser-Jenkins 2020), and consultation with local participants and taxonomic experts. The identity of each specimen was later verified by comparing it with the specimens housed at KATH Herbarium, Nepal. We used online floral databases, such as POWO (2024) to validate and update the scientific names.

Results

RICHNESS OF PLANT TAXA

Altogether, 137 plant species belonging to 123 genera and 67 families were found to be used by the Magar community, combining both villages (Appendix 1). People in Chhapdanda reported 102 species, whereas people in Dharapani were found using 100 species. People from both sites were found using 13 species for common purposes. There were 48 species used in both sites for different purposes. There were 41 species of plants used by the Magar of Chhapdanda as unique, and 30 species were unique for Dharapani (Appendix 1). Out of the total used plants, 21.64% of species were cultivated, 70.15% were collected from the wild, and 8.2% were sourced from both cultivation and the wild.

Asteraceae was the richest family (with 9 species and 9 genera), followed by Poaceae (8 species and 8 genera), Fabaceae (7 species and 7 genera), and Lamiaceae (6 species and 5 genera), in terms of ethnobotanical usage. Three families were represented by five species, another three by four species, seven families by three species, nine families by two species, and 41 families by only a single species each. Among genera, *Citrus*, *Solanum,* and *Terminalia* each featured three ethnobotanical species. Similarly, *Curcuma*, *Dioscorea*, *Euphorbia*, *Ficus*, *Musa*, *Ocimum*, *Phyllanthus,* and *Prunus* represented two species. The rest of the 112 genera contained only a single species each. Herbs were the dominant life form (38% of total species combining both villages), followed by trees (35%), shrubs (14%), climbers (12%) and bamboo (1%). Both sites represented all these life forms, except bamboo, which was cited only by the people in Dharapani (Figure 2, Appendix 1).

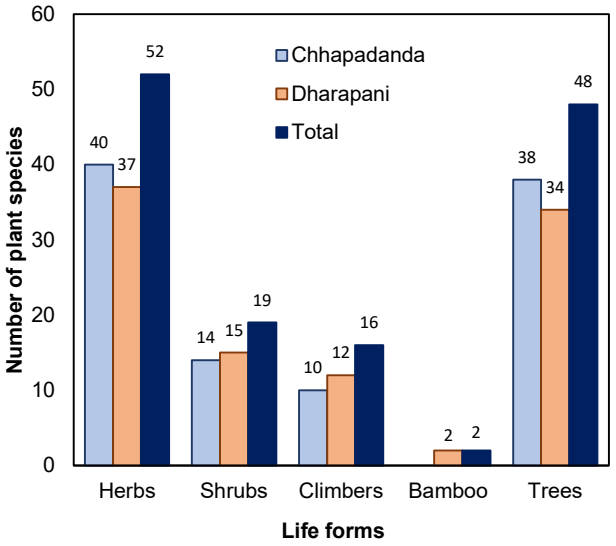

Figure 2. The richness of ethnobotanical species under different life form categories.

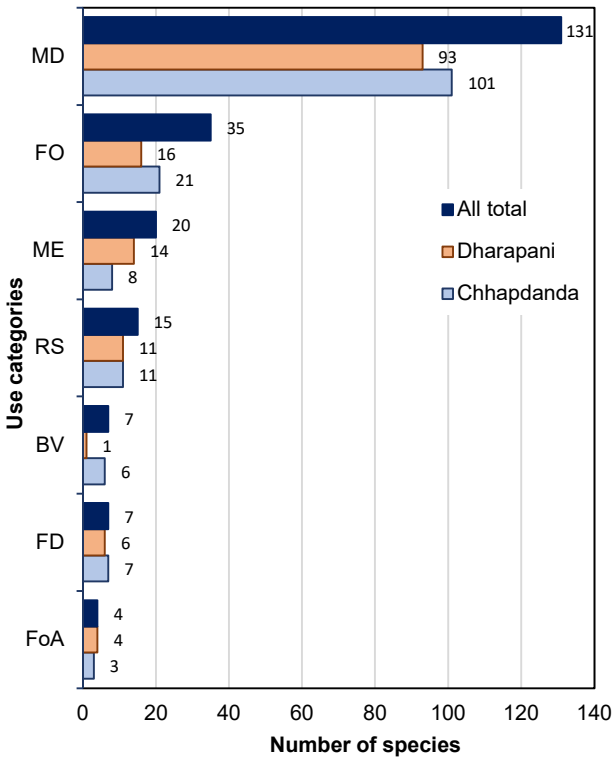

Figure 3. Number of plant species under different ethnobotanical use categories in the two study villages. Use categories: MD = medicinal, FO = food, ME = materials and environmental use, RS = religious and spiritual, BV = beverage, FD = fodder, and FOA = food additives.

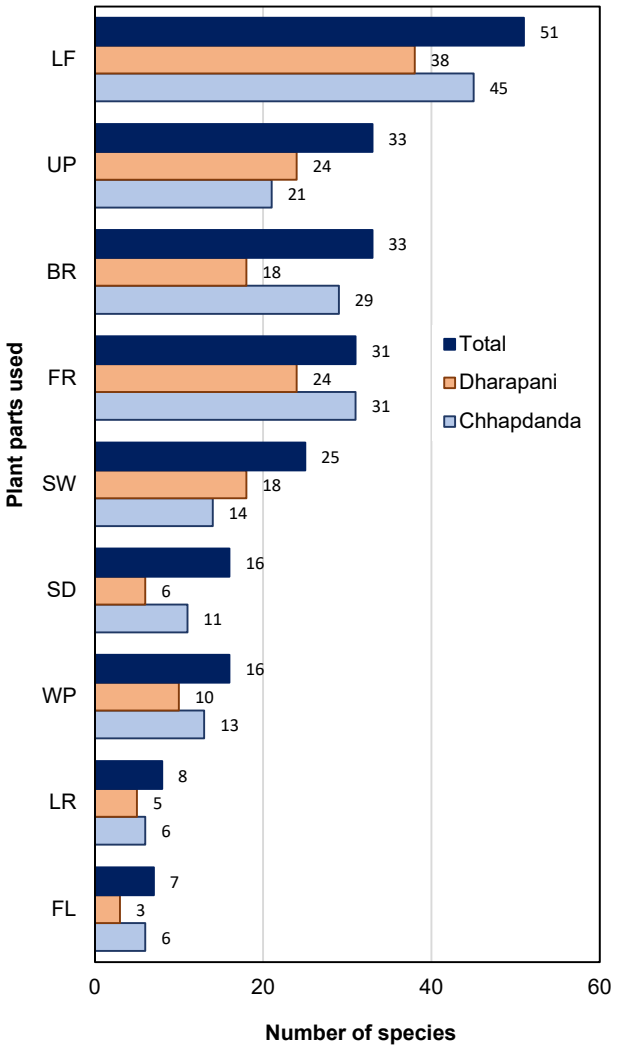

Figure 4. The number of plant species under different parts use categories in the two study villages. Plant parts: LF = Leaves, UP = underground parts, BR = bark, FR = fruits, SW = stem and wood, SD = seeds, WP = whole plant, LR = latex and resin, and FL = flowers.

ETHNOBOTANICAL USE CATEGORIES

Plant species recorded from both the study villages were grouped into seven use categories based on their nature of ethnobotanical usage (Figure 3): medicinal (altogether: 131 species, 96%), food (35 species, 26%), materials and environmental use (20 species, 15%), religious and spiritual (15 species, 11%), beverage (7 species, 5%), fodder (7 species, 5%), and food additives (4 species, 3%). Sixty-nine plant species were cited for more than one ethnobotanical use category, with *Diploknema butyracea* having the highest number of ethnobotanical uses, which was noted for four use categories. *Berberis asiatica*, *Falconeria insignis*, *Juglans regia*, *Prunus cerasoides*, *P. persica*, *Schima wallichii*, *Semecarpus anacardium*, *Syzygium cumini* and *Terminalia chebula* were cited for three use categories.

The Magar people from Chhapdanda cited the highest number of species in medicinal, food, beverage, and fodder categories, while people from Dharapani cited a slightly greater number of species in materials/environmental and food additive categories (Figure 3). In both sites, equal numbers of plant species were cited in the religious/spiritual use category (Figure 3).

PLANT PARTS USED

We recorded 15 different plant parts as being utilized in the study area, and these were grouped into nine categories (Figure 4). Among these, leaves are mostly used in both villages. In total, people use leaves of 51 species for different purposes. Underground parts and bark fall under the second important parts-use category. The underground part included bulbs, rhizomes, roots, and tubers. A total of 33 species each were sought for their underground parts and bark. Fruits represented the third important part utilized by the people, and these were sourced from a total of 31 species.

The number of species in which leaves, bark, fruits, seeds, and flowers were used was far greater in Chhapdanda than in Dharapani. On the other hand, people in Dharapani cited a slightly greater number of species for underground parts, stems, and wood (Figure 4).

