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## A review of medicinal plants used in the traditional healthcare system of *Nyishi* tribe of Arunachal Pradesh, Eastern Himalaya, India.

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### Abstract:

The study on review of medicinal plants used in traditional health care system of Nyishi tribe in Arunachal Pradesh was done through secondary literature by consulting 17 research journals and 1 book chapter. There were 469 plant species with 333 genera and 112 plant families used in traditional healthcare system of Nyishi tribe. The dominant family was Fabaceae with 28 spp., followed by Asteraceae (26 spp.), Lamiaceae (21 spp.), Poaceae (19 spp.), etc. Solanum was the dominant genera with 9 spp., followed by Piper (7 spp.), Rubus (6 spp.), Dioscorea, *Ficus* and *Zanthoxylum* (5 spp. each), etc. The herb was the dominant plant habit, followed by shrub, tree, etc. The dominant plant part was the leaf (29 spp.), followed by root (82 spp.), fruit (74 spp.), whole plant (68 spp.), etc. The highest number of plants (61 spp.) are used traditionally for the treatment of cough & cold, followed by fever, dysentery, etc.

### Key words-

Medicinal plants, Nyishi, healthcare system, etc.

### Introduction

Plants play an important role in traditional knowledge system in various aspects among all indigenous tribes in India such as food, shelter, clothing, etc. (Debbarma et al. 2017, Borah et al. 2023; Kathambi et al. 2020) Of this, the traditional healthcare system is an important aspect that helps in protecting their health against various minor & major injuries and various ailments since time immemorial (Debbarma et al. 2017, Mao et al. 2009). In India, there are three codified traditional healthcare systems that exist such as Ayurveda, Siddha and Unani and it utilised 1,200 plant spp., 900 spp.

and 700 spp., respectively (Subbarayappa 2001; Borin 1987). Besides, there is an uncodified traditional healthcare system i.e., folk medicine which has been used by ethnic or indigenous communities in rural areas since time immemorial. There are about 8000 plants utilised in folk medicine to cure many diseases in India (Sen and Chakraborty 2015; Devanna et al. 2014).

In India, there are about 705 scheduled tribes with a population of 10.43 crores (Anon. 2013; Anon. 2011). These tribes have their indigenous knowledge system related to plant utilisations that have been passed vertically from one generation to another (Chakraborty et al. 2017; Singh and Das 2016; Chatterjee et al. 2006).

As per WHO estimates, more than 80% of the people in developing countries depend on traditional medicines (WHO 2023).

Arunachal Pradesh is one of the states of India which is well known internationally as an integral part of the Indo-Burma Hotspot and is also identified as 200 globally important ecoregions (Mayer et al. 2002; Wikramanayake et al. 2001). The geographical area of the state is 83,743 km<sup>2</sup> and areas under very dense forest, medium dense forest and open forest are 21,058 km<sup>2</sup>, 30,176 km<sup>2</sup> and 15,197 km<sup>2</sup>, respectively. The dominant forest type in the state is 11b/C1 East Himalayan wet temperate forest (22.72%), followed by 8B/C1 East Himalayan subtropical wet hill forest (21.53%), 14/C2 East Himalayan sub-alpine birch/fir forest, etc. (Indian State of Forest Report 2021). There are about 5000 flowering plants present in the state (Chatterjee et al. 2006). The state also has diverse ethnicity with 26 major tribes and many sub-tribes. Till now, many studies were done on various tribes of Arunachal Pradesh regarding the use of medicinal plants in traditional health care systems such as Adi tribe by Taram et al. 2020; Danggen et al. 2018; Jayaprakash et al. 2017; Ghosh et al. 2014; Gibji et al. 2012; Tangjang et al. 2011; Khongsai et al. 2011; Kagyung et al. 2010 and Tag et al. 2008., Apatani tribe (Ayam 2017; Tilling et al. 2015; Yakang et al. 2013; Khongsai et al. 2011; Kala 2005), Monpa tribe (Bhuyan and Pangu 2018; Chakraborty et al. 2017; Tilling et al. 2015; Namsa et al. 2011; Khongsai et al. 2011; Namsa et al. 2011; Tiwari et al. 2009; Kar and Borthakur 2008; Kala 2005), etc.

In Arunachal Pradesh, Nyishi is one of the dominant tribe and total population of the tribe is 2,49,824 (Census of India 2011). The tribe also utilised medicinal plants

in traditional health care system (Balkrishna et al. 2021; Toku et al. 2021; Tripathi et al. 2017; Khongsai et al. 2011; Jeri et al. 2011; Tangjang et al. 2011; Kar and Borthakur 2008; Srivastava and Nyishi community 2007; etc.). The review of medicinal plants used by Nyishi tribe is a need of the hour to consolidate all the information related to healthcare system so that Intellectual Property Right (IPR) protection can be provided as per the provisions of National Biodiversity Act 2002 and rules 2004.

### Materials and methods

The study healthcare system of the Nyishi tribe with medicinal plants was done by consulting various secondary literature viz., 17 published research papers and 1 book chapter [Balkrishna et al. (2021), Toku et al. (2021), Jayaprakash et al. (2017), Ayam (2017), Tripathi et al. (2017), Murtem and Chaudhry (2016), Tilling et al. (2015), Perme et al. (2015), Tangjang et al. (2011), Jeri et al. (2011), Khongsai et al. (2011), Srivastava and Nyishi (2010), Tiwari et al. 2009, Kar and Borthakur (2008), Tag & Das (2004), Bora (2001) and Gangwar & Ramakrishnan (1989)].

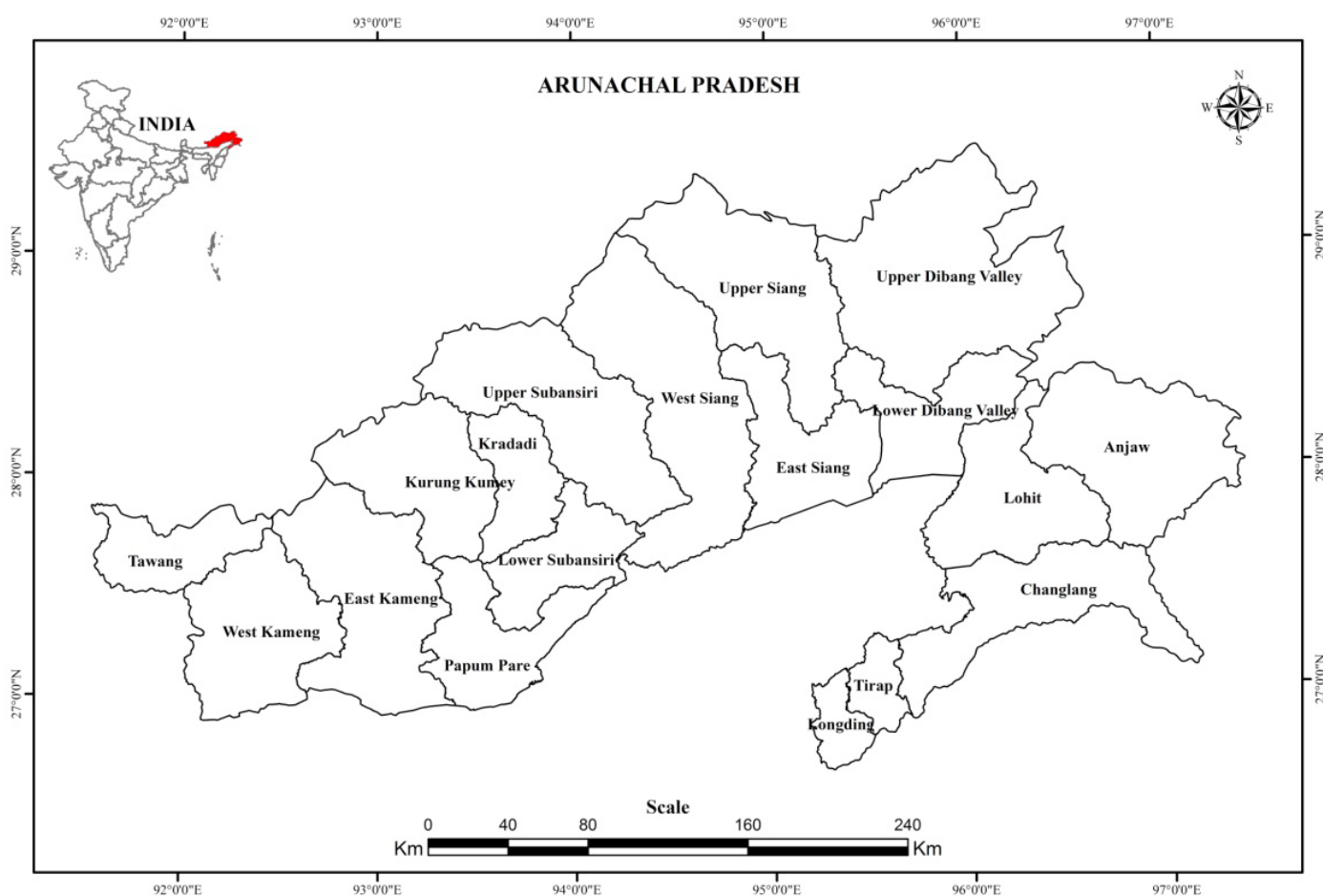
Updating the scientific and families of medicinal plants was done using the Plants of the World Online (<https://powo.science.kew.org>) and plant list's websites (<http://www.theplantlist.org>).

### Study area

The study site is located in Arunachal Pradesh and it is situated between 29°31' N latitude and 91°30' E longitude with a geographical area of 83,743 km<sup>2</sup>. There are 26 major tribes and 105 sub-tribes in the state. Of these, Nyishi is one of the dominant tribes distributed in eight districts such as Papumpare, East Kameng, Lower Subansiri, Kurung Kumey, Kra Daadi, Kamle, Pakke Kesang & Lohit districts (Fig. 1). The total population of this tribe is 2,49,824 and Donyipolo is the dominant religion of the tribe (Census of India 2011).

### Results and discussion

The Nyishi tribe utilised 385 plant species in their traditional healthcare system (Table 1). The number of medicinal plants utilised in the present study is reported higher than in other studies such as Adi tribe with 301 spp. (Taram et al. 2020), Monpa tribe with 143 spp.



(Pangging et al. 2021), 73 spp. (Jeyaprakash et al. 2017) and 50 spp. (Bhuyan and Pangu 2018), Adi, Idu and Khamba tribes with 55 spp. (Ghosh et al. 2014), Adi tribe with 44 spp. (Kagyung et al. 2010), Adi tribe with 41 spp. (Tag et al. 2008), Apatani tribe with 30 spp. (Ayam 2017), Adi tribe with 28 spp. (Danggen et al. 2018) and 26 spp. (Gibji et al. 2012), Monpa and Adi tribe with 15 spp. (Singh et al. 2010), etc. However, the number of plant spp. reported is lower than in other studies such as Nyishi, Tagin and Hill Miri with 401 spp. (Hage et al. 2020), etc.

333 genera,

These medicinal plants belonged to 333 genera and the dominant genus was Solanum was the dominant genera with 9 spp., followed by Piper (7 spp.), Rubus (6 spp.), Dioscorea, Ficus and Zanthoxylum (5 spp. each), etc. The number of genera found in the present study is higher than in other studies viz., Monpa tribe with 111 genera (Pangging et al. 2021), Adi tribe with 66 genera (Jeyaprakash et al. 2017), Nocte, Nyishi and Adi tribes with 61 genera (Tangjang et al. 2011), Adi, Idu and Khamba tribes with 49 genera (Ghosh et al. 2014), Apatani tribe with 28 genera (Ayam 2017), etc.