PLANTS USED FOR MEDICINAL PURPOSES

Of the 137 plant species documented, 131 were reported as medicinal. The Magar people of Chhapdanda cited 101 species as medicinal, while 93 species were reported in Dharapani for this purpose (Appendix 1). The medicinal plants were grouped into 15 disease/disorder categories.

Gastrointestinal disorders appeared to be the most common ailments treated by the local people using a higher number of plant species. We identified 52 species (38%) used for conditions such as abdominal pain, constipation, diarrhea, dysentery, flatulence, gastritis, indigestion, and piles (Table 1, Appendix 1). Commonly cited plant species for treating gastrointestinal ailments included *Phyllanthus emblica*, *Plumbago zeylanica*, *Psidium guajava*, *Schima wallichii,* and *Stephania glandulifera*. Interestingly, the Magar people in Chhapdanda utilize a greater diversity of plants for treating gastrointestinal disorders, with 52 species cited compared to 34 in Dharapani.

Skin diseases ranked second in terms of cited number of plant species. We identified 24 species (18%) cited for treating conditions such as athlete's foot, blisters, boils, cracked feet, dandruff, melasma, dermatitis, itching, scabies, and white spots on the skin. Examples of plants used for skin ailments included *Punica granatum*, *Sapindus mukorossi*, *Cryptolepis buchananii*, *Eclipta prostrata*, and *Falconeria insignis*.

Respiratory disorders were also widely addressed with medicinal plants, with 22 species (16%) reported to treat conditions such as asthma, colds, coughs, pneumonia, sinusitis, sore throat, tuberculosis, and whooping cough. Of these, 17 species were reported in Chhapdanda and 9 in Dharapani. In both villages, *Euphorbia royleana* was reported to be used to treat pneumonia. The Magar people, specifically from Dharapani, also cited *Amaranthus viridis* for treating pneumonia. *Tinospora cordifolia* was reported to be used to boost protection against the novel coronavirus disease.

Musculoskeletal system disorders, such as arthritis, back pain, body aches, body swellings, bone pain, bone fracture, rheumatism, and sprains were treated using 21 species of plants in Chhapdanda and 16 in Dharapani. The most frequently used species included *Betula alnoides*, *Calotropis procera*, *Curcuma longa,* and *Prunus cerasoides*. Fever was another

Table 1. List of diseases/disorders treated and species used for each disease/disorder category in Chhapdanda and Dharapani villages.

Disease/disorder treated	Chhapdanda	Dharapani	All total	%
Circulatory system disorder: hypertension	9	3	11	8.0
Injuries: cuts, wounds, burns	12	12	18	13.1
Dental disorders: toothache, mouth bleeding	6	2	6	4.4
Ophthalmic disorders: cataracts (*phulo pareko*), keratitis, stye, eye infections, eye floaters	4	1	5	3.6
Fever: malaria, typhoid, unspecified fever	9	3	12	8.8
Gastroenterological disorders: abdominal pain, colic, constipation, diarrhea, dysentery, flatulence, gastritis, indigestion, piles	52	34	52	38.0
Hepatobiliary disorders: jaundice, unspecified liver problem, yellowing of eyes	8	7	12	8.8
Menstrual and gynecological disorders: Dystocia of labor, unspecified menstrual disorders	1	1	2	1.5
Metabolic disorders: diabetes, uric acid issue	6	6	11	8.0
Muscular-skeletal system disorders: arthritis, backbone pain, body aches, body swellings, bone pain, bone fracture, rheumatism, sprains	21	16	21	15.3
Ear disorders: dizziness, balance disorder (*ringaune*)	1	1	2	1.5
Respiratory disorders: asthma, cold, common cold, cough, chronic cough, pneumonia, sinusitis, sore throat, tuberculosis, whooping cough	17	9	22	16.1
Skin disorders: Athlete's foot, blisters, boils, cracked foot, dandruff, melasma (*poto*), dermatitis, itching, scabies, white spots on the skin	19	17	24	17.5
Urinary disorders: kidney stone, dysuria or painful urination (*pisab polne*), urinary tract obstruction (*pisab rokiyeko*)	6	4	8	5.8
Others: animal sterility, burning sensation, dehydration, diseases related to spiritual problems, heat-related illnesses, low physical strength, low sex drive, worm infestations, weaknesses	11	13	21	6.6

common condition treated with plants, with 12 species cited in both villages, nine in Chhapdanda and three in Dharapani. *Cissampelos pareira*, *Justicia adhatoda*, *Momordica charantia*, *Premna barbata,* and *Solanum virginianum* were frequently used to treat febrile conditions.

In addition to the more common ailments, plants were also used to treat animal sterility, burning sensations, dehydration, spiritual ailments, heat-related illnesses, and general debility. Twenty-one plant species were cited for these lesser-known uses, with 11 from Chhapdanda and 13 from Dharapani. Notably, plant preparations used for the treatment of animal fertility were specific. For example, in Chhapdanda, the bark of *Oroxylum indicum* was mixed with the powdered bark of *Plumeria rubra* and *Schima wallichii* and fed to female buffaloes to enhance ovulation. In contrast, people in Dharapani used a powder made by grinding equal parts of the bark of *Oroxylum indicum*, *Heynea trijuga,* and *Plumeria rubra*, along with the stem of *Euphorbia royleana* to treat sterility in buffalos. This suggests that the local practices for animal husbandry and fertility are closely tied to the knowledge of plant properties, demonstrating the integral role of plants in both human and animal health.

Aegle marmelos, *Calotropis procera*, *Rhus javanica*, *Terminalia chebula*, *Phyllanthus emblica,* and *Zanthoxylum armatum* were reported for multiple medicinal uses across disease categories.

PLANTS USED FOR OTHER PURPOSES

People in the two villages collectively cited 35 plant species as food sources, with 21 species identified in Chhapdanda and 16 in Dharapani. These were reported to be consumed in various forms such as raw edible fruits and seeds, cooked vegetables, boiled tubers, fermented foods (e.g., pickles, *gundruk*, and *sinki*), fresh pickles, and salads. Important food plants included *Urtica dioica*, *Amaranthus viridis*, *Asparagus racemosus,* and *Bauhinia variegata*. Most of these species also possessed medicinal values.

Plants in the materials and environmental use category comprised 20 species, of which 14 were cited in Dharapani and 8 in Chhapdanda. These were used as a source of materials for crafting utensils, agriculture implements, and furniture; for building construction; and as soap substitutes, coloring agents, fence plants, and green manure. *Dendrocalamus hamiltonii*, *Diploknema butyracea*, *Drepanostachyum intermedium, Eulaliopsis binata, Sapindus mukorossi*, *Schima wallichii,* and *Shorea robusta* were specifically noted for their use in these areas, highlighting the cultural and material significance of local plants beyond their medicinal and nutritional roles. *Dendrocalamus hamiltonii* and *Drepanostachyum intermedium* were specifically used to make baskets. Inflorescences of *Thysanolaena latifolia* were used to make brooms.

Plants under the religious and spiritual use category comprised 15 species, with 11 species cited each in Dharapani and Chhapdanda. These included sacred plants and plants providing items of offerings, and those with specialized and ceremonial uses during festivals and religious occasions. Notable wild plants in this category included *Achyranthes aspera*, *Aegle marmelos*, *Artemisia dubia*, *Cynodon dactylon*, *Desmostachya bipinnata*, *Eulaliopsis binata*, *Ficus religiosa*, *Semecarpus anacardium* and *Smilax aspera*. Most of these were also recorded under the medicinal use category.

Seven plant species were collectively recorded in the two villages for their role in producing alcoholic beverages or as fermenting agents. Residents of Chhapdanda utilized six species, whereas only one species was reported in Dharapani. Among these, ripe fruits of Berberis asiatica, *Diploknema butyracea*, and *Syzygium cumini*, as well as cooked fruits of *Prunus persica* and

seeds of *Hordeum vulgare*, were reported for brewing local alcohol. Additionally, the inflorescences of *Blumea flava* and the flowers of *Pogostemon benghalensis* were used to prepare 'marcha', a starter for fermenting alcoholic beverages.

Fodder plants comprised seven species, including *Drepanostachyum intermedium*, *Litsea monopetala*, *Premna barbata*, and *Prunus cerasoides*. Plants categorized as food additives included four species utilized as spices, of these, *Allium sativum*, *Curcuma longa*, and *Zingiber officinale* were cultivated, while *Cinnamomum tamala* was collected from the wild.

Discussion

DIVERSITY OF PLANTS USED BY THE MAGAR PEOPLE

This study highlights the ethnobotanical practices of the Magar community in the Arghakhanchi District, revealing a total of 137 distinct species of wild and cultivated plants, excluding cereals and millets, utilized for their basic needs. The Magar community from Chhapdanda employs 102 species, while people from Dharapani utilize 100 species. These findings differ from Ale *et al.* (2009), who documented a slightly greater number of species (181) used among the Magar population in Siluwa, Palpa. This indicates regional variations in plant utilization that may be influenced due to ecological, cultural, and historical factors.

Asteraceae and Poaceae were the richest families representing the highest diversity of plant species utilized in the Magar community. This observation aligns with previous research indicating a reliance on some common families for various purposes, including food, medicine, and cultural practices (Acharya and Acharya 2009). Chaudhary (1994) identified that the families Leguminosae and Moraceae were significant having the most therapeutic plants. Raut and Shrestha (2012) indicated the importance of the plant families, such as Solanaceae, Liliaceae, and Moraceae with the most common ethnobotanically used plant species. These shifts in variations reflect the ecological specificity and contextual reliance on plant usage.

PLANT HABIT AND PLANT PARTS USED

The overwhelming reliance on herbs over trees and shrubs is notable as herbaceous plants accounted for a greater proportion of the species used by the Magar community. Herbs are more abundant, and easier to collect and transport, making them crucial for daily life. This aligns with Raut and Shrestha (2012), who found that herbs comprised 54% of the medicinal plants in Morang District. The result contradicts Chaudhary (1994) who reported dominance of trees (38%) in the local pharmacopeia of people in four districts of the Tarai region of Nepal, and Acharya and Acharya (2010) found climbers (39%) to be the dominant life form used in Kaski. The diversity of plant species used and their life forms fluctuates greatly across regions shaped by the specific needs of the local community, availability of local flora, and cultural practices. This adaptability highlights the dynamic relationship between humans and their environment in shaping traditional plant-based knowledge.

In medicine, leaves, stems and bark were the most commonly used parts. In addition, roots/rhizomes, fruits, seeds, entire plants, and flowers were also important. The predominance of leaves and stems/bark in medicinal applications suggests significant therapeutic potential in these parts, warranting further investigation into their pharmacological properties. According to Acharya *et al.* (2015), whole plant (31%) was most commonly used in ethnoveterinary medicine, followed by bulb/root (21%), fruit and leaf (16%), bark (12%), and milky juice (5%). Raut and Shrestha (2012) found that fruits and seeds (33%) were most commonly used in ethnoveterinary medicine, followed by leaves, stem/ bark, bulb, root, and whole plant.

USES OF MEDICINAL PLANTS

Medicinal plants accounted for a significant portion of the various plant uses identified in the study. This highlights the extensive reliance on plant-based remedies rooted in folklore systems and affirms the critical importance of medicinal plants in traditional healthcare systems.

Our results indicated notable geographical variations influencing the selection of species. In Chhapdanda, 101 plant species were cited for medicinal purposes, compared to 93 species in Dharapani. These results suggest that the Magar people in Chhapdanda possess higher plant knowledge and encompass a broader repertoire of remedies probably influenced by local ecological and cultural factors. These findings align with previous studies by Subedi (2017), Chaudhary (1994), Acharya and Acharya (2009), and Raut and Shrestha (2012), all of which emphasize the significance of plant resources in health care and the rich traditional knowledge associated with their use. Furthermore, therapeutic plants for human and livestock ailments differed between the two study villages. The use of plants to treat various diseases in humans and domestic animals varies according to ethnicity, culture, geography, available vegetation, and other factors (Rajbhandari 2001).

In the study area, the Magar communities address 73 types of ailments under 15 disease/disorder categories with diverse species of medicinal plants. The results indicate a rich ethnobotanical knowledge and relatively intact cultural practices of plant-based remedies, which aligns with traditional uses of plants in many cultures for healing and general well-being. Among disease/disorder categories, gastrointestinal illnesses are treated by using a large number of medicinal herbs. Frequently used plants include *Curcuma longa*, *Phyllanthus emblica*, *Plumbago zeylanica,* and *Psidium guajava*. These practices corroborate the findings of Faruque *et al.* (2019), who reported the largest number of plant species (49) for treating digestive issues in the Pangkhua community, Bangladesh. In addition to gastrointestinal ailments, the diversity of applications for various health conditions such as fever, eye infections, kidney stones, and bone fractures demonstrate the rich pharmacopeia available to the Magar community. The different local practices to treat several ailments show the depth of traditional medicinal knowledge. Thus, the wide use of diverse plant parts involving different species in treating various ailments showcases the understanding of the local flora and their application.

In most cases, the preference of species used to treat particular ailments differed between the two villages, reflecting differences in either local plant availability or cultural preferences.

However, some plants were recorded as being utilized in both villages, thus showing shared traditional knowledge. For example, *Euphorbia royleana* was commonly used to treat pneumonia in both villages, but *Amaranthus viridis* was mentioned in treating pneumonia only in Dharapani. The shared ethnobotanical knowledge may be related to cultural exchange or geographical proximity; but the variation points to the dynamic interaction of plant availability, cultural practices, and traditional healthcare knowledge within the Magar communities.

Tinospora cordifolia, an immunity-enhancing herb (e.g., Gupta *et al.* 2017), was reported in this study to be used for developing protection against the novel coronavirus. This knowledge has been recently acquired by the local communities in the post-pandemic period, showing how traditional practices adapt and evolve in response to global health crises.

OTHER USE OF PLANTS AND CULTURAL PRACTICES

In addition to medicinal uses, the Magar communities utilize plants for various other purposes, including food, beverages, materials, and for social and religious purposes. Of these, food plants constituted a total of 35 species, consumed as raw edible fruits and seeds, cooked vegetables, boiled tubers, fermented foods, fresh pickles, and salads. Food plants not only provide sustenance but also possess medicinal properties, indicating their multifunctionality within the local food systems.

Similarly, a total of 20 plant species were reported as sources of materials for everyday use, including fiber, coloring agents, soap substitutes, timber, fencing, and manure. Particularly, the use of *Agave cantula* and *Phanera vahlii* for fiber extraction in making sacks or ropes; fruits of *Sapindus mukorossi* and *Solanum virginianum*, and seedcake of *Diploknema butyracea* as soap substitutes demonstrate the practical applications of local flora in daily life. Similarly, the leaves of *Phanera vahlii*, *Shorea robusta,* and *Diploknema butyracea* are commonly used for crafting leaf plates. These practices not only support the community's economic needs but also help preserve traditional crafts and knowledge. Subedi (2017) reported the use of *Asparagus racemosus*, *Camellia kissi*, *Sapindus mukorossi,* and *Solanum viarum* as soap-making materials, and are often supplied to soap industries for further processing. In Arghakhanchi and several other mountain districts of Nepal, the seeds of *Diploknema butyracea* are popularly used to produce vegetable ghee. Furthermore, the seed cake of *Diploknema butyracea* and the stem juice of *Falconeria insignis* are traditionally used as a fish poison, a practice also documented by Subedi (2017).

In the Magar community, alcohol production is considered to have cultural, medicinal, and ceremonial values. For them, it is part of body warming, treating colds, and other routine purposes, such as an accompaniment to all religious services and as a form of showing respect to visitors. The preparation of 'marcha' – a starter culture for the local alcoholic beverages – reflects the innovative use of local resources. The ingredients used in the preparation of marcha include millet flour, rice, and powdered inflorescences or flowers from specific plants. Plant species commonly used by the Magar community for preparing marcha include *Blumeopsis flava* and *Pogostemon benghalensis*. This finding contradicts that of Subedi (2017), who listed *Spilanthes acmella*, *Psidium guajava*, *Reinwardtia indica*, *Tagetes erecta,* and *Zanthoxylum armatum* as being used as fermenting agents. Similarly, Devkota and Chhetri (2010) listed *Ageratina adenophora*, *Artocarpus heterophyllus*, *Blumea* sp., *Clematis buchananiana*, *Conyza japonica*, *Drymaria diandra*, *Piper mullesua*, *Plumbago zeylanica,* and *Scoparia dulcis* as being used as fermenting agents by ethnic groups in Sunsari, Nepal. Moreover, the production and sale of marcha are an important source of income for some members of the community, which further emphasizes its cultural and economic importance.

SHIFTING KNOWLEDGE AND PRACTICES

In both the study villages, the increased access to modern medicine has brought about changes in the traditional healthcare practices of the Magar community. Although modern medicine has its conveniences and efficacies, it also presents serious challenges to preserving traditional knowledge. Particularly, the preference of the younger generation to modern medicine, and recent trends of migration strongly hinder both access to and the passing on of traditional plant knowledge. The elder community members are often the custodians of such knowledge, their growing age and migration may result in a significant loss of indigenous wisdom amongst the younger generation. This demographic shift has led to reduced awareness of plants that have historically constituted part of the cultural identity of the Magar. Therefore, there is an urgent need to document and disseminate this traditional knowledge to ensure its preservation for future generations.