Table 1. List of medicinal plants used by *Nyishi* tribe of Arunachal Pradesh.

Sl. no.	Medicinal plants # (As per the POWO 2021)	As per publication	Local name	Habits	Parts	Used for treating certain ailments and health related issues.
1.	<i>Abrus precatorius</i> L. (Fabaceae)	<i>Abrus precatorius</i> L.	Raho	Climber	Leaf, root	Abortifacient (Srivastava and Nyishi 2010).
2.	<i>Abroma augusta</i> (L.) L.f. (Malvaceae)*	<i>Abroma augusta</i> (L.) L.f.	Yokhung, Yadukh	Shrub	Root, bark	Appetite and dysentery (Tripathi et al. 2017).
					Root, bark	Gonorrhoea, jaundice and uterine disease (Balkrishna et al. 2021).
					Root	Appetite, dysentery and vomiting (Srivastava and Nyishi 2010).
3.	<i>Achyranthes aspera</i> L. (Amaranthaceae)	<i>Achyranthes aspera</i> L.	Torgom	Herb	Whole Plant	Used during scorpion sting and urinary tract infection (Bora 2001, Toku et al. 2021).
4.	<i>Acacia concinna</i> (Willd.) DC.	<i>Acacia concinna</i>	-	Climber	Fruit	Hairfall and dandruff (Balkrishna et al. 2021).
	(Fabaceae)	(Willd.) DC.				
5.	<i>Acacia pennata</i> (L.) Willd. (Fabaceae)	<i>Acacia pennata</i> (L.) Willd.	Khanghu	Climber	Bark	Asthma and blood disorder (Balkrishna et al. 2021).
6.	<i>Acanthus leucostachyus</i> Wall. ex Nees (Acanthaceae)	<i>Acanthus leucostachyus</i> Wall. ex Nees	-	Herb	Whole plant	Oral contraceptive (Balkrishna et al. 2021).
7.	<i>Adenia trilobata</i> (Roxb.) Engl. (Passifloraceae)	<i>Adenia trilobata</i> (Roxb.) Engl.	-	Climber	Leaf	Snakebite (Balkrishna et al. 2021).
8.	<i>Achyropermum densiflorum</i> Blume (Lamiaceae)	<i>Achyropermum densiflorum</i> Blume	-	Shrub	Leaf	Skin disorder (Balkrishna et al. 2021).
9.	<i>Aegle marmelos</i> (L.) Correa (Rutaceae)	<i>Aegle marmelos</i> (L.) Correa	Bel-thei, Bhel	Tree	Fruit	Gastric and diarrhoea (Balkrishna et al. 2021).
					Fruit	Digestive (Murtem and Chaudhry 2016).
10.	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC. (Amaranthaceae)	<i>Alternanthera sessilis</i> L.	Oing	Herb	Stem, leaf	Snakebite (Balkrishna et al. 2021). Lactation, stomach ache, dysentery, indigestion (Bora 2001, Toku et al. 2021).
11.	<i>Alpinia malaccensis</i> (Burm. f.) Roscoe (Zingiberaceae)	<i>Alpinia malaccensis</i> (Burm. f.) Roscoe	-	Herb	Rhizome, flower	Fever, cough and throat sore (Balkrishna et al. 2021).

12.	<i>Alpinia nigra</i> (Gaertn.) Burtt (Zingiberaceae)	<i>Alpinia nigra</i> (Gaertn.) Burtt	<i>Tora Tajee</i>	Herb	Rhizome, leaf, fruit	Blood pressure (Balkrishna et al. 2021).
					Fruit, Rhizome	Gastritis, nerve problem, ring worm on nail (Bora 2001, Toku et al. 2021).
13.	<i>Alpinia galangal</i> (L.) Willd. (Zingiberaceae)	<i>Alpinia galangal</i> (L.) Willd.	<i>Pipa, Talee Pabo</i>	Herb	Rhizome	Child birth, constipation (Bora 2001, Toku et al. 2021).
14.	<i>Amaranthus tricolor</i> L. (Amaranthaceae)	<i>Amaranthus tricolor</i> L.	Talung	Herb	Whole plant	Wound, cut and sepsis (Bora 2001, Toku et al. 2021).
15.	<i>Amaranthus spinosus</i> L. (Amaranthaceae)	<i>Amaranthus spinosus</i> L.	<i>Tai, Puchu kinyu</i>	Herb	Whole plant	Piles, dysentery, urinary tract infection, constipation, blood disorder, cough, leucorrhoea (Balkrishna et al. 2021).
					Leaf	Chest inflammation, trout pain and constipation (Jeri et al. 2011).
16.	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson (Araceae)	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson	<i>Anyil</i>	Herb	Leaf	Abscesses (Bora 2001, Toku et al. 2021).
17.	<i>Ananas comosus</i> (L.) Merr. (Bromeliaceae)	<i>Ananas comosus</i> (L.) Merr.	<i>Kothal</i>	Shrub	Leaf	Typhoid fever and worm infection, Childbirth (Balkrishna et al. 2021, Bora 2001).
18.	<i>Annona reticulata</i> L. (Annonaceae)	<i>Annona reticulata</i> L.	-	Tree	Fruit	Cough & cold and blood disorders (Balkrishna et al. 2021).
					Leaf, Bark	Wound of cattle (Bora 2001).
19.	<i>Aquilaria malaccensis</i> Lam. (Thymelaeaceae)	<i>Aquilaria malaccensis</i> Lam.	<i>Thing-rai</i>	Tree	Stem	Snakebite, vomiting, constipation diarrhoea (Balkrishna et al. 2021).
20.	<i>Archidendron clypearia</i> (Jack) I.C.Nielsen (Fabaceae)	<i>Archidendron clypearia</i> (Jack) I.C.Nielsen	-	Tree	Leaf, seed	Toothache and diabetes (Balkrishna et al. 2021).
21.	<i>Areca catechu</i> L. (Arecaceae)	<i>Areca catechu</i> L.	<i>Kuvathin g</i>	Tree	Nut	Diabetes (Balkrishna et al. 2021).
22.	<i>Senegalia caesia</i> (L.) Maslin, Seigler & Ebinger (Fabaceae)	<i>Acacia caesia</i> (L.) Willd Syn.	-	Climber	Leaf	Kill lice (Murtem and Chaudhry 2016).



23.	<i>Acmella paniculata</i> (Wall. ex DC.) R.K.Jansen (Asteraceae)	<i>Spilanthes paniculata</i> Wall. Or <i>Spilanthes paniculata</i> DC.	<i>Buud, Byadhi, Marcha Pajong Nam</i>	Herb	Leaf, flower	Cough, intestine worm and toothache (Srivastava and Nyishi 2010).
		<i>Spilanthes paniculata</i> Wallich ex DC.			Flower	Toothache and tongue infection (Murtem and Chaudhry 2016).
					Flower	Bodyache and toothache (Balkrishna et al. 2021).
					Leaf	Toothache and constipation (Jeri et al. 2011).
					Leaf	Toothache, bodyache and constipation (Jeri et al. 2011; Khongsai et al. 2011; Tripathi et al. 2017).
					Leaf	Cough, fever and toothache (Tangjang et al. 2011).
24.	<i>Aconitum ferox</i> Wall. ex Ser. (Ranunculaceae)	<i>Aconitum ferox</i> Wallich ex setinge	<i>Omle, Omyu</i>	Herb	Whole plant	Diarrhoea, dysentery, fever and cold (Murtem and Chaudhry 2016).
25.	<i>Acmella calva</i> (DC.) R.K. Jansen (Asteraceae)	<i>Acmella calva</i> (DC.) R.K.Jansen	<i>Gan Bo</i>	Herb	Leaf, fruit	Stomatitis (Balkrishna et al. 2021).
					Whole plant	Stomachache, body pain and cure wound of cattle (Bora 2001, Toku et al. 2021).
26.	<i>Acmella oleracea</i> (L.) R.K. Jansen (Asteraceae)	<i>Acmella oleracea</i> (L.) R.K. Jansen	-	Herb	Whole plant	Inflammation of lungs & bowels and urinary disorders (Balkrishna et al., 2021).
27.	<i>Acorus calamus</i> L. (Acoraceae)	<i>Acorus calamus</i> L.	<i>Gongee</i>	Herb	Rhizome	Diarrhoea, dysentery, asthma, bronchitis, loose motion in hen and goat (Murtem and Chaudhry 2016).
28.	<i>Aesculus assamica</i> Griff. (Sapindaceae)	<i>Aesculus assamica</i> Griff.	<i>Ozonsak</i>	Tree	Root, flower, seed	Haemorrhoids, backache and skin infection (Balkrishna et al. 2021).
29.	<i>Ageratum conyzoides</i> L. (Asteraceae)	<i>Ageratum conyzoides</i> L.	<i>Nyeam ei, Pasho, Pasu-payou</i>	Herb	Leaf	Blood coagulant (Tangjang et al. 2011)
					Leaf	Cut and wound (Murtem and Chaudhry 2016; Balkrishna et al. 2021).
					Leaf	Pain reliever, red eye
						(conjunctivitis), cut, wound and blood dysentery (Srivastava and Nyishi 2010).
					Leaf	Cold and cough (Tilling et al. 2015).

30.	<i>Allium hookeri</i> Thwaites (Amaryllidaceae)	<i>Allium hookeri</i> Thwaites	<i>Talap, Lahun</i>	Herb	Leaf	Stimulant, vermicide, anti-inflammatory, cut and wound (Jeri et al. 2011).
					Bulb	Cough and cold problem (Murtem and Chaudhry 2016).
31.	<i>Ageratum houstonianum</i> Mill. (Asteraceae)	<i>Ageratum houstonianum</i> Mill.	-	Herb	Leaf	Cut and wound (Balkrishna et al. 2021).
32.	<i>Allium sativum</i> L. (Amaryllidaceae)	<i>Allium sativum</i> L.	<i>Dilap</i>	Herb	Bulb, Leaf	Influenza, stomachache, gastrics, indigestion, blood purifier (Bora 2001).
33.	<i>Allamanda cathartica</i> L. (Apocynaceae)	<i>Allamanda cathartica</i> L.	-	Shrub	Root	Snakebite (Balkrishna et al. 2021).
34.	<i>Allium rubellum</i> M. Bieb. (Amaryllidaceae)	<i>Allium rubellum</i> M. Bieberstein	<i>Mud talap</i>	Herb	Leaf	Skin allergy, wound & infection and brain numbness (Jeri et al. 2011).
35.	<i>Aloe vera</i> (L.) Burm.f. (Asphodelaceae)	<i>Aloe barbadensis</i> Mill.	<i>Ghrit-kumari</i>	Herb	Leaf	Cut, burn and dermatitis (Khongsai et al. (2011).
36.	<i>Alnus nepalensis</i> D.Don (Betulaceae)	<i>Alnus nepalensis</i> D.Don	<i>Utis</i>	Tree	Fruit, Rhizome	Cancer, uterine cancer, hepatitis (Perme et al. 2015).
37.	<i>Alocasia macrorrhizos</i> (L) G.Don (Araceae)	<i>Alocasia macrorrhizos</i> (L) G.Don	<i>Anyii</i>	Herb	Leaf	Tonsillitis (Bora 2001, Toku et al. 2021).
38.	<i>Alstonia scholaris</i> (L.) R.Br. (Apocynaceae)	<i>Alstonia scholaris</i> (L.) R.Br. <i>Alstonia scholaris</i> Broom.	<i>Tai sen, Taisan</i>	Tree	Leaf, latex	Skin eruption and headache (Tripathi et al. 2017).
					Latex, bark	Skin eruption and malaria (Murtem and Chaudhry 2016).
					Root, leaf, bark, latex	Ulcer, snakebite, malaria, fever, diarrhoea and dysentery (Balkrishna et al. 2021)
39.	<i>Amaranthus viridis</i> L. (Amaranthaceae)	<i>Amaranthus viridis</i> L.	<i>Yorko puchu, Zamzo</i>	Herb	Leaf	Chest pain, rheumatism, cough, asthma, boil and score (Jeri et al. 2011).
					Stem, leaf	Scorpion sting, constipation and snakebite (Balkrishna et al. 2021).
					Stem	Scorpion stings (Bora 2001)
40.	<i>Anamirta cocculus</i> (L.) Wight and Arn. (Menispermaceae)	<i>Anamirta cocculus</i> (L.) Wight and Arn.	-	Climber	Bark, leaf	Snakebite (Balkrishna et al. 2021).
41.	<i>Aphanamixis polystachya</i> (Wall.) R.Parker (Meliaceae)	<i>Aphanamixis polystachya</i> (Wall.) R.Parker	-	Tree	Bark, seed	Muscular pain, ulcer, leucorrhoea, rheumatoid arthritis and liver disorders (Balkrishna et al. 2021).
42.	<i>Argyreia argentea</i> (Roxb.) Sweet (Convolvulaceae)	<i>Argyreia argentea</i> (Roxb.)	-	Climber	Root, leaf, fruit	Cold and rheumatoid arthritis (Balkrishna et al. 2021).