Conclusions

This research shows the rich ethnobotanical knowledge and associated practices of the Magar community in Chhapdanda and Dharapani of the Arghakhanchi District. The diversity in the species used and the fact that the plant use varies between the study villages reflect the ecological availability and cultural preference. The available plant resources and the traditional knowledge and practices must be preserved through integrating these into income-generating activities and conservation efforts. Awareness programs by ethnic leaders themselves may encourage passing on the knowledge to the younger generation. Furthermore, chemical analysis of ethnomedicinal plants should be carried out to identify the active principles responsible for their medicinal properties. Recognizing traditional medical knowledge as a complement to modern medicine is important to foster holistic notions of health and well-being. In this way, both traditional and modern medicinal practices will be valued, helping the Magar community face modernization without losing their cultural identity.

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Appendix 1. Plants used by the Magar community in Sandhikharka-3, Chhapdanda (CD), and Bhumikasthan-4, Dharapani (DP), Arghakhanchi, Nepal.

S.N.	Botanical name	Family	Local name	Habit	Parts used	Ethnobotanical use categories and detail use	Plant used in	
							CD	DP
1.	*Achyranthes aspera* L.	Amaranthaceae	Datiwan	Herb	Rt, St	***Medicinal***: Root and stem juice is used in treating indigestion, stomach ache, and toothache (taken orally 2–3 times a day). ***Religious***: the whole plant is used as a toothbrush during the *Teej* festival.	+	+
2.	*Acmella calva* (DC.) R.K.Jansen	Asteraceae	Marauti	Herb	Fl, Fr	***Medicinal***: Fresh or dried flowers are chewed and shallowed with water to treat stomach aches. Fried seeds in oil are chewed 2–3 times in flatulence, and gastritis, and also taken as an appetizer.	+	+
3.	*Acorus calamus* L.	Acoraceae	Bojho	Herb	Rh	***Medicinal***: Small pieces of dried rhizomes are chewed to relieve sore throat and cough.		+
4.	*Aegle marmelos* (L.) Corrêa	Rutaceae	Bel	Tree	Lf, Fr	***Medicinal***: A powder made by grinding equal parts of the bark of *Aegle marmelos*, *Phyllanthus emblica*, *Terminalia bellirica*, *T. chebula*, *Mangifera indica*, and the roots of *Cissampelos pareira* is taken 2–3 times a day to treat gastritis. Cooked fruits are eaten or raw leaves are chewed to treat colds and hypertension. ***Religious***: Leaves are used in various religious activities.	+	+
5.	*Agave vivipara* L.	Asparagaceae	Ketuki	Shrub	Lf, Rt	***Material***: Fiber of dried leaves used for making carrying rope in rural areas. ***Medicinal***: Root decoction mixed with roots of *Achyranthes aspera*, *Cissampelos pareira,* and *Plumbago zeylanica* taken orally to cure indigestion (*gar pareko*).	+	
6.	*Ageratina adenophora* (Spreng.) R.M.King & H.Rob.	Asteraceae	Banmara	Herb	Lf	***Medicinal***: A paste or juice made from the leaves is applied to the affected areas to treat cuts and wounds.	+	+
7.	*Ageratum conyzoides* L.	Asteraceae	Ganaune jhar	Herb	Lf	***Medicinal***: Leaf juice is applied to fresh cuts to stop bleeding.		+
8.	*Allium sativum* L.	Amaryllidaceae	Lasun	Herb	Wp	***Food additive***: The whole plant is used as spice. ***Medicinal***: In Chhapdanda, juice prepared by grinding equal parts of the whole plant of *Allium sativum*, the roots of *Thysanolaena latifolia*, *Mallotus philippensis*, and *Cissampelos pareira*; the bark of *Oroxylum indicum* and *Shorea robusta*; and the bulbs of *Stephania glandulifera*, combined with asafetida and black salt, is consumed in half-liter doses twice a day to treat gastritis. In Dharapani, a paste is prepared by grinding equal parts of the rhizomes of *Zingiber officinale* and *Bergenia ciliata*; the bark of *Cinnamomum tamala*, *Betula alnoides,* and *Zanthoxylum armatum*; the seeds of *Lindera neesiana* and *Acmella calva*; along with clove (*Syzygium aromaticum*) and black pepper (*Piper nigrum*). This paste is mixed with the flour of finger millet (*Eleusine coracana*) to make bread, which is consumed 2–3 times a day to treat rheumatic arthritis.	+	+
9.	*Aloe vera* (L.) Burm.f.	Asphodelaceae	Ghiu kumari	Shrub	Lf	***Medicinal***: Leaf pulp is consumed raw and also applied to the affected area to treat burns and wounds. Additionally, leaves are eaten raw to manage hypertension.	+	+
10.	*Amaranthus viridis* L.	Amaranthaceae	Lunde	Herb	Lf, Rt	***Food***: Leaves are cooked and eaten as a vegetable. ***Medicinal***: Root juice is consumed twice a day to treat colic and pneumonia.		+
11.	*Ampelocissus divaricata* (Wall. ex M.A.Lawson) Planch.	Vitaceae	Pureni	Climber	St	***Medicinal***: Take a fresh stem, about half a meter long, and position one end near the eye. Apply suction on the other end to allow water to flow into the eye as a treatment for keratitis.		+
12.	*Artemisia dubia* Wall. ex Besser	Asteraceae	Titepati	Herb	Lf	***Medicinal***: Leaf juice is applied externally twice a day to treat scabies, wounds, and cuts. ***Religious***: Leaves are used in various worshiping activities.	+	+
13.	*Artocarpus lacucha* Buch.-Ham.	Moraceae	Badahar	Tree	Lt	***Medicinal***: Latex of fruit is used for the treatment of blisters and boils.	+	

Appendix 1. contd…..

S.N.	Botanical name	Family	Local name	Habit	Parts used	Ethnobotanical use categories and detail use	Plant used in	
							CD	DP
14.	*Asparagus racemosus* Willd.	Asparagaceae	Kurilo	Herb	St, Tb	***Food***: Tender shoots are cooked and eaten as vegetables. ***Medicinal***: Shoots and tubers are considered tonics and are consumed to alleviate weakness.		+
15.	*Azadirachta indica* A.Juss.	Meliaceae	Neem, Neem patta	Tree	Br, Lf	***Medicinal***: Leaves and bark are boiled in water, and the resulting water is used for bathing to treat wounds and scabies. Leaf juice, prepared by boiling the leaves, is taken three times a day to manage hypertension.	+	+
16.	*Baccharoides anthelmintica* (L.) Moench	Asteraceae	Kalo jeera	Herb	Lf	***Medicinal***: Juice of green leaves is taken 2 times to treat chronic cough and hypertension.	+	
17.	*Bauhinia variegata* L.	Fabaceae	Koiralo	Tree	Br, Fl	***Food***: Flowers are edible as pickles. ***Medicinal***: Bark juice mixed with the bark of *Bauhinia vahlii*, bark of *Mangifera indica,* bulb of *Stephenia glandulifera,* and bark of *Litsea monopetala* is used 2-3 times a day to treat gastritis and dysentery.	+	
18.	*Berberis asiatica* Roxb. ex DC.	Berberidaceae	Chautari	Shrub	Br, Fr	***Food & beverage***: Ripe fruits are edible, and these are also used to make alcohol. ***Medicinal***: Bark juice is applied 2-3 times a day to treat eye boils. Bark juice is also taken to treat diabetes.	+	+
19.	*Bergenia ciliata* (Haw.) Sternb.	Saxifragaceae	Pakhanbed	Herb	Rh, St	***Medicinal***: Bark juice of the plant mixed with equal parts of that of *Prunus cerasoides* and bark of *Betula alnoides* is taken orally 2–3 times a day to treat back bone pain, cuts, wounds, and bone fracture. Two spoonfuls of dry rhizome powder are taken with milk 2–3 times a day as a tonic.	+	+
20.	*Betula alnoides* Buch.-Ham. ex D.Don	Betulaceae	Saur	Tree	Br	***Medicinal***: Bark juice is orally taken and also applied to treat body aches, sprains, and fractures. Powdered bark is given with milk 2–3 times to help ease delivery.	+	+
21.	*Blumea flava* DC.	Asteraceae	Torifule	Herb	Fl	***Beverage***: Inflorescences are used as an ingredient to prepare *marcha*, a starter for the preparation of local alcoholic beverages.	+	
22.	*Brassica juncea* (L.) Czern.	Brassicaceae	Rayo	Herb	Sd	***Medicinal***: The seeds are smoked to 'get in touch with the spirits' during the process of spiritual treatment for various disorders.		+
23.	*Brucea javanica* (L.) Merr.	Simaroubaceae	Bhakimlo	Tree	Fr	***Medicinal***: Fruit powder is taken with water or milk, or ripe fruits are soaked in water for some time, and the water is consumed twice a day to treat diarrhea and dysentery.	+	+
24.	*Calotropis procera* (Aiton) W.T.Aiton	Apocynaceae	Ank	Shrub	Lt, St	***Medicinal***: Latex is applied in the affected areas to treat body pain, sprains, and boils. The smoke of the dry stem is inhaled to treat sinusitis.	+	+
25.	*Cannabis sativa* L.	Cannabaceae	Ganja	Herb	Sd	***Medicinal***: Fried seeds are used as a cooling agent, and to treat diarrhea. Leaves and flowering shoots are used as drugs.	+	
26.	*Carica papaya* L.	Caricaceae	Mewa	Herb	Fr	***Food & medicinal***: Ripe fruit is edible. Fruits are also eaten during jaundice and hotness of the body.	+	
27.	*Cassia fistula* L.	Fabaceae	Raj brichha	Tree	Sd	***Medicinal***: Seeds are soaked in water for one day and this water is drunk 2–3 times a day to treat urinary disorder (*pisab rokiyeko*).		+
28.	*Castanopsis tribuloides* (Sm.) A.DC.	Fagaceae	Masuri katash	Tree	Br	***Medicinal***: Bark juice is taken 2–3 times a day to treat body aches and fever.	+	
29.	*Centella asiatica* (L.) Urb.	Apiaceae	Ghodtapre, Tapre jhar	Herb	Wp	***Medicinal***: A paste of the plant is applied to relieve body heat. A decoction of the plant is taken 2–3 times a day to treat uric acid issues, jaundice, and diarrhea.	+	+
30.	*Chenopodium album* L.	Amaranthaceae	Bethe	Herb	Fl, Lf, St	***Food***: Young shoots are cooked as vegetables. ***Medicinal***: Tender shoots and flower juice are given orally 2–3 times a day to treat stone formation and constipation.	+	
31.	*Cinnamomum tamala* (Buch.-Ham.) T.Nees & C.H.Eberm.	Lauraceae	Sinkauli	Tree	Br, Lf	***Food additive***: Leaves and bark are used as spice. ***Medicinal***: Bark decoction is taken orally 2–3 times a day to treat arthritis.	+	+