43.	<i>Aristolochia indica</i> L. (Aristolochiaceae)	<i>Aristolochia indica</i> L.	-	Climber	Root	Fever (Balkrishna et al. 2021).
44.	<i>Anacardium occidentale</i> L. (Anacardiaceae)	<i>Anacardium occidentale</i> L.	-	Tree	Bark, leaf, flower, oil	Loss of appetite, piles, skin diseases, dysentery, fever, ulcer, leucoderma, toothache, sore gums and tumours (Balkrishna et al. 2021).
45.	<i>Andrographis paniculata</i> (Burm.f.) Nees (Acanthaceae)	<i>Andrographis paniculata</i> (Burm.f.) Wall. Ex Nees	<i>Chirata, Chiraita teeta</i>	Herb	Root, whole plant	Malarial fever, jaundice, liver disorders, stomach pain and anthelmintic (Tripathi et al. 2017; Khongsai et al. 2011).
46.	<i>Angiopteris evecta</i> (G. Forst.) Hoffm. (Marattiaceae)	<i>Angiopteris evecta</i> (Forst.) Hoffm.	<i>Nabay, Bom</i>	Shrub	Rhizome	Dysentery and diarrhoea (Murtem and Chaudhry 2016).
47.	<i>Artemisia indica</i> Willd. (Asteraceae)	<i>Artemisia indica</i> Willdenow.	<i>Tapin</i>	Herb	Leaf	Asthma, nose blockage, itching, skin allergy, back pain, red eye and headache (Srivastava and Nyishi 2010).
48.	<i>Artemisia nilagirica</i> (C.B. Clarke) Pamp. (Asteraceae)	<i>Artemisia nilagirica</i> (C.B. Clarke)	<i>Tappen</i>	Herb	Leaf	Stomach trouble, body pain and disinfectant (Murtem and Chaudhry 2016).
49.	<i>Artemisia parviflora</i> Roxb. ex D. Don (Asteraceae)	<i>Artemisia parviflora</i> Buch. Ham. ex Roxb.	<i>Taping roming</i>	Herb	Leaf	Back pain (Srivastava & Nyishi 2010).
50.	<i>Asparagus racemosus</i> Willd. (Asparagaceae)	<i>Asparagus racemosus</i> Willd.	-	Herb	Root, tender leaf	Diarrhoea, dysentery and general debility (Tripathi et al. 2017).
					Whole plant	Diuretic and cooling (Murtem and Chaudhry 2016).
51.	<i>Artocarpus heterophyllus</i> Lam. (Moraceae)	<i>Artocarpus heterophyllus</i> Lam.	<i>Lamkhua ng</i>	Tree	Root, fruit, seed	Inflammation, snakebite, skin diseases and diarrhoea (Balkrishna et al. 2021).
52.	<i>Athyrium falcatum</i> Bedd. (Aspleniaceae)	<i>Athyrium falcatum</i> Bedd.	-	Herb	Root	Rheumatism, spleen disorder, jaundice, pox (Bora 2001, Gangwar & Ramakrishnan 1989)
53.	<i>Averrhoa carambola</i> L. (Oxalidaceae)	<i>Averrhoa carambola</i> L.	<i>Theiher-awt. Tanyak</i>	Tree	Fruit	Fever, gum bleeding and jaundice (Balkrishna et al. 2021).
					Fruit, Leaf	Jaundice (Bora 2001)
54.	<i>Azadirachta indica</i> A. Juss. (Meliaceae)	<i>Azadirachta indica</i> A. Juss. Syn.	<i>Dokam Belam</i>	Tree	Leaf, Bark	Skin disease and stomach ache (Murtem and Chaudhry 2016, Gangwar & Ramakrishnan 1989).
55.	<i>Baliospermum calycinum</i> var. <i>micranthum</i> (Müll. Arg.) Chakrab. and N.P. Balakr. (Euphorbiaceae)	<i>Baliospermum calycinum</i> var. <i>micranthum</i> (Müll. Arg.) Chakrab. and N.P. Balakr.	<i>Gilagal</i>	Shrub	Whole plant	Gastric problem, jaundice, asthma, snakebite, Gout, rheumatism and toothache (Balkrishna et al. 2021).

56.	<i>Baliospermum solanifolium</i> (Burm.) Suresh (Euphorbiaceae)	<i>Baliospermum solanifolium</i> (Burm.) Suresh	<i>Tapiosen</i>	Shrub	Endosperm	Indigestion (Gangwar & Ramakrishnan 1989)
57.	<i>Bambusa balcooa</i> Roxb. (Poaceae)	<i>Bambusa balcooa</i> Roxb.	<i>Tepnudu, Tadi nudu</i>	Bamboo	Culm	Wound and abortion (Bora 2001, Toku et al. 2021).
58.	<i>Bambusa tulda</i> Roxb. (Poaceae)	<i>Bambusa tulda</i> Roxb.	-	Bamboo	Leaf	Mensural pain and intestinal worm (Bora 2001, Toku et al. 2021).
59.	<i>Basella alba</i> L. (Basellaceae)	<i>Basella alba</i> L.	<i>Hunkey</i>	Climber	Leaf	Constipation and burn injury (Bora 2001, Toku et al. 2021).
60.	<i>Bauhinia purpurea</i> L. (Fabaceae)	<i>Bauhinia purpurea</i> L.	<i>Gai seen</i>	Tree	Bark, Root, Flower	Abcesses and constipation (Bora 2001).
61.	<i>Bauhinia variegata</i> L. (Fabaceae)	<i>Bauhinia variegata</i> Linnaeus	<i>Pachaum</i>	Tree	Leaf	Liver disorder, chest pain and rheumatism (Jeri et al. 2011).
					Whole plant	Snakebite, piles, dysentery, diarrhoea, scrofula, ulcer, skin diseases and dyspepsia (Balkrishna et al. 2021).
62.	<i>Begonia picta</i> Sm. (Begoniaceae)	<i>Begonia obversa</i> C.B. Clarke,	<i>Baya, Babarai</i>	Herb	Leaf, petiole	Itching, cold and fever (Srivastava and Nyishi 2010).
63.	<i>Begonia palmata</i> D. Don (Begoniaceae)	<i>Begonia palmata</i> D. Don	<i>Bikku yulu, Bayia</i>	Herb	Stem	Cough and cold (Srivastava and Nyishi 2010).
					Root	Diarrhoea and dysentery (Murtem and Chaudhry 2016).
64.	<i>Begonia roxburghii</i> (Miq.) A. DC. (Begoniaceae)	<i>Begonia roxburghii</i> A. DC.	<i>Boku yulu, Baya, Babarai</i>	Herb	Leaf, petiole	Wound, boils & sores, stomachache and indigestion (Jeri et al. 2011).
					Leaf, stem	Stomach ache (Tangjang et al. 2011).
					Root, petiole, leaf	Malaria and itching (Srivastava and Nyishi 2010).
65.	<i>Benincasa hispida</i> (Thunb.) Cogn. (Cucurbitaceae)	<i>Benincasa hispida</i> (Thunb.) Cogn.	<i>Turutap</i>	Climber	Fruit	Chronic dysentery (Bora 2001).
66.	<i>Berberis wallichiana</i> DC. (Berberidaceae)	<i>Berberis wallichiana</i> DC.	<i>Madrak</i>	Shrub	Root bark	Pain reliever on swollen body parts (Srivastava and Nyishi 2010).
67.	<i>Blechnum orientale</i> L. (Aspleniaceae)	<i>Blechnum orientale</i> L.	<i>Lichalana</i>	Herb	Leaf, rhizome	Cut and wound (Srivastava and Nyishi 2010).
					Leaf, Rhizome	Cut and wound, menstrual disorder, stomachache and skin diseases (Srivastava & Nyishi 2010).
68.	<i>Bombax ceiba</i> L. (Malvaceae)	<i>Bombax ceiba</i> L.	<i>Phuncha wng</i>	Tree	Root, bark, leaf, gall	Snakebite and diarrhoea (Balkrishna et al. 2021).
69.	<i>Bonnaya ruellioides</i> (Colsm.) Spreng. (Linderniaceae)	<i>Bonnaya ruellioides</i> (Colsm.) Spreng.	-	Herb	Leaf	Urinary troubles, snakebite, dysentery, boil, jaundice, bruise and wound (Balkrishna et al. 2021).
70.	<i>Brassica rapa</i> L.	<i>Brassica</i>	<i>Horyo</i>	Herb	Seed	Used for various ailment

	(Brassicaceae)	<i>campestris</i> Linn.				(Murtem and Chaudhry 2016).
71.	<i>Brassica nigra</i> (L.) W.D.J.Koch (Brassicaceae)	<i>Brassica nigra</i> (L.) K.Koch	-	Herb	Leaf, seed	Skin disease, itching on the skin and fever (Balkrishna et al. 2021).
72.	<i>Bistorta officinalis</i> Delarbre (Polygonaceae)	<i>Bistorta officinalis</i> Delarbre	-	Herb	Whole plant	Indigestion and dysentery in cattle (Bora 2001).
73.	<i>Brassaiopsis glomerulata</i> (Blume) Regel (Araliaceae)	<i>Brassaiopsis speciosa</i> Decne & Planch.; <i>Brassaiopsis glomerulata</i> Kuntze	Tago	Tree	Leaf	Diarrhoea, stomachache and throat pain (Srivastava and Nyishi 2010).
					Fruit	Cough, skin eruption and abscesses (Srivastava and Nyishi 2010).
					Fruit	Skin eruption (Murtem and Chaudhry 2016).
74.	<i>Bridelia retusa</i> (L.) A.Juss. (Phyllanthaceae)	<i>Bridelia retusa</i> (L.) A.Juss.	-	Tree	Root, bark	Rheumatism (Balkrishna et al. 2021).
75.	<i>Blumea lacera</i> (Burm.f.) DC. (Asteraceae)	<i>Blumea lacera</i> (Burm.f.) DC.	Tagungke khi	Herb	Root	Blood dysentery (Bora 2001).
76.	<i>Buddleja asiatica</i> Lour. (Scrophulariaceae)	<i>Buddleja asiatica</i> Lour.	Sailrial, Serial	Shrub	Flower	Sinus (Murtem and Chaudhry 2016).
					Leaf	Inflammation (Balkrishna et al. 2021).
77.	<i>Calamus floribundus</i> Griff. (Arecaceae)	<i>Calamus floribundus</i> Griff.	-	Climber	Stem	Abortion, skin diseases, scorpion sting, toothache (Bora 2001).
78.	<i>Callicarpa arborea</i> Roxb. (Lamiaceae)	<i>Callicarpa arborea</i> Roxb.	Yaal Schein, Tato, Yalu, Yahorin, Hnahkiah	Tree	Bark	Toothache and skin problems (Murtem and Chaudhry 2016).
					Leaf, bark	Skin diseases, stomachache and toothache (Balkrishna et al. 2021).
79.	<i>Calotropis gigantea</i> (L.) W.T.Aiton (Apocynaceae)	<i>Calotropis gigantea</i> (L.) Dryland.	Akon-Asing	Shrub	Root, flower	Dog bites (Murtem and Chaudhry 2016).
80.	<i>Calotropis procera</i> (Aiton) W.T.Aiton (Apocynaceae)	<i>Calotropis procera</i> Br.	Akon Asing	Shrub	Leaf	Dysentery, pain and burn (Murtem and Chaudhry 2016).
81.	<i>Camonea umbellata</i> (L.) A.R.Simoes and Staples (Convolvulaceae)	<i>Camonea umbellata</i> (L.) A.R.Simoes and Staples	-	Climber	Whole plant, seed	Skin disease and fistula (Balkrishna et al. 2021).
82.	<i>Canarium strictum</i> Roxb. (Burseraceae)	<i>Canarium strictum</i> Roxb.	Shellum, Singlu	Tree	Bark	Insect bite (Srivastava and Nyishi 2010).
					Bark	Insect bites (Murtem and Chaudhry 2016).
83.	<i>Canarium bengalense</i> Roxb. (Burseraceae)	<i>Canarium bengalense</i> Roxb.	Sulum seen	Tree	Oleoresin	Mosquito repellent for livestock (Murtem and Chaudhry 2016).  Chichen related diseases (Bora 2001).
84.	<i>Cannabis sativa</i> L.	<i>Cannabis</i>	Bhang	Herb	Leaf	Ringworm, flatulence and



	(Cannabaceae)	<i>sativa</i> L.				indigestion in livestock (Murtem and Chaudhry 2016).
					Leaf	Pain and fever (Balkrishna et al. 2021).
85.	<i>Capsicum frutescens</i> L. (Solanaceae)	<i>Capsicum frutescens</i> L.	<i>Yandik</i>	Herb	Leaf, Flower	Ulcers (Bora 2001).
86.	<i>Carallia brachiata</i> (Lour.) Merr. (Rhizophoraceae)	<i>Carallia brachiata</i> (Lour.) Merr.	<i>Bunkey tanam</i>	Tree	Flower	Ulcer (Bora 2001).
87.	<i>Cardiospermum halicacabum</i> L. (Sapindaceae)	<i>Cardiospermum halicacabum</i> L.	<i>Naye</i>	Climber	Leaf	Body pain (Bora 2001).
88.	<i>Cardamine hirsuta</i> L. (Brassicaceae)	<i>Cardamine hirsuta</i> L.	<i>Soram guyi</i>	Herb	Leaf	Liver disorder, chest pain, cough, toothache, cut and wound (Jeri et al. 2011).
89.	<i>Carex cruciata</i> Wahlenb. (Cyperaceae)	<i>Carex cruciata</i> Nees ex Wight	-	Herb	Seed	Wound (Srivastava and Nyishi 2010).
90.	<i>Carica papaya</i> L. (Caricaceae)	<i>Carica papaya</i> L.	<i>Omita shein, Omita, Thingfang hna</i>	Tree	Flower, fruit	Improve hearing capacity and increase lactation (Srivastava and Nyishi 2010).
					Fruit	Stomach problem (Murtem and Chaudhry 2016).
					Fruit, seed	Indigestion, constipation, worm infection and skin disease (Balkrishna et al. 2021).
91.	<i>Carlemania griffithii</i> Benth.**(Rubiaceae)	<i>Carlemania griffithii</i> Benth.	<i>Hamka</i>	Herb	Whole plant	Cough (Srivastava and Nyishi 2010).
92.	<i>Caryota urens</i> L. (Arecaceae)	<i>Caryota urens</i> L.	<i>Meihle, Tum</i>	Tree	Nut	Pain and migraine (Balkrishna et al. 2021).
93.	<i>Casearia vareca</i> Roxb. (Salicaceae)	<i>Casearia vareca</i> Roxb.	<i>Nelochan g</i>	Shrub	Fruit	Intestine parasites and earache (Srivastava and Nyishi 2010).
94.	<i>Cassia fistula</i> L. (Fabaceae)	<i>Cassia fistula</i> L.	<i>Tuluk shein</i>	Tree	Fruit	Constipation (Murtem and Chaudhry 2016).
95.	<i>Causonis trifolia</i> (L.) Mabb. and J.Wen (Vitaceae)	<i>Causonis trifolia</i> (L.) Mabb. and J.Wen	-	Climber	Stem, fruit	Fever and ulcer (Balkrishna et al. 2021).
96.	<i>Centella asiatica</i> (L.) Urb. (Apiaceae)	<i>Centella asiatica</i> (L.)	<i>Nguri, Bodo, Aghinya, Hanbial, Lambak</i>	Herb	Leaf, stem	Brain numbness and body ache (Jeri et al. 2011).
					Leaf	Leprosy, tuberculosis and asthma (Khongsai et al. 2011).
					Leaf	Stomach trouble and brain tonic (Murtem and Chaudhry 2016).
					Whole plant	Blood purifier, gastric, abdominal pain, constipation, digestion and appetite (Srivastava and Nyishi 2010).
					Whole plant	Bodyache and numbness (Balkrishna et al. 2021).

97.	<i>Celosia argentea</i> L. (Amaranthaceae)	<i>Celosia argentea</i> L.	-	Shrub	Flower, seed	Dysentery, cough, diarrhoea and menstrual problem (Balkrishna et al. 2021).
98.	<i>Cissus quadrangularis</i> L. (Vitaceae)	<i>Cissus quadrangularis</i> L.	Saru	Herb	Leaf, young shoot	Menstrual disorder and earache (Srivastava & Nyishi 2010).
99.	<i>Coccinia grandis</i> (L.) Voigt (Cucurbitaceae)	<i>Coccinia grandis</i> (L.) Voigt	Egendu	Climber	Root, leaf, Bark	Diabetes (Balkrishna et al. 2021). Diabetes, gonorrhoea and cathartic (Bora 2001).
100.	<i>Coriandrum sativum</i> L. (Apiaceae)	<i>Coriandrum sativum</i> L.	Dhaniya	Herb	Leaf, seed	Tuberculosis, bleeding of the gums, scabies, ophthalmalgia, jaundice and toothache (Balkrishna et al. 2021).
101.	<i>Chenopodium album</i> L. (Amaranthaceae)	<i>Chenopodium album</i> L.	Tai	Herb	Seed, leaf Leaf	Indigestion, lack of appetite and debility (Jeri et al. 2011). Piles and worm infestation (Balkrishna et al. 2021).
102.	<i>Choerospondias axillaris</i> (Roxb.) B.L.Burt & A.W.Hill (Anacardiaceae)	<i>Spondias axillaris</i> Roxb.	Gocham, Paka kat	Shrub	Leaf Fruit	Diarrhoea, cough, liver disorder and inflamed skin. Chest pain, constipation and circulation problem (Jeri et al. 2011).
103.	<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob. (Asteraceae)	<i>Chromolaena odorata</i> (L.) King & Rob.	Gocham Nemi, Telimbabo	Shrub	Leaf	Wound infested by worms in livestock (Murtem and Chaudhry 2016). Wound (Balkrishna et al. 2021).
104.	<i>Catharanthus roseus</i> (L.) G. Don (Apocynaceae)	<i>Catharanthus roseus</i> (L.) G. Don	Kumtluang	Herb	Whole plant, leaf, flower	Cancer and diabetes (Balkrishna et al. 2021).
105.	<i>Celastrus paniculatus</i> Willd. (Celastraceae)	<i>Celastrus paniculatus</i> Willd.	-	Climber	Bark, seed	Rheumatism, fever and leprosy (Balkrishna et al. 2021).
106.	<i>Chloranthus elatior</i> Link (Chloranthaceae)	<i>Chloranthus elatior</i> Link	-	Herb	Root, leaf	Fever (Balkrishna et al. 2021).
107.	<i>Cinnamomum verum</i> J.Presl (Lauraceae)	<i>Cinnamomum zeylanicum</i> Breyer.	Dalchini	Tree	Bark	Oral infection (Murtem and Chaudhry 2016).
108.	<i>Cinnamomum tamala</i> (Buch.-Ham.) T. Nees and Eberm. (Lauraceae)	<i>Cinnamomum tamala</i> (Buch.-Ham.) T. Nees and Eberm.	Tezpata	Tree	Root, bark	Gonorrhoea, diabetes, cough, indigestion, scorpion bite, rheumatism and diarrhoea (Balkrishna et al. 2021).
109.	<i>Cissampelos pareira</i> L. (Menispermaceae)	<i>Cissampelos pareira</i> L.	-	Climber	Root, stem, leaf	Malaria, dyspepsia, diarrhoea, dropsy, stomach pain, urinary troubles, cough and snakebite (Balkrishna et al. 2021).
110.	<i>Cissus repens</i> Lam. (Vitaceae)	<i>Cissus repens</i> Lam.	-	Climber	Whole plant	Abscess and boil (Balkrishna et al. 2021).
111.	<i>Citrus medica</i> L. (Rutaceae)	<i>Citrus medica</i> L.	Narang, Jipin	Tree	Fruit, leaf Fruit	Indigestion, cardiotonic, epilepsy, convulsion, cough and hair vitalizer (Khongsai et al. 2011). Scurvy, heatstroke and dysentery (Balkrishna et al. 2021).
112.	<i>Citrullus colocynthis</i> (L.) Schrad.	<i>Citrullus colocynthis</i> (L.) Schrad.	Turomturi	Climber	Seed, Root	Abortion and urinary problem (Bora 2001).