Appendix 1. contd…..

S.N.	Botanical name	Family	Local name	Habit	Parts used	Ethnobotanical use categories and detail use	Plant used in	
							CD	DP
32.	*Cissampelos pareira* L.	Menispermaceae	Batulpate, Badalpate	Climber	Rt	***Medicine***: Root juice mixed with the bark of *Schima wallichii* and *Mangifera indica* is taken 2–3 times a day to treat gastritis. Juice extracted from a mixture of the root of *Cissampelos pareira*, and the bark of old *Pinus roxburghii* tree and *Mangifera indica* is taken twice to treat fever and gastritis.	+	+
33.	*Citrus × aurantium* L.	Rutaceae	Suntala	Tree	Fr	***Food***: Ripe fruits are edible. ***Medicinal***: The juice of the outer layer of the fruit is applied to the affected area to treat dandruff and dark tan (*poto*) on the face.		+
34.	*Citrus × limon* (L.) Osbeck	Rutaceae	Kagati	Tree	Lf	***Medicinal***: Decoction of leaf mixed with a leaf of *Psidium guajava,* bark of *Prunus cerasoides*, and leaf of *Ocimum tenuiflorum* is taken orally 2–3 times a day to treat cough and sore throat.	+	
35.	*Citrus maxima* (Burm.) Merr.	Rutaceae	Bhogate	Tree	St	***Medicinal***: The juice of young shoots is taken 2–3 times a day to treat indigestion.		+
36.	*Clematis acuminata* DC.	Ranunculaceae	Khursane lahara	Climber	Lf, St	***Medicinal***: Leaf juice is used to alleviate toothache.	+	
37.	*Coccinia grandis* (L.) Voigt	Cucurbitaceae	Gol kakri	Climber	Fr	***Medicinal***: Fruit juice of the plant mixed with the root juice of *Ziziphus mauritiana* and *Cuscuta reflexa* is taken for one month to cure jaundice.	+	
38.	*Crateva unilocularis* Buch.-Ham.	Capparaceae	Siplican	Tree	Lf	***Medicinal***: Young leaves are cooked as a vegetable and taken to treat urinary disorders and to reduce high blood pressure. The cooked vegetable is also taken as an appetizer. The juice obtained after boiling the leaves is taken 3 times a day to treat malaria.	+	+
39.	*Cryptolepis buchananii* R.Br. ex Roem. & Schult.	Apocynaceae	Dudhe laharo	Climber	Lt	***Medicinal***: Latex is applied 2 times to treat white spots on the skin.		+
40.	*Cucumis sativus* L.	Cucurbitaceae	Kankro	Climber	Fr, Sd	***Medicinal***: Juice of the seeds, mixed with the seeds of *Raphanus sativus* and leaves of *Lablab purpureus*, is taken 2–3 times a day to treat typhoid. Fresh fruits are consumed as an appetizer and to maintain hydration in the body.	+	+
41.	*Curcuma longa* L.	Zingiberaceae	Besar	Herb	Rh	***Food additives***: Rhizome powder is used as a spice and to enhance the color of food. ***Medicinal***: Rhizome juice or powder is mixed with ash and water, and the mixture is taken 2–3 times a day to treat stomach pain, body aches, sprains, and old internal bone pain. Rhizome powder mixed with milk and honey is also taken daily for 1 month to cure the aforementioned disorders. Additionally, it is used as a psychological treatment for patients suffering from spirit possession.	+	+
42.	*Curcuma caesia* Roxb.	Zingiberaceae	Kalo besar	Herb	Rh	***Medicinal***: A paste of the rhizome is applied twice a day to treat gastritis and body aches. The juice of the rhizome is taken 3 times a day to treat stomach aches and body pain during delivery.	+	+
43.	*Cuscuta reflexa* Roxb.	Convolvulaceae	Akashebeli	Climber	Wp	***Medicinal***: Juice of the whole plant is taken 2–3 times a day to cure jaundice and ascariasis. Juice extracted from the plant is also given orally to cattle to remove ascaris from their nose.	+	+
44.	*Cynodon dactylon* (L.) Pers.	Poaceae	Dubo	Herb	Lf	***Medicinal***: Crushed young leaves are eaten daily to treat hypertension and gastritis. Leaf paste is applied twice a day on the affected area to treat scabies. ***Religious***: The plant is valued for worshipping Lord Ganesha.	+	+
45.	*Dendrocalamus hamiltonii* Nees & Arn. ex Munro	Poaceae	Bansh	Bamboo	St	***Food***: Young shoots are cooked and eaten as a vegetable. ***Material***: Mature stems are used in house construction, and to make baskets, mats, fences, and different household tools.		+
46.	*Desmostachya bipinnata* (L.) Stapf	Poaceae	Kush	Herb	Lf, Rt	***Medicinal***: Juice of root is eaten orally and a paste of root and leaf is applied on the forehead to treat hypertension and toothache. ***Religious***: Leaves are used in every worship.	+	