	(Cucurbitaceae)					
113.	<i>Citrus sinensis</i> (L.) Osbeck (Rutaceae)	<i>Citrus sinensis</i> (L.) Osbeck	<i>Serthlum</i>	Tree	Fruit	Scurvy and heatstroke (Balkrishna et al. 2021).
114.	<i>Clerodendrum infortunatum</i> L. (Lamiaceae)	<i>Clerodendrum infortunatum</i> L.; <i>Clerodendron venosum</i> Vent.		Shrub	Leaf	High blood pressure (Tangjang et al. 2011).
					Root, leaf	Skin diseases and tumours (Balkrishna et al. 2021).
					Leaf	Body ache (Tangjang et al. 2011).
115.	<i>Clerodendrum colebrookeanum</i> Walp. (Lamiaceae)	<i>Clerodendrum colebrookeanum</i> Walp.	<i>Tippin, Tappin, Potto, Poto, Ongin, Oen, Tapin, Phuihnam</i>	Shrub	Tender Leaf	High blood pressure, liver pain, insomnia, dysentery, diarrhoea and cough (Jeri et al. 2011).
					Leaf	High blood pressure, diarrhoea, dysentery, insomnia and diabetes (Balkrishna et al. 2021).
					Leaf	High blood pressure and stomach trouble (Murtem and Chaudhry 2016, Khongsai et al. 2011).
116.	<i>Cleome viscosa</i> L. (Cleomaceae)	<i>Cleome viscosa</i> L.	-	Herb	Root, leaf, seed	Malarial fever, Gonorrhoea fever, skin diseases, fever, headache and rheumatism (Balkrishna et al. 2021).
117.	<i>Clematis gouriana</i> Roxb. ex DC. (Ranunculaceae)	<i>Clematis gouriana</i> Roxb. ex DC.	-	Climber	Leaf	Skin disorder (Balkrishna et al. 2021).
118.	<i>Coelogyne punctulata</i> Lindl. (Orchidaceae)	<i>Coelogyne punctulata</i> Lindl.	<i>Tikhit</i>	Herb	Pseudo-bulb	Burn injury (Srivastava and Nyishi 2010).
119.	<i>Coix lacryma-jobi</i> L. (Poaceae)	<i>Coix lacryma-jobi</i> L.	<i>Tangek</i>	Herb	Grain	Low vitamins, fats, carbohydrates and calcium supplements (Jeri et al. 2011).
120.	<i>Colocasia affinis</i> Schott (Araceae)	<i>Colocasia affinis</i> Schott.	<i>Maksar, Jangli Kachu</i>	Herb	Spathe, inflorescence, leaf	Cough, fever, tuberculosis and itching (Srivastava and Nyishi 2010).
121.	<i>Colocasia esculenta</i> (L.) Schott (Araceae)	<i>Colocasia esculenta</i> (L.) Schott; <i>Colocasia antiquorum</i> Schott Melet	<i>Takche Reba, Engngepop, Bal, Dawl</i>	Herb	Leaf, rhizome	Indigestion, lack of appetite and constipation (Jeri et al. 2011).
					Leaf, stem	Anti-allergic (Tangjang et al. 2011)
					Bark	Cut and wound in pig (Murtem and Chaudhry 2016).
					Rhizome, leaf	Cough, constipation, appetite and indigestion (Balkrishna et al. 2021).
122.	<i>Colocasia sp.</i> (Araceae)	<i>Colocasia sp.</i>	Yengin	Herb	Rhizome	Cut (Bora 2001).
123.	<i>Coniogramme fraxinea</i> (D.Don) Fee Diels (Pteridaceae)	<i>Coniogramme fraxinea</i> (D.Don) Fee ex Diels	--	Herb	Leaf	Burn injury (Srivastava and Nyishi 2010).
124.	<i>Crinum asiaticum</i> L. (Amaryllidaceae)	<i>Crinum asiaticum</i> L.	-	Herb	Tuber	Tumour, urinary discharge, vomiting and snakebite (Balkrishna et al. 2021).



125.	<i>Crotalaria retusa</i> L. (Fabaceae)	<i>Crotalaria retusa</i> L.	-	Shrub	Leaf	Scabies and fever (Balkrishna et al. 2021).
126.	<i>Coptis teeta</i> Wall. (Ranunculaceae)	<i>Coptis teeta</i> Wall.	Rinke, Rinko	Herb	Rhizome	Eye diseases, appetizers, indigestion, anti-inflammatory and skin disorders (Tripathi et al. 2017).
					Rhizome	Tonic, fever, headache and gastric (Srivastava and Nyishi 2010).
					Whole plant	Diarrhoea, dysentery and fever (Murtem and Choudhary 2016).
127.	<i>Corylus avellana</i> L. (Betulaceae)	<i>Corylus avellana</i> L.	Taying	Shrub	Whole plant	Dysentery (Srivastava and Nyishi 2010).
128.	<i>Croton sp.</i> (Euphorbiaceae)	<i>Croton sp.</i>	Tai sen	Shrub	Latex	Skin diseases (Gangwar & Ramakrishnan 1989).
129.	<i>Commelina benghalensis</i> L. (Commelinaceae)	<i>Commelina benghalensis</i> L.	-	Herb	Leaf	Leprosy (Balkrishna et al. 2021).
130.	<i>Crassocephalum crepidioides</i> (Benth.) S.Moore (Asteraceae)	<i>Crassocephalum crepidioides</i> (Benth.) S.Moore	Yamen	Herb	Leaf	Constipation, chest pain, liver disorder and difficulty in delivery (Jeri et al. 2011).
					Leaf	Injury and wound (Murtem and Chaudhry 2016).
					Leaf	Headache, pain, Cut and wound (Balkrishna et al. 2021).
131.	<i>Crateva magna</i> (Lour.) DC. (Capparaceae)	<i>Crateva magna</i> (Lour.) DC.	-	Tree	Bark	Constipation, arthritis and urinary troubles (Balkrishna et al. 2021).
132.	<i>Cucumis melo</i> L. (Cucurbitaceae)	<i>Cucumis melo</i> Linnaeus	Meble	Herb	Fruit, leaf	Laxative, digestive and thirst quencher (Jeri et al. 2011).
133.	<i>Cucumis sativus</i> L. (Cucurbitaceae)	<i>Cucumis sativa</i> Linnaeus	Fanghma, Mukku, Muku	Climber	Fruit, leaf	Thirst quencher and laxative (Jeri et al. 2011).
					Fruit	Digestion (Murtem and Chaudhry 2016).
					Fruit	Cardiac disorder, constipation and thirst (Balkrishna et al. 2021).
134.	<i>Cucurbita maxima</i> Duchesne (Cucurbitaceae)	<i>Cucurbita maxima</i> Duchesne	Tapp, Mai	Climber	Fruit, leaf	Anti-inflammatory, digestive and laxative (Jeri et al. 2011).
					Fruit	Constipation and ringworm (Balkrishna et al. 2021).
135.	<i>Curcuma amada</i> Roxb. (Zingiberaceae)	<i>Curcuma amada</i> L.	-	Herb	Rhizome	Indigestion and liver disorders (Tripathi et al. 2017).
136.	<i>Curcuma longa</i> L. (Zingiberaceae)	<i>Curcuma longa</i> L.	Kaya Haldi	Herb	Rhizome	Fracture and pain reliever (Murtem and Chaudhry 2016).
137.	<i>Curcuma aromatica</i> Salisb.* (Zingiberaceae)	<i>Curcuma aromatica</i>	Haldi	Herb	Rhizome	Cough and cold (Murtem and Chaudhry 2016).
138.	<i>Curcuma caesia</i> Roxb. (Zingiberaceae)	<i>Curcuma caesia</i> Roxb.	Turom	Herb	Rhizome	Dysentery of cattle (Bora 2001).
139.	<i>Cuscuta reflexa</i> Roxb.	<i>Cuscuta reflexa</i> Roxb.	Mikyot	Stem parasite	Stem	Treating unhealthy hair (Bora 2001).

	(Convolvulaceae)					
140.	<i>Cyanthillium cinereum</i> (L.) H. Rob. (Asteraceae)	<i>Cyanthillium cinereum</i> (L.) H. Rob.	-	Herb	Whole plant, leaf, seed	Skin diseases, leukoderma, worm infestation and cough (Balkrishna et al. 2021).
141.	<i>Cymbopogon nardus</i> (L.) Rendle (Poaceae)	<i>Cymbopogon nardus</i> (L.) Rendle	-	Herb	Whole plant	Indigestion (Balkrishna et al. 2021).
142.	<i>Cynodon dactylon</i> (L.) Pers. (Poaceae)	<i>Cynodon dactylon</i> Pers.	<i>Meedira Tasha, Phaitualh nim</i>	Herb	Whole plant	Regular mensuration and headache (Srivastava and Nyishi 2010).
					Whole plant	Cut, wound and piles (Balkrishna et al. 2021).
143.	<i>Cyperus rotundus</i> L. (Cyperaceae)	<i>Cyperus rotundus</i> L.	<i>Notke</i>	Herb	Tuber	Check poor milk flow (Bora 2001).
144.	<i>Dactyloctenium aegyptium</i> (L.) Willd. (Poaceae)	<i>Dactyloctenium aegyptium</i> (L.) Willd.	<i>Sayong</i>	Herb	Culm	Asthma, cure fracture (Bora 2001).
145.	<i>Dalbergia pinnata</i> (Lour.) Prain (Fabaceae)	<i>Dalbergia pinnata</i> (Lour.) Prain Syn.	<i>Seda Nyi</i>	Climber	Leaf	Cut and wound (Murtem and Chaudhry 2016).
					Leaf	Wound, cut and worm infestation (Balkrishna et al. 2021).
146.	<i>Dalbergia lanceolaria</i> L.f. (Fabaceae)	<i>Dalbergia lanceolaria</i> L.f.	-	Tree	Bark	Rheumatism and dyspepsia (Balkrishna et al. 2021).
147.	<i>Datura metel</i> L. (Solanaceae)	<i>Datura metel</i> L.	<i>Tuppu Uppu</i>	Herb	Root, leaf	Asthma, rheumatism, cough, blisters and cerebral complaints (Tripathi et al. 2017).
					Leaf, seed	Headache, worms and cattle wound (Murtem and Chaudhry 2016).
148.	<i>Datura stramonium</i> L. (Solanaceae)	<i>Datura stramonium</i> L.	<i>Ogik</i>	Herb	Root, Leaf and Fruit	Toothache, swelling and pain (Bora 2001).
149.	<i>Debregeasia longifolia</i> (Burm.f.) Wedd. (Urticaceae)	<i>Debregeasia longifolia</i> (Burm.f.) Wedd.	-	Shrub	Fruit, leaf	Scabies and rheumatism (Balkrishna et al. 2021).
150.	<i>Dendrocalamus giganteus</i> Munro (Poaceae)	<i>Dendrocalamus giganteus</i> Wallich ex Munro	<i>Eeh Hiku</i>	Bamboo	Young shoot	Low blood pressure, constipation, indigestion and chest pain (Jeri et al. 2011; Balkrishna et al. 2021).
151.	<i>Dendrocalamus strictus</i> (Roxb.) Nees (Poaceae)	<i>Bambusa stricta</i> Roxburgh	<i>Eh here</i>	Bamboo	Young shoot	Chest pain, indigestion, constipation and low blood pressure (Jeri et al. 2011).
					Young shoot	Low blood pressure (Balkrishna et al. 2021).
152.	<i>Dendrocnide sinuata</i> (Blume) Chew (Urticaceae)	<i>Dendrocnide sinuata</i> (Blume) Chew	<i>Podret, Pudrangt a</i>	Shrub	Root, leaf	Swollen muscles, injury and itching, fever and malaria (Srivastava and Nyishi 2010).
153.	<i>Dendrophthoe falcata</i> (L.f.) Ettingsh. (Loranthaceae)	<i>Dendrophthoe falcata</i> (L.f.) Ettingsh.	<i>Joro</i>	Shrub	Bark	Wound (Bora 2001).
154.	<i>Desmostachya bipinnata</i> (L.) Stapf (Poaceae)	<i>Desmostachya bipinnata</i> (L.) Stapf	-	Herb	Whole plant	Jaundice and asthma (Balkrishna et al. 2021).

155.	<i>Dillenia indica</i> L. (Dilleniaceae)	<i>Dillenia indica</i> L.	<i>Jampa, Champak, Outenga, Kawrthin deng</i>	Tree	Acrescent calyx	Indigestion, liver disorder and stomachache (Jeri et al. 2011).
					Fruit	Cough, fever, weakness and digestion (Khongsai et al. 2011).
					Fruit	Stomachache (Srivastava and Nyishi 2010).
					Fruit, leaf	Bone fracture, stomachache, wound, diarrhoea, indigestion, cough, fever, cancer and abdominal pain (Balkrishna et al. 2021).
					Fruit	Prevent hair fall (Murtem and Chaudhry 2016).
156.	<i>Dimetia scandens</i> (Roxb.) R.J.Wang (Rubiaceae)	<i>Dimetia scandens</i> (Roxb.) R.J.Wang ; <i>Hedyotis scandens</i> Roxb.	<i>Hylibi, Reekhing</i>	Climber	Root	Pain and sprain (Balkrishna et al. 2021).
					Stem	Toothache and conjunctivitis (Srivastava and Nyishi 2010).
					Root	Stomach pain (Murtem and Chaudhry 2016).
157.	<i>Dioscorea alata</i> L. (Dioscoreaceae)	<i>Dioscorea alata</i> L.	<i>Bachin, Egin nginek, Egin nginek</i>	Climber	Tuber	Laxative, stimulant and asthma (Jeri et al. 2011).
					Tuber	Gonorrhoea, asthma, constipation, piles and leprosy (Balkrishna et al. 2021).
158.	<i>Dioscorea belophylla</i> (Prain) Voigt ex Haines (Dioscoreaceae)	<i>Dioscorea belophylla</i> (Prain) Voigt ex Haines	-	Climber	Tuber	Tubers powders with water are used in ulcers, malaria, headache and fever (Srivastava and Nyishi 2010).
					Tuber	Headache, fever, ulcer and malaria (Tripathi et al. 2017).
159.	<i>Dioscorea bulbifera</i> L. (Dioscoreaceae)	<i>Dioscorea bulbifera</i> L.	-	Climber	Tuber	Loose motion (Jayaprakash et al. 2017).
					Tuber	Dysentery and relief burning sensation (Srivastava and Nyishi 2010).
160.	<i>Dioscorea pentaphylla</i> L. (Dioscoreaceae)	<i>Dioscorea pentaphylla</i> L.	-	Climber	Tuber	Swelling (Balkrishna et al. 2021).
161.	<i>Dioscorea deltoidea</i> Wall. ex Griseb. (Dioscoreaceae)	<i>Dioscorea deltoidea</i> Wallich	<i>Egin nginte</i>	Climber	Tuber	Laxative, indigestion and fatigue (Jeri et al. 2011).
					Tuber, leaf, stem	Rheumatism, indigestion and constipation (Balkrishna et al. 2021).
162.	<i>Diplazium esculentum</i> (Retz.) Sw. (Aspleniaceae)	<i>Diplazium esculentum</i> Swartz	<i>Taka peya, Hokapad ma</i>	Herb	Tender leaf	Liver disorder, alcohol addiction and indigestion (Jeri et al. 2011).
163.	<i>Dracaena angustifolia</i> (Medik.) Roxb. (Asparagaceae)	<i>Dracaena angustifolia</i> (Medik.) Roxb.	<i>Aci Boki</i>	Shrub	Stem	Burning sensation during fever, menstrual cycle, haemorrhage (Bora 2001).
164.	<i>Drymaria cordata</i> (L.) Willd. Ex Schult. (Caryophyllaceae)	<i>Drymaria cordata</i> Willd. Ex R. & S.	<i>Ropsik-Romnik, Kadokaro, Sojang mariang</i>	Herb	Leaf	Skin disease, ringworm and sinus (Srivastava and Nyishi 2010).
					Leaf	Malaria, cold and jaundice (Balkrishna et al. 2021).



165.	<i>Drymaria diandra</i> Blume. (Caryophyllaceae)	<i>Drymaria diandra</i> Blume.	<i>Ropsik-Romnik</i>	Herb	Leaf	Skin diseases (Murtem and Chaudhry 2016).
166.	<i>Dysoxylum gotadhora</i> (Buch.-Ham.) Mabb. (Meliaceae)	<i>Dysoxylum gotadhora</i> (Buch.-Ham.) Mabb.	<i>Tayop seen</i>	Tree	Seed	Leprosy (Bora 2001).
167.	<i>Dysphania ambrosioides</i> (L.) Mosyakin & Clemants (Amaranthaceae)	<i>Chenopodium ambrosioides</i> Linnaeus	<i>Teya</i>	Herb	Leaf	Toothache (Murtem and Chaudhry 2016).
168.	<i>Elaeocarpus serratus</i> L. (Elaeocarpaceae)	<i>Elaeocarpus sphericus</i> (Gaertn) Schum.	-	Tree	Seed, leaf	Hypertension (Tripathi et al. 2017).
169.	<i>Elaeocarpus angustifolius</i> Blume (Elaeocarpaceae)	<i>Elaeocarpus angustifolius</i> Blume	-	Tree	Leaf and seed	Hepertension (Tripathi et al. 2017).
170.	<i>Eclipta prostrata</i> (L.) L. (Asteraceae)	<i>Eclipta prostrata</i> (L.) L.	-	Herb	Whole plant	Jaundice, fever and headache (Balkrishna et al. 2021).
171.	<i>Elatostema platyphyllum</i> Wedd. (Urticaceae)	<i>Elatostema platyphyllum</i> Wedd.	<i>Hoj Ao, Huj</i>	Shrub	Root	Vomiting (Srivastava and Nyishi 2010; Murtem and Chaudhry 2016).
172.	<i>Eleusine coracana</i> (L.) Gaertn. (Poaceae)	<i>Eleusine coracana</i> (L.) Gaertner	<i>Teem</i>	Herb	Grain	Low vitamins, low stamina and iron deficiency (Jeri et al. 2011).
173.	<i>Eleusine indica</i> (L.) Gaertn. (Poaceae)	<i>Eleusine indica</i> (L.) Gaertn.	-	Herb	Whole plant	Liver problem (Balkrishna et al. 2021).
174.	<i>Embelia ribes</i> Burm. f. (Primulaceae)	<i>Embelia ribes</i> Burm. f.	-	Shrub	Fruit	Liver disorder (Tripathi et al. 2017).
					Root, fruit	Skin disease and fever (Balkrishna et al. 2021).
175.	<i>Emilia sonchifolia</i> (L.) DC. (Asteraceae)	<i>Emilia sonchifolia</i> DC.	<i>Genta Ao</i>	Herb	Leaf	Injury and wound (Murtem and Chaudhry 2016).
					Root, leaf	Night blindness, inflammation of the eyes and diarrhoea (Balkrishna et al. 2021).
176.	<i>Entada rheedei</i> Spreng. (Fabaceae)	<i>Entada purseatha</i> DC. Syn.	<i>Rich, Kawi</i>	Climber	Seed	Bone fracture (Srivastava and Nyishi 2010).
					Bark, seed	Ulcer and dysentery (Balkrishna et al. 2021).
					Stem, leaf	Bone fracture (Murtem and Chaudhry 2016).
177.	<i>Equisetum diffusum</i> D. Don (Equisetaceae)	<i>Equisetum diffusum</i> D. Don.	<i>Alak Allo</i>	Herb	Whole plant	Bone fracture (Murtem and Chaudhry 2016).
178.	<i>Equisetum giganteum</i> L. (Equisetaceae)	<i>Equisetum giganteum</i> L.	<i>Silum luming</i>	Herb	Rhizome	Dysentery, sprain and fractured bones (Bora 2001).
179.	<i>Eryngium foetidum</i> L. (Apiaceae)	<i>Eryngium foetidum</i> Forsk.	<i>Dhaniya pat</i>	Herb	Leaf, stem, seed	Headache and madness (Srivastava and Nyishi 2010).

					Leaf	Headache and appetizer (Murtem and Chaudhry 2016).
180.	<i>Erythrina stricts</i> Roxb. (Fabaceae)	<i>Erythrina stricts</i> Roxb.	Targa seen	Tree	Root, Bark	Gout and scorpion bite (Bora 2001, Perme et al. 2015).
181.	<i>Eriobotrya japonica</i> (Thunb.) Lindl. (Rosaceae)	<i>Eriobotrya japonica</i> (Thunb.) Lindl.	-	Tree	Leaf	Diarrhoea (Balkrishna et al. 2021).
182.	<i>Euphorbia tithymaloides</i> L. (Euphorbiaceae)	<i>Euphorbia tithymaloides</i> L.	-	Shrub	Stem	Wart, cutaneous infection (Bora 2001).
183.	<i>Euphorbia hirta</i> L. (Euphorbiaceae)	<i>Euphorbia hirta</i> L.	Laldodhi	Herb	Stem	Bronchial, asthma and stomach worm (Khongsai et al. 2011).
					Whole plant	Wart, asthma, cough, stomach problem and worm infection (Balkrishna et al. 2021).
184.	<i>Euphorbia nerifolia</i> L. (Euphorbiaceae)	<i>Euphorbia ligularia</i> Roxb.	Hiju	Tree	Stem	Stomach pain (Murtem and Chaudhry 2016).
185.	<i>Fagopyrum cymosum</i> (Trevir.) Meisn (Polygonaceae)	<i>Fagopyrum dibotrys</i> (D.Don) Trev.	-	Herb	Leaf	Appetizer, laxative and stomachache (Jeri et al. 2011).
186.	<i>Fagopyrum esculentum</i> Moench (Polygonaceae)	<i>Fagopyrum esculentum</i> Moench	Huku	Herb	Leaf	Appetizer, laxative and stomachache (Jeri et al. 2011).
187.	<i>Ficus semicordata</i> Buch.-Ham. ex Sm. (Moraceae)	<i>Ficus semicordata</i> Buchanon-Hamilton wx Smith	Tokuk, Theipui, Tokuk	Tree	Fruits	Indigestion, constipation, asthma and brain stimulant (Jeri et al. 2011).
					Bark, fruit	Hepatitis, asthma, constipation, indigestion and jaundice (Balkrishna et al. 2021).
188.	<i>Ficus religiosa</i> L. (Moraceae)	<i>Ficus religiosa</i> L.	-	Tree	Bark	Skin disease and ulcer (Balkrishna et al. 2021).
189.	<i>Ficus hispida</i> L. f. (Moraceae)	<i>Ficus hispida</i> L. f.	-	Tree	Bark, fruit, seed	Constipation (Balkrishna et al. 2021).
190.	<i>Ficus racemose</i> L. (Moraceae)	<i>Ficus racemose</i> L.	-	Tree	Flower, Leaf and Root	Indigestion in cattle, dysentery (Bora 2001).
191.	<i>Ficus squamosa</i> Roxb. (Moraceae)	<i>Ficus saemocarpa</i> Miq. Or <i>Ficus squamosa</i> Roxb.	Talagi, Talasi	Tree	Latex	Warts and pimple (Srivastava and Nyishi 2010).
					Latex	Pimple (Murtem and Chaudhry 2016).
192.	<i>Garcinia pedunculata</i> Roxb. ex Buch.-Ham. (Clusiaceae)	<i>Garcinia pedunculata</i> Roxb.	Bua, Mibia, Meba	Tree	Fruit	Dysentery (Kar and Borthakur 2008).
					Fruit	Dysentery and cough (Srivastava and Nyishi 2010).
					Leaf	Dysentery and cough (Murtem and Chaudhry 2016).
					Leaf	Dysentery and diarrhoea (Balkrishna et al. 2021).
193.	<i>Piloselloides hirsuta</i> (Forssk.) C.Jeffrey ex	<i>Gerbera piloselloides</i> (L.)	Pangnesir	Herb	Leaf	Rheumatic pain (Murtem and Chaudhry 2016).