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S.N.	Botanical name	Family	Local name	Habit	Parts used	Ethnobotanical use categories and detail use	Plant used in	
							CD	DP
47.	*Dioscorea alata* L.	Dioscoreaceae	Ghar tarul	Climber	Tb	***Food***: Tubers are boiled and eaten during the *Maghe Sankranti* festival.		+
48.	*Dioscorea bulbifera* L.	Dioscoreaceae	Githa	Climber	Bl	***Food***: Aerial bulbils (air potatoes) are boiled and eaten as potatoes during the *Maghe Sankranti* and *Ekadashi* festivals. ***Medicinal***: Such boiled bulbils are also eaten to cure diarrhea.		+
49.	*Diploknema butyracea* (Roxb.) H.J.Lam	Sapotaceae	Chiuree	Tree	Fr, Lf, Sd, Wd	***Beverage***: Fruits are brewed to make local alcohol. ***Food***: Ripe fruits are edible. Seeds are used for making vegetable ghee. ***Material***: Leaves used for making traditional plates (*tapari*). Timber is used for making furniture. Seedcakes are used as soap substitutes. ***Medicinal***: Ghee prepared from seeds is applied externally to treat scabies, wounds, and cracked feet.	+	+
50.	*Drepanostachyum intermedium* (Munro) Keng f.	Poaceae	Nigalo bansh	Bamboo	St	***Fodder***: Leaves and young shoots are used as animal fodder. ***Material***: Mature stems are used to make carrying baskets, fishing rods, and fishing baskets.		+
51.	*Drymaria diandra* Blume	Caryophyllaceae	Abijalo	Herb	Lf, Wp	***Medicinal***: Leaf juice is taken 2–3 times a day to treat indigestion. The plant is also used to treat hotness.	+	
52.	*Eclipta prostrata* (L.) L.	Asteraceae	Bhringi jhar	Herb	Lf	***Medicinal***: Leaf juice is applied to treat fungal skin infections between the toes.		+
53.	*Elephantopus scaber* L.	Asteraceae	Sayajadi	Herb	Rt	***Medicinal***: Root juice is taken 3 times a day to treat urinary disorder (*pisab polne*).	+	
54.	*Equisetum arvense* L.	Equisetaceae	Ankhle jhar	Herb	Wp	***Medicinal***: The juice of the plant is taken twice a day to treat jaundice.		+
55.	*Eulaliopsis binata* (Retz.) C.E.Hubb.	Poaceae	Babbiyo, Bankasi	Herb	Lf, Wp	***Material***: The plant is used as material for the roofing of the house. ***Medicinal***: A decoction of the leaves is taken 2–3 times a day to treat diabetes, and leaf juice is taken twice a day to cure urinary disorders. ***Religious***: The whole plant, along with the leaf of *Semecarpus anacardium*, is kept in the house on the day of *Saune Sakranti* for religious reasons.	+	+
56.	*Euphorbia hirta* L.	Euphorbiaceae	Dudhe jhar	Herb	Wp	***Medicinal***: The juice made from the whole plant is used as a refresher, and its latex is applied to treat eye infections. The juice is also taken twice a day to stop diarrhea.	+	+
57.	*Euphorbia royleana* Boiss.	Euphorbiaceae	Siudi	Shrub	Lf, Lt, Wp	***Material***: The whole plant is used to make fences for protection from cattle. ***Medicinal***: Latex is applied to affected areas to treat wounds and ear boils. Slightly burned yellow leaves are eaten to treat pneumonia.	+	+
58.	*Falconeria insignis* Royle	Euphorbiaceae	Khirro	Tree	Lf, Lt	***Medicinal***: Stem latex is used to cure various skin diseases. ***Poison***: Stem latex is used as an invertebrate poison and insecticide. ***Religious***: Leaves are used in puja (*chokhe falne*)	+	
59.	*Ficus religiosa* L.	Moraceae	Pipal	Tree	Lf, St, Wp	***Medicinal***: Dry branches of the plant along with the branches of *Ficus benghalensis* L. are fired and the heat is applied to cure swellings of the body due to old age. ***Religious***: The whole plant is worshipped as God.	+	
60.	*Ficus semicordata* Buch.-Ham. ex Sm.	Moraceae	Khanniu	Tree	Br	***Medicinal***: Juice prepared by grinding a mixture of equal parts of the bark of *Ficus semicordata*, *Terminalia elliptica*, and *Bombax ceiba* is used to treat body heat and dizziness.		+
61.	*Garuga pinnata* Roxb.	Burseraceae	Ban dabdabe	Tree	Rn	***Medicinal***: Resin is dissolved in milk and taken 3 times a day to treat sprains and bone fractures.		+
62.	*Gonostegia hirta* (Blume) Miq.	Urticaceae	Lahare githi	Shrub	Lf	***Medicinal***: A paste of leaves is applied to the affected area to treat bone fractures and sprains (*sarke marke ko*). The fracture is secured with a pair of bamboo sticks and cloth.	+	+
63.	*Hemionitis albomarginata* (C.B.Clarke) Christenh.	Pteridaceae	Dupsinki	Herb	Wp	***Medicinal***: Juice of the whole plant is taken orally 2–3 times a day to treat gastritis and stomach pain.	+	

Appendix 1. contd…..

S.N.	Botanical name	Family	Local name	Habit	Parts used	Ethnobotanical use categories and detail use	Plant used in	
							CD	DP
64.	*Heynea trijuga* Roxb. ex Sims	Meliaceae	Aankha tare	Tree	Br, Lf	***Medicinal***: Bark juice is applied to affected areas to treat scabies. A decoction of bark and leaves is taken daily to treat menstrual disorders.	+	+
65.	*Hordeum vulgare* L.	Poaceae	Jau	Herb	Lf, Sd	***Beverage***: Seeds are used in brewing alcohol. ***Medicinal***: Leaf juice is applied as eye drops 3–4 times a day to treat eye problems (*phulo pareko*). Juice prepared from germinated seedlings (jamara) is taken twice a day to treat jaundice and tuberculosis.	+	+
66.	*Ipomoea batatas* (L.) Lam.	Convolvulaceae	Sakarkhanda	Herb	Tb	***Food & religious***: Boiled tubers are eaten especially during the *Maghe Sankranti* and *Ekadashi* festivals.		+
67.	*Jatropha curcas* L.	Euphorbiaceae	Saijawol	Tree	Lt, Sd, St, Wp	***Materials***: Young twigs are used as toothbrushes. Dry naked seeds are burned as candles. The plant is also used for making fences. ***Medicinal***: Latex is applied to treat cuts and wounds, and fungal skin infections.	+	+
68.	*Juglans regia* L.	Juglandaceae	Okhar	Tree	Br, Fr, Sd	***Food & religious***: Nuts are edible. Fruits are especially used in the *Tihar* festival. ***Medicinal***: A paste of the bark is applied to cure skin diseases.		+
69.	*Justicia adhatoda* L.	Acanthaceae	Asuro	Shrub	Lf	***Materials***: Leaves are used as green manure in paddy fields. ***Medicinal***: A leaf decoction is taken to treat fever, cough, and headache. Apical young twigs are chewed to relieve indigestion.	+	+
70.	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae	Pathar chatta	Herb	Lf	***Medicinal***: Leaf juice is consumed 2–3 times a day to treat stone formation in the body organs.		+
71.	*Lablab purpureus* (L.) Sweet	Fabaceae	Hiude sime	Climber	Lf, Fr	***Food***: Fruits are cooked as vegetables. ***Medicinal***: Leaf juice is applied to treat cuts and scabies.	+	
72.	*Lagenaria siceraria* (Molina) Standl.	Cucurbitaceae	Lauka	Climber	Fr, Sd	***Food***: Young fruits are cooked and eaten as a vegetable. ***Medicinal***: Seed juice is taken to treat cough. Vegetable is also considered effective for reducing body fat.		+
73.	*Lepidium sativum* L.	Brassicaceae	Chamsur	Herb	Lf	***Medicinal***: Fresh leaves are taken for the treatment of liver problems.	+	
74.	*Litsea monopetala* (Roxb.) Pers.	Lauraceae	Kutmero	Tree	Br, Lf	***Fodder & forage***: Leaves are used as cattle fodder. ***Medicinal***: A decoction prepared by mixing equal parts of the bark of *Litsea monopetala, Mangifera indica*, and *Shorea robusta*; the bulbs of *Stephania glandulifera*; the roots of *Cissampelos pareira*; the rhizomes of *Curcuma caesia*; and the leaves of *Gonostegia hirta* is taken 2–3 times a day to treat stomachache and gastritis.	+	+
75.	*Lophiolepis veruta* (D.Don) Bureš, Del Guacchio, Lamonico & P.Caputo	Asteraceae	Sugure kanda	Herb	St, Rt	***Medicinal***: Young shoots, after removing the bark, are consumed to treat body heat. The root juice is taken, or the raw stem (after removing the outer layer) is chewed to treat typhoid and diabetes.	+	+
76.	*Lyonia ovalifolia* (Wall.) Drude	Ericaceae	Angero	Tree	Lf	***Medicinal***: Juice of the young leaves is applied all over the body daily for a week to get rid of scabies and itching.	+	+
77.	*Macrotyloma uniflorum* (Lam.) Verdc.	Fabaceae	Gahat	Herb	Sd	***Food***: Cooked seeds are frequently eaten as *dal*. ***Medicinal***: Seeds are cooked as *dal* and used 2 times a day for one month to break and eliminate kidney stones.	+	+
78.	*Maesa chisia* D.Don	Primulaceae	Bilaune	Shrub	Fr, Rt	***Medicinal***: A paste made from its fruits or roots is applied to treat skin diseases.		+
79.	*Mallotus philippensis* (Lam.) Müll.Arg.	Euphorbiaceae	Raini	Tree	Br, Rt	***Materials***: Bark juice is used as a fungicide. ***Medicinal***: Root juice is used to cure gastritis.	+	
80.	*Mentha spicata* L.	Lamiaceae	Pudina	Herb	Lf	***Food***: Leaves are used to prepare fresh pickles. ***Medicinal***: Leaf juice is taken 2–3 times a day to treat dysentery, indigestion, and body heat.	+	+
81.	*Mirabilis jalapa* L.	Nyctaginaceae	Malati	Shrub	Rh	***Medicinal***: Rhizome juice is taken orally 2–3 times a day to treat diabetes and body aches.	+	

Appendix 1. contd…..