204.	<i>Hibiscus rosa-sinensis</i> L. (Malvaceae)	<i>Hibiscus rosa-sinensis</i> L.	Bat, Chinnpan g-par.	Shrub	Flower, leaf	Dandruff, hair tonic and fever (Srivastava and Nyishi 2010).
					Leaf, flower	Constipation (Balkrishna et al. 2021).
205.	<i>Hiptage benghalensis</i> (L.) Kurz (Malpighiaceae)	<i>Hiptage benghalensis</i> (L.) Kurz	-	Shrub	Leaf, bark	Leprosy and skin disease (Balkrishna et al. 2021).
206.	<i>Hodgsonia macrocarpa</i> (Blume) Cogn. (Cucurbitaceae)	<i>Hodgsonia macrocarpa</i> (Blume) Cogn.	Khaum	Climber	Leaf, seed, oil	Gynaecological disorder and dysentery (Balkrishna et al. 2021).
207.	<i>Holarrhena pubescens</i> Wall. ex G.Don. (Apocynaceae)	<i>Holarrhena antidysenterica</i> (Roth) Wall. ex A.DC.	-	Shrub	Bark, fruit	Dysentery, colic, dyspepsia, piles, skin diseases and spleen (Tripathi et al. 2017).
208.	<i>Homalomena aromatica</i> (Spreng.) Schott (Araceae)	<i>Homalomena aromatica</i> L.	Eng Namnen	Herb	Rhizome	Diabetes (Murtem and Chaudhry 2016).
209.	<i>Houttuynia cordata</i> Thunb. (Saururaceae)	<i>Houttuynia cordata</i> Thunberg	Checha Peya, Hiya, Honya, Hongyea, Vaithinhang, Hiya	Herb	Stem, leaf	Insomnia, high blood pressure and diarrhoea (Jeri et al. 2011).
					Tender shoot, leaf, stem	Ulcer, bronchitis, pneumonia, skin trouble, diarrhoea, gonorrhoea, measles and dysentery (Balkrishna et al. 2021).
					Root	Appetite (Murtem and Chaudhry 2016).
210.	<i>Hydrocotyle javanica</i> Thunb. (Araliaceae)	<i>Hydrocotyle javanica</i> Thunb.; <i>Hydrocotyle podantha</i> Molck.	Barung	Herb	Leaf	Snake and scorpion bite (Murtem and Chaudhry 2016).
					Whole plant	Stomachache after delivery (Srivastava and Nyishi 2010).
					Whole plant	Appetite and jaundice (Srivastava and Nyishi 2010).
					Leaf	Indigestion, dysentery and nervousness (Balkrishna et al. 2021).
					Whole plant	Stomachache (Srivastava and Nyishi 2010).
211.	<i>Hydrocotyle sibthorpioides</i> Lam. (Araliaceae)	<i>Hydrocotyle sibthorpioides</i> Lamk.	Grang Kejong	Herb	Whole plant	Dysentery (Kar and Borthakur 2008).
212.	<i>Hyptis suaveolens</i> (L.) Poit. (Lamiaceae)	<i>Hyptis suaveolens</i> (L.) Poit.	-	Shrub	Leaf	Skin disease and wound (Balkrishna et al. 2021).
213.	<i>Impatiens balsamina</i> L. (Balsaminaceae)	<i>Impatiens balsamina</i> L.	Tankur	Herb	Leaf, Stem, Fruit	Scabies, fever (Bora 2001).
214.	<i>Impatiens latiflora</i> Hook.f. & Thomson (Balsaminaceae)	<i>Impatiens latiflora</i> Hook.f. & Thoms	Riong	Herb	Whole plant	Fever and headache (Srivastava and Nyishi 2010).
215.	<i>Impatiens tripetala</i> Roxb. ex DC. (Balsaminaceae)	<i>Impatiens tripetala</i> Roxb.	Leangm	Herb	Whole plant	Appetite (Srivastava and Nyishi 2010).
216.	<i>Indigofera</i>	<i>Indigofera</i>	Shob	Shrub	Root	Worm infested sores of

	<i>tinctoria</i> L. (Fabaceae)	<i>tinctoria</i> L.	<i>Setin</i>			livestock (Murtem and Chaudhry 2016).
217.	<i>Indofevillea khasiana</i> Chatterjee (Cucurbitaceae)	<i>Indofevillea khasiana</i> Chatterjee	<i>Yazang pipe</i>	Climber	Root, stem	Fever, headache, malaria and dysentery (Srivastava and Nyishi 2010).
218.	<i>Ipomoea batatas</i> (L.) Lam. (Convolvulaceae)	<i>Ipomoea batatas</i> (L.) Lamarck	<i>Egin pegri</i>	Herb	Tuber	Indigestion, lack of appetite and asthma (Jeri et al. 2011).
219.	<i>Ixora stenophylla</i> (Korth.) Kuntze (Rubiaceae)	<i>Ixora acuminata</i> Boerl.	<i>Oju, Dokmain</i>	Shrub	Leaf	Headache and cooling forehead (Srivastava and Nyishi 2010).
					Twig	Fever (Murtem and Chaudhry 2016).
220.	<i>Ixora thwaitesii</i> Hook.f. (Rubiaceae)	<i>Ixora thwaitesii</i> Hook.f.	Dokmain	Shrub	Leaf, Young shoot	Fever, headache (Murtem & Choudhry 2016, Srivastava & Nyishi 2010).
221.	<i>Jasminum nervosum</i> Lour. (Oleaceae)	<i>Jasminum nervosum</i> Lour.	<i>Hruikha</i>	Climber	Leaf	Diarrhoea and stomachache (Balkrishna et al. 2021).
222.	<i>Jasminum sambac</i> (L.) Aiton (Oleaceae)	<i>Jasminum sambac</i> (L.) Aiton	<i>Kebo maku</i>	Shrub	Flower	Abscesses formed post child birth (Bora 2001).
223.	<i>Jatropha curcas</i> L. (Euphorbiaceae)	<i>Jatropha curcas</i> L.	<i>Solung Schein, Kangdam dawi</i>	Shrub	Latex	Scabies (Murtem and Chaudhry 2016).
					Stem, fruit	Ringworm, eczema and constipation (Balkrishna et al. 2021).
224.	<i>Justicia adhatoda</i> L. (Acanthaceae)	<i>Adhatoda zeylanica</i> Medik.	<i>Basak</i>	Shrub	Leaf, root	Cough, cold and other bronchial troubles (Srivastava & Nyishi 2010).
					Leaf	Cough and cold (Murtem and Chaudhry 2016).
225.	<i>Justicia gendarussa</i> Burm.f. (Acanthaceae)	<i>Justicia gendarussa</i> Linn.	<i>Esh talo</i>	Shrub	Leaf	Bone fracture and muscle pain (Murtem and Chaudhry 2016).
226.	<i>Kalanchoe pinnata</i> (Lam.) Pers. (Crassulaceae)	<i>Kalanchoe pinnata</i> (Lam.) Pers.	-	Shrub	Whole plant	Scorpion-sting, snake-bite, vomiting, diarrhoea and inflammation (Balkrishna et al. 2021).
227.	<i>Kydia calycina</i> Roxb. (Malvaceae)	<i>Kydia calycina</i> Roxb.	-	Tree	Leaf	Body pain (Balkrishna et al. 2021).
228.	<i>Lactuca sativa</i> L. (Asteraceae)	<i>Lactuca sativa</i> L.	<i>Rabjap</i>	Herb	Leaf, fruit	Mild fever, cough, stomach pain, gas and liver disorder (Jeri et al. 2011).
229.	<i>Lagenaria siceraria</i> (Molina) Standl. (Cucurbitaceae)	<i>Lagenaria vulgaris</i> Seringe	<i>Opum ojuk</i>	Climber	Leaf, fruit	Asthma and joint pain (Jeri et al. 2011).
					Fruit	Constipation (Balkrishna et al. 2021).
230.	<i>Lagerstroemia speciosa</i> (L.) Pers. (Lythraceae)	<i>Lagerstroemia speciosa</i> (L.) Pers.	<i>Thlado</i>	Tree	Root, bark, leaf	Constipation, fever, jaundice and dysentery (Balkrishna et al. 2021).
231.	<i>Laggera rispate</i> (Vahl) Hepper & J.R.I. Wood (Asteraceae)	<i>Laggera pterodonta</i> (DC) Sch-Bip.Ex.Olive r	<i>Dindo eh</i>	Herb	Leaf	Inflammation and swelling (Murtem and Chaudhry 2016).
232.	<i>Lantana indica</i>	<i>Lantana</i>	-	Shrub	Leaf	Malaria, rheumatism and



	Roxb. (Verbenaceae)	<i>indica</i> Roxb.				tetanus (Balkrishna et al. 2021).
233.	<i>Lantana camara</i> L. (Verbenaceae)	<i>Lantana camara</i> L.	<i>Hlingpan g-par</i>	Shrub	Leaf	Swelling, ulcer and cut (Balkrishna et al. 2021).  Malaria (Bora 2001).
234.	<i>Laphangium luteoalbum</i> (L.) Tzvelev (Asteraceae)	<i>Laphangium luteoalbum</i> (L.) Tzvelev	-	Herb	Leaf	Fever (Balkrishna et al. 2021).
235.	<i>Leea compactiflora</i> Kurz (Vitaceae)	<i>Leea compactiflora</i> Kurz	<i>Neelan</i>	Shrub	Flower, berry	Snakebite and insect bite (Srivastava and Nyishi 2010).
236.	<i>Leea indica</i> (Burm. f.) Merr. (Vitaceae)	<i>Leea indica</i> (Burm. f.) Merr.	-	Shrub	Root	Dysentery and diarrhoea (Balkrishna et al. 2021).
237.	<i>Leucas zeylanica</i> (L.) W.T.Aiton (Lamiaceae)	<i>Leucas indica</i> (L.) Br.	-	Herb	Leaf	Nose bleeding, sinusitis, piles, digestion, snakebite and caterpillar bite (Tripathi et al. 2017).
238.	<i>Leucas aspera</i> (Willd.) Link (Lamiaceae)	<i>Leucas aspera</i> (Willd.) Link	Monom	Herb	Leaf	snakebite, skin eruptions, psoriasis and chronic rheumatism (Balkrishna et al. 2021).
					Young shoot, Leaf	Diarrhoea, nose bleeding (Bora 2001).
239.	<i>Leonurus glaucescens</i> Bunge (Lamiaceae)	<i>Leonurus glaucescens</i> Bunge	Monom	Herb	Young shoot, Leaf	Indigestion, poor appetite (Bora 2001).
240.	<i>Litsea cubeba</i> (Lour.) Pers. (Lauraceae)	<i>Litsea cubeba</i> (Lour.) Pers.	<i>Earking, Jayar</i>	Shrub	Fruit, leaf, seed	Blood dysentery, stomach trouble and fever, headache and worm infection (Srivastava and Nyishi 2010).
					Fruit	Loss of memory, bone fracture, paralysis, hysteria and headache (Balkrishna et al. 2021).
241.	<i>Litsea salicifolia</i> (J.Roxb. ex Nees) Hook. f. (Lauraceae)	<i>Litsea salicifolia</i> Hook.f.; <i>Litsea salicifolia</i> Roxb.	<i>Taor, Tanyik Sangne, Hara, Taor</i>	Tree	Bark	Bone fracture, boils and abscesses (Srivastava and Nyishi 2010).
					Bark	Bone fracture (Murtem and Chaudhry 2016).
242.	<i>Lobelia montana</i> Reinw. ex Blume (Campanulaceae)	<i>Lobelia montana</i> Reinwardt.	-	Herb	Leaf	Stomach pain (Murtem and Chaudhry 2016).
243.	<i>Lobelia nicotianifolia</i> Roth (Campanulaceae)	<i>Lobelia nicotianifolia</i> Roth ex Schult.	-	Herb	Leaf	Burning sensation, vaginal disorder, blood diseases and uterine disorder (Balkrishna et al. 2021).
244.	<i>Lonicera macrantha</i> (D. Don) Spreng. (Caprifoliaceae)	<i>Lonicera macrantha</i> (D. Don) Spreng.	<i>Leihruisen</i>	Climber	Leaf	Dysentery (Balkrishna et al. 2021).
245.	<i>Ludwigia octovalvis</i> (Jacq.) P.H. Raven (Onagraceae)	<i>Ludwigia octovalvis</i> (Jacq.) P.H. Raven	-	Herb	Whole plant	Wound, eczema and skin disease (Balkrishna et al. 2021).
246.	<i>Lycopodiella cernua</i> (L.)	<i>Lycopodiella cernua</i> (L.)	<i>Siruk</i>	Herb	Whole plant	Snake bite, menstrual problem, gout, rheumatism