S.N.	Botanical name	Family	Local name	Habit	Parts used	Ethnobotanical use categories and detail use	Plant used in	
							CD	DP
82.	*Momordica charantia* L.	Cucurbitaceae	Titekarela	Climber	Fr	***Food***: Fruits are cooked as vegetables. ***Medicinal***: Fruit decoction or juice is taken daily to treat hypertension, and fever, and to act as an appetizer.	+	+
83.	*Morus indica* L.	Moraceae	Kimbu	Tree	Fr, Rt	***Food***: Ripe fruits are eaten fresh. ***Medicinal***: Root juice is taken in case of gastritis.	+	
84.	*Musa × paradisiaca* L.	Musaceae	Kera	Herb	Br, Fr	***Food***: Unripe fruits are cooked as vegetables, and ripe fruits are eaten fresh. ***Medicinal***: Dried bark is burned and the ash is taken in case of indigestion, diarrhea, and dysentery.	+	
85.	*Musa* sp.	Musaceae	Marche kera	Herb	Fr	***Food***: Ripe fruits are edible. ***Medicinal***: Juice of raw fruits, mixed with candy sugar, is taken twice a day to treat dysentery. Ripe fruits are eaten as an aphrodisiac.		+
86.	*Myrica esculenta* Buch.-Ham. ex D.Don	Myricaceae	Kaphal	Tree	Br, Fr	***Food***: Ripe fruits are edible. ***Medicinal***: Bark juice is taken to treat indigestion, and a decoction of bark mixed with that of *Osyris lanceolata* is applied to the sprain.	+	
87.	*Nicotiana tabacum* L.	Solanaceae	Kacho Paat	Herb	Lf	***Medicinal***: A paste of leaves is applied to the affected areas to treat wounds and dermatitis.		+
88.	*Ocimum basilicum* L.	Lamiaceae	Bamari	Herb	Lf	***Medicinal***: A decoction prepared by mixing the leaves of *O. basilicum*, and roots of *Rubus ellipticus* and *Pogostemon benghalensis* is taken 2–3 times a day to treat cough and common cold.	+	
89.	*Ocimum tenuiflorum* L.	Lamiaceae	Tulsi	Herb	Lf	***Medicinal***: A decoction prepared by mixing the leaves of *O. tenuiflorum*, *Psidium guajava*, *Citrus* x *limon*, and bark of *Prunus persica* is taken orally for one week to treat cold, headache, and sore throat. ***Religious***: The plant is worshipped as God Bishnu.	+	+
90.	*Oroxylum indicum* (L.) Kurz	Bignoniaceae	Tatelo	Tree	Br	***Medicinal***: In Chhapdanda, bark juice is applied to treat wounds. The bark of the plant, mixed with that of *Plumeria rubra* and *Schima wallichii*, is powdered and orally fed to female buffaloes to enhance the success of fertilization (*ranga khojne*). In Dharapani, a powder made by grinding equal parts of the bark of *Oroxylum indicum*, *Heynea trijuga*, and *Plumeria rubra*, along with the stem of *Euphorbia royleana*, is fed to buffaloes to treat sterility.	+	+
91.	*Osbeckia stellata* Buch.-Ham. ex D.Don	Melastomataceae	Kali angeri	Shrub	Rt	***Food***: Ripe fruits are edible. ***Medicinal***: Root juice is taken 3 times a day to treat diarrhea and dysentery.		+
92.	*Osyris lanceolata* Hochst. & Steud.	Santalaceae	Nundhiki	Shrub	Br	***Medicinal***: A decoction prepared by mixing the bark of the plant with that of *Myrica esculenta* is applied in affected areas to treat fracture, and sprain (*sarke-markeko*).	+	
93.	*Oxalis corniculata* L.	Oxalidaceae	Chariamilo	Herb	Rt, St, Wp	***Medicinal***: Root juice is applied as an eye drop to treat eye spots. Juice of the whole plant is taken orally 2–3 times a day to treat stomach ache, bone ache, and uric acid.	+	+
94.	*Phanera vahlii* (Wight & Arn.) Benth.	Fabaceae	Bharlo	Climber	Br, Lf, Sd	***Material***: Leaves are used for making leaf plates. ***Medicinal***: Bark juice or raw seeds are taken to treat dysentery and stomach aches.	+	
95.	*Phyllanthus emblica* L.	Phyllanthaceae	Amala	Tree	Br, Fr	***Food***: Fruits are edible, and also pickled. ***Medicinal***: Bark juice is taken to treat dysentery and constipation. Raw fruits or powder is taken 3 times a day to treat gastritis.	+	+
96.	*Phyllanthus niruri* L.	Phyllanthaceae	Bhui amala	Herb	Wp	***Medicinal***: Juice of the whole plant is taken orally 2–3 times a day to treat jaundice.	+	
97.	*Physalis peruviana* L.	Solanaceae	Isagol	Herb	Sd	***Medicinal***: Seeds are soaked in a glass of water and left overnight. The next day morning, the water is mixed with candy sugar and drunk to reduce body heat.	+	+
98.	*Pinus roxburghii* Sarg.	Pinaceae	Khote sallo	Tree	Br, Wd	***Materials***: Timber is used for making different furniture. ***Medicinal***: Paste of the old bark is used to cure burns and scabies.	+	

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S.N.	Botanical name	Family	Local name	Habit	Parts used	Ethnobotanical use categories and detail use	Plant used in	
							CD	DP
99.	*Plumbago zeylanica* L.	Plumbaginaceae	Chita	Herb	Rt	***Medicinal***: Juice from the crushed root is taken orally 2–3 times a day to cure indigestion, diarrhea, and cough.	+	+
100.	*Plumeria rubra* L.	Apocynaceae	Galaichi, Galechi	Tree	Br	***Medicinal***: A small piece of the bark is chewed to treat indigestion (*gar pareko*). Similarly, bark juice is taken twice a day to treat stomach aches.	+	+
101.	*Pogostemon benghalensis* (Burm.f.) Kuntze	Lamiaceae	Rudilo	Shrub	Br, Fl, Lf, Rt	***Beverage***: Flowers are used as an ingredient to prepare *marcha*, a starter for the preparation of local alcoholic beverages. ***Medicinal***: Juice prepared from the roots and bark of the plant, mixed with the roots and leaves of *Ocimum basilicum*, is taken orally 2–3 times a day to treat cough and the common cold. Similarly, a leaf decoction can be taken twice a day to treat these disorders.	+	+
102.	*Pouzolzia rugulosa* (Wedd.) Acharya & Kravtsova	Urticaceae	Githi	Tree	Rt	***Medicinal***: Root paste is applied to stop bleeding from cuts.		+
103.	*Premna barbata* Wall. ex Schauer	Lamiaceae	Ginauri, Gineri	Tree	Br, Lf	***Fodder & forage***: Leaves are used as fodder for cattle. ***Medicinal***: Bark juice mixed with candy sugar is taken orally 2–3 times a day to treat fever, nosebleeds, and hypertension. Additionally, bark juice with candy sugar is taken 3 times a day to reduce body heat.	+	+
104.	*Prunus cerasoides* Buch.-Ham. ex D.Don	Rosaceae	Paiyu	Tree	Br, Lf, St	***Fodder & forage***: The plant serves as good fodder for cattle. ***Medicinal***: A bark decoction is applied to treat body acne. A decoction made from the bark of the plant, combined with the bark of *Betula alnoides*, and the rhizome of *Bergenia ciliata*, is taken orally to treat backbone pain and sprains. A paste made from the bark is applied to sprains and secured with cloth and thread. ***Religious***: Four branches of the plant are required for marriage ceremonies.	+	+
105.	*Prunus persica* (L.) Batsch	Rosaceae	Aaru	Tree	Br, Fr, St	***Beverage***: Local alcoholic drinks are brewed from cooked fruits. ***Food***: Fruits are edible. ***Medicinal***: Juice of the young leaves is applied in affected areas to treat wounds. Bark juice is taken orally to treat stomach pain.	+	
106.	*Psidium guajava* L.	Myrtaceae	Belauti	Tree	Fr, Lf	***Food***: Ripe fruits are eaten. ***Medicinal***: Boiled fruits are consumed to relieve indigestion. A leaf decoction is taken 3 times a day to treat diarrhea.	+	+
107.	*Punica granatum* L.	Lythraceae	Darim	Tree	Br	***Food***: Ripe fruits are eaten for energy. ***Medicinal***: Juice of the fruit bark is taken orally to get rid of worm infestation. Juice of the bark is applied to treat fungal skin infections between the toes.	+	
108.	*Pyrus pyrifolia* (Burm.f.) Nakai	Rosaceae	Naspati	Tree	Br, Fr	***Food***: Ripe fruits are eaten. ***Medicinal***: Bark juice or fruit is eaten to treat jaundice and diarrhea.	+	
109.	*Raphanus sativus* L.	Brassicaceae	Mula	Shrub	Lf, Rt, Wp	***Food***: Salads and vegetables are prepared from the leaves and taproots. Leaves and taproots are fermented and dried to prepare traditional fermented vegetables known as *gundruk* and *sinki*, respectively. ***Medicinal***: The whole plant is consumed as an appetizer and to treat piles. Similarly, raw taproots are eaten, or leaf juice is taken 3 times a day to treat indigestion and piles.	+	+
110.	*Reinwardtia indica* Dumort.	Linaceae	Peuli phool	Shrub	Wp	***Medicinal***: Plant juice is taken 3 times a day to treat jaundice.		+
111.	*Rubus ellipticus* Sm.	Rosaceae	Aiselu	Shrub	Rt, St	***Food***: Ripe fruits are eaten. ***Medicinal***: Root juice is taken 2–3 times a day to treat typhoid. Juice of young shoots is taken 3 times a day to treat indigestion and flatulence.	+	+
112.	*Saccharum officinarum* L.	Poaceae	Ukhu	Grass	St	***Medicinal***: Stem juice is taken orally to treat jaundice. ***Religious***: Stems are also used in various religious functions.	+	+

Appendix 1. contd…..

S.N.	Botanical name	Family	Local name	Habit	Parts used	Ethnobotanical use categories and detail use	Plant used in	
							CD	DP
113.	*Sapindus mukorossi* Gaertn.	Sapindaceae	Ritha	Tree	Fr	***Materials***: The fruit bark is used as a natural soap for washing clothes. ***Medicinal***: Fruit juice is applied 3 times a day to treat dark tans on the skin.		+
114.	*Schima wallichii* (DC.) Korth.	Theaceae	Chilaune	Tree	Br, Wd	***Food***: Ripe fruits are eaten. ***Materials***: Timber from the plant is valued for house construction. ***Medicinal***: Bark juice or paste is applied to stop bleeding from fresh cuts and to aid in wound healing.	+	+
115.	*Semecarpus anacardium* L.f.	Anacardiaceae	Bhalayo	Tree	Fr	***Food***: Ripe fruits are eaten, though some people may experience allergic reactions when the plant parts are touched or consumed. ***Medicinal***: Fruits are used to treat asthma and rheumatism. Leaf juice is applied to cure mouth bleeding. ***Religious***: Fruits or leaves of the plant, along with the whole plant or leaves of *Eulaliopsis binata*, are kept in the house on the day of *Saune Sakranti* for religious purposes.	+	+
116.	*Senegalia catechu* (L.f.) P.J.H.Hurter & Mabb.	Fabaceae	Khayar	Tree	Br, St	***Materials***: Timber is valued in construction. ***Medicinal***: Stem paste is applied on cuts and wounds.	-	+
117.	*Shorea robusta* C.F.Gaertn.	Dipterocarpaceae	Sal	Tree	Br, Lf, Rn, Wd	***Materials***: Leaves are used to make traditional plates (*tapari*). Timber from the plant is highly valued for making furniture and constructing houses. ***Medicinal***: Bark juice is taken orally for one month to cure gastritis. Wood resin mixed with milk is consumed twice a day to treat sprains and bone pain. Juice from young leaves is taken 3 times a day to treat diabetes.	+	+
118.	*Sida cordifolia* L.	Malvaceae	Balu	Shrub	Lf	***Medicinal***: Leaf juice is taken orally to relieve the burning sensation during urination. Leaves mixed with goat droppings are made into a paste, which is applied for one day to drain puss from boils (*pilo*).	+	+
119.	*Smilax aspera* L.	Smilacaceae	Kukurdaino	Climber	Lf, Rt	***Medicinal***: Root juice is taken 2–3 times a day to treat rheumatism. ***Religious***: Leaves are used in s*aune sakranti*.		+
120.	*Solanum lycopersicum* L.	Solanaceae	Golvenda	Herb	Fr	***Medicinal***: Paste of the fruits is applied to treat boils and burns.		+
121.	*Solanum nigrum* L.	Solanaceae	Bihi, Kamai	Herb	Fr	***Medicinal***: A paste made from ripe fruits is applied to the forehead and taken orally to treat balance disorders (*ringaune*) and jaundice. Seeds are soaked in a glass of water, and the water is consumed 2–3 times a day to treat headaches and jaundice.	+	+
122.	*Solanum virginianum* L.	Solanaceae	Kanthakari	Herb	Fr, Rt, Sd, Wp	***Materials***: Fruits are used as soap to clean clothes. ***Medicinal***: A paste prepared after grinding seeds is applied to treat toothache. A decoction made from root or whole plant is taken orally 2–3 times a day to treat cough and fever.	+	+
123.	*Stephania glandulifera* Miers	Menispermaceae	Gane gurjo	Climber	Lf, Tb	***Medicinal***: Juice from tubers or leaves is taken orally twice a day to treat gastritis and colic.	+	+
124.	*Syzygium cumini* (L.) Skeels	Myrtaceae	Fadel	Tree	Br, Fr, Sd	***Beverage***: Fruits are used to prepare alcohol. ***Food***: Ripe fruits are edible. ***Medicinal***: Bark juice is taken orally 2–3 times a day to treat diarrhea. Juice prepared after grinding seeds is taken orally to treat diabetes.	+	
125.	*Tectaria coadunata* (Wall. ex J. Sm.) C.Chr.	Polypodiaceae	Kalo niuro	Fern	Rh	***Medicinal***: Rhizome juice is taken 2–3 times a day until recovery in case of diarrhea and dysentery.	+	
126.	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae	Barro	Tree	Br, Lf, Sd	***Fodder***: Leaves are used as fodder for cattle. ***Medicinal***: Burned seeds are taken to treat whooping cough. Bark juice is taken orally 2–3 times a day for 1 month to treat gastritis and colic.	+	+
127.	*Terminalia chebula* Retz.	Combretaceae	Harro	Tree	Br, Fr, Lf, Wd	***Fodder***: Leaves are used as fodder for cattle. ***Materials***: The plant provides timber for various household purposes. ***Medicinal***: Bark juice is taken orally to treat hypertension, cough, and gastritis. Burned fruits are also consumed to treat gastritis and cough.	+	+

Appendix 1. contd…..

S.N.	Botanical name	Family	Local name	Habit	Parts used	Ethnobotanical use categories and detail use	Plant used in	
							CD	DP
128.	*Terminalia elliptica* Willd.	Combretaceae	Saj	Tree	Br	***Medicinal***: Bark juice is applied to treat cuts and sprains.		+
129.	*Thysanolaena latifolia* (Roxb. ex Hornem.) Honda	Poaceae	Amriso	Shrub	In, Rh	***Materials***: Inflorescences are used for making brooms. ***Medicinal***: Rhizome paste is applied to treat boils and rhizome juice is taken orally daily for one month to treat gastritis.	+	
130.	*Tinospora cordifolia* (Willd.) Hook.f. & Thomson	Menispermaceae	Chini laharo, Gurjo	Climber	Lf, St	***Medicinal***: A decoction of leaves and stems is taken orally twice a day to treat hypertension, diabetes, and cough. Plant parts are also consumed as herbal tea three times a day to boost physical strength.	+	+
131.	*Trigonella foenum-graecum* L.	Fabaceae	Methi	Herb	Sd	***Medicinal***: Juice from seeds is taken orally to cure cough and body pain. Warm oil, prepared by frying the seeds of the plant and mixing it with the fruits of *Zanthoxylum armatum*, is gently massaged onto the affected areas to treat body swellings caused by cold.	+	
132.	*Urtica dioica* L.	Urticaceae	Sisno	Herb	Lf	***Food***: Tender leaves are cooked as a vegetable. ***Medicinal***: Regular consumption of this vegetable, prepared from tender shoots, provides iron to the body and helps reduce blood sugar levels. Leaf powder is also taken with water or milk twice a day to treat diabetes and anemia.	+	+
133.	*Vitex negundo* L.	Lamiaceae	Simali	Shrub	Lf	***Medicinal***: Leaf decoction is applied 3 times a day to treat scabies and dermatitis.		+
134.	*Woodfordia fruticosa* (L.) Kurz	Lythraceae	Dhairo	Shrub	Fl	***Medicinal***: Flower juice is taken 3 times a day to treat diarrhea.		+
135.	*Zanthoxylum armatum* DC.	Rutaceae	Timur	Tree	Fr	***Medicinal***: Fruits are chewed to relieve toothache, fever, cold, and gastritis. A decoction of the fruits mixed with salt and powdered turmeric is also taken orally 2–3 times a day to treat these ailments.	+	+
136.	*Zingiber officinale* Roscoe	Zingiberaceae	Aduwa	Herb	Rh	***Food additives***: Rhizome is used as a spice in vegetables. ***Medicinal***: Rhizome juice is consumed 2–3 times a day until recovery to treat cough and indigestion. A paste of rhizome is applied twice a day to relieve cold.	+	+
137.	*Ziziphus mauritiana* Lam.	Rhamnaceae	Bayar	Tree	Br, Fr, Rt	***Food***: Ripe fruits are eaten. ***Medicinal***: Bark juice or decoction is taken orally twice a day to treat diarrhea and dysentery. Fruits are consumed to treat indigestion, and root juice is taken twice a day to reduce body heat.	+	+