	Pic.Serm. (Lycopodiaceae)	Pic. Serm.				(Bora 2001).
247.	<i>Macaranga denticulata</i> (Blume) Mull.Arg. (Euphorbiaceae)	<i>Macaranga denticulata</i> (Bl.) Muell.-Arg.	<i>Hara, Yaduk</i>	Tree	Leaf	Wound (Srivastava and Nyishi 2010).
					Whole plant	Abdominal pain and fungal infection (Balkrishna et al. 2021).
248.	<i>Machilus gamblei</i> King ex Hook.f. (Lauraceae)	<i>Machilus bombycine</i> King ex Hook.f.	<i>Yoko seen</i>	Tree	Fruit, Bark	Malaria, helminth infection (Bora 2001).
249.	<i>Macaranga peltata</i> (Roxb.) Mull.AArg. (Euphorbiaceae)	<i>Macaranga peltata</i> (Roxb.) Mull.AArg.	-	Tree	Gall	Skin disease (Balkrishna et al. 2021).
250.	<i>Maesa indica</i> (Roxb.) Sweet (Primulaceae)	<i>Maesa indica</i> Roxb.	<i>Chonium</i>	Shrub	Fruit	Decrease body temperature (Khongsai et al. 2011).
251.	<i>Maesa macrophylla</i> (Wall.) A.DC. (Primulaceae)	<i>Maesa macrophylla</i> C.B.Clarke	<i>Tak Sangne</i>	Shrub	Berries	Malaria fever (Srivastava and Nyishi 2010).
252.	<i>Maesa montana</i> A. DC. (Primulaceae)	<i>Maesa montana</i> A.DC.	<i>Surana</i>	Shrub	Leaf	Body pain (Srivastava and Nyishi 2010).
253.	<i>Magnolia champaca</i> (L.) Bail. ex Pierre (Magnoliaceae)	<i>Magnolia champaca</i> (L.) Bail. ex Pierre	<i>Salvo seen</i>	Tree	Fruit	Dysentery (Bora 2001).
254.	<i>Magnolia oblonga</i> (Wall. ex Hook.f. & Thomson) Figlar (Magnoliaceae)	<i>Magnolia oblonga</i> (Wall. ex Hook.f. & Thomson) Figlar	<i>Salvo seen</i>	Tree	Fruit	Dysentery (Bora 2001).
255.	<i>Mallotus paniculatus</i> (Lam.) Mull.Arg. (Euphorbiaceae)	<i>Mallotus paniculatus</i> (Lam.) Mull.Arg.	<i>Lokjok seen</i>	Tree	Bark, Leaf	Chronic stomach ache, dysentery (Bora 2001).
256.	<i>Malvastrum coromandelianum</i> (L.) Garcke (Malvaceae)	<i>Malvastrum coromandelianum</i> (L.) Garcke	-	Herb	Leaf	Wound (Balkrishna et al. 2021).
257.	<i>Mangifera indica</i> L. (Anacardiaceae)	<i>Mangifera indica</i> L.	<i>Theihai</i>	Tree	Bark, fruit, seed	Asthma, rheumatism and diphtheria (Balkrishna et al. 2021).
258.	<i>Mangifera sylvatica</i> Roxb. (Anacardiaceae)	<i>Mangifera sylvatica</i> Roxb.	<i>Monan seen</i>	Tree	Leaf	Indigestion (Bora 2001).
259.	<i>Manihot esculenta</i> Crantz (Euphorbiaceae)	<i>Manihot esculenta</i> Crantz	<i>Pangbal, Sin Eegin</i>	Shrub	Tuber	Indigestion and constipation (Jeri et al. 2011).
					Root, leaf	Skin disease, indigestion, constipation and headache (Balkrishna et al. 2021).
260.	<i>Mastersia assamica</i> Benth. (Fabaceae)	<i>Mastersia assamica</i> Benth.	<i>Rem, Rading</i>	Climber	Stem	Cut and wound (Srivastava and Nyishi 2010; Murtem and Chaudhry 2016).
261.	<i>Mazus pumilus</i> (Burm.f.) Steenis	<i>Mazus pumilus</i>	<i>Uy-Naan Ei</i>	Herb	Leaf	Cut, blood clotting (Murtem and Chaudhry 2016).

	(Mazaceae)	(Burm.f.) var steenisi				
262.	<i>Melia azedarach</i> L. (Meliaceae)	<i>Melia azedarach</i> L.	Tapa Tale	Tree	Leaf	Itching (Srivastava and Nyishi 2010).
					Bark	Skin disorder and worm infestation (Balkrishna et al. 2021).
					Bark	Burning sensation (Murtem and Chaudhry 2016).
263.	<i>Mesua ferrea</i> L. (Calophyllaceae)	<i>Mesua ferrea</i> L.	Hershe	Tree	Bark, leaf, flower, fruit, seed	Scabies, snakebite, dysentery and scorpion sting (Balkrishna et al. 2021).
264.	<i>Momordica charantia</i> L. (Cucurbitaceae)	<i>Momordica charantia</i> L.	Changkha , Khechak, Kerela	Climber	Leaf, fruit, seed	Dysmenorrhea, night blindness, diabetes, rheumatism and high blood pressure (Balkrishna et al. 2021).
					Fruit	Stomach disorder and blood pressure (Murtem and Chaudhry 2016).
265.	<i>Melastoma malabathricum</i> L. (Melastomataceae)	<i>Melastoma malabathricum</i> L.	Builukham	Shrub	Root, leaf	Toothache (Balkrishna et al. 2021).
					Stem, Leaf	Infected teeth, wound and cut (Bora 2001, Srivastava & Nyishi 2010).
266.	<i>Mentha<sup>x</sup> piperita</i> L. (Lamiaceae)	<i>Mentha piperita</i> Linn. Emend.Huds.	Pudina	Herb	Leaf	Gastric (Murtem and Chaudhry 2016).
267.	<i>Mentha arvensis</i> L. (Lamiaceae)		Anyup	Herb	Leaf	Cut, vomiting, diahorrea. Dysentery, stomach ache (Bora 2001, Perme et al. 2015)
268.	<i>Meyna spinosa</i> Roxb. ex Link (Rubiaceae)	<i>Meyna spinosa</i> Roxb. ex Link	Riling seen	Shrub	Leaf	Liver problem (Bora 2001).
269.	<i>Mezoneuron cucullatum</i> (Roxb.) Wight & Am. (Fabaceae)	<i>Mezoneuron cucullatum</i> (Roxb.) Wight & Am.	Pani Pgig Traw	Liana	Leaf, Seed	Body pain, stomachache (Murtem & Chaudhry 2016).
270.	<i>Thelypteris gracilescens</i> (Blume) Ching (Aspleniaceae)	<i>Metathelypteris gracilescens</i> (Bl.) Ching	-	Herb	Leaf	Cut, body ache and body pain (Srivastava and Nyishi 2010).
271.	<i>Mikania micrantha</i> Kunth (Asteraceae)	<i>Mikania micrantha</i> H.B.K.	Tare	Climber	Leaf	Wound, cut, eye trouble, snakebite and scorpion bite (Srivastava and Nyishi 2010).
					Leaf	Wound, diarrhoea and malaria (Balkrishna et al. 2021).
272.	<i>Mikania scandens</i> (L.) Willd. (Asteraceae)	<i>Mikania scandens</i>	Tare Nemi	Climber	Leaf	Cut and wound (Murtem and Chaudhry 2016).
273.	<i>Miliusa dioeca</i> (Roxb.)	<i>Miliusa dioeca</i>	Tasenaung	Tree	Leaf	Headache (Srivastava and Nyishi 2010).

	Chaowasku & Kessler (Annonaceae)	(Roxb.) Chaowasku & Kessler				
274.	<i>Mimosa pudica</i> L. (Fabaceae)	<i>Mimosa pudica</i> L.	<i>Onee O, Hlonuar</i>	Shrub	Rhizome, Bark, Leaf, Whole plant	Nostril inflammation, diarrhoea, tap worm infection of pig (Bora 2001).
					Whole plant	Scorpion sting, fistula, piles and renal disorders (Balkrishna et al. 2021).
275.	<i>Mirabilis jalapa</i> L. (Nyctaginaceae)	<i>Mirabilis jalapa</i> L.	<i>Aratukkhuan</i>	Shrub	Root, leaf	Inflammation, boil and diabetes (Balkrishna et al. 2021).
276.	<i>Murdannia nudiflora</i> (L.) Brenan (Commelinaceae)	<i>Murdannia nudiflora</i> (L.) Brenan	-	Herb	Whole plant	Burns (Balkrishna et al. 2021).
277.	<i>Murraya koenigii</i> (L.) Spreng. (Rutaceae)	<i>Murraya koenigii</i> (L.) Spreng.	<i>Arpatil</i>	Shrub	Leaf	Dysentery and indigestion (Balkrishna et al. 2021).
278.	<i>Curculigo capitulata</i> (Lour.) Kuntze (Hypoxidaceae)	<i>Molineria recurvata</i> Herb.; <i>Curculigo capitulata</i> L.	<i>Doik</i>	Herb	Root	Cut and wound (Srivastava and Nyishi 2010).
					Rhizome	Blood coagulant (Tangjang et al. 2011).
279.	<i>Mollugo disticha</i> (L.) Ser. (Molluginaceae)	<i>Mollugo disticha</i>	<i>Talen</i>	Herb	Root	Muscular pain (Murtem and Chaudhry 2016).
280.	<i>Monochoria vaginalis</i> (Burm.f.) C.Presl (Pontederiaceae)	<i>Monochoria vaginalis</i> (Burm.f.) C.Presl	-	Herb	Root, stem	Asthma and toothache (Balkrishna et al. 2021).
281.	<i>Morinda citrifolia</i> L. (Rubiaceae)	<i>Morinda angustifolia</i> Roth.	<i>Yacha, Lum</i>	Shrub	Leaf, root	Body pain and cough (Srivastava and Nyishi 2010).
					Leaf	Crack feet (Balkrishna et al. 2021).
282.	<i>Morus macroura</i> Miq. (Moraceae)	<i>Morus laevigata</i> Wall.	<i>Cheknyium, Thingtheihmu</i>	Tree	Bark	Boil and itching (Murtem and Chaudhry 2016).
					Inflorescence	Throat problem, fever and constipation (Balkrishna et al. 2021).
283.	<i>Momordica cochinchinensis</i> (Lour.) Spreng. (Cucurbitaceae)	<i>Momordica cochinchinensis</i> (Lour.) Spreng.	<i>Bonri-garla, Niori-garla</i>	Climber	Root	Hoofrot of cattle (Bora 2001).
284.	<i>Momordica dioica</i> Roxb. ex Willd. (Cucurbitaceae)	<i>Momordica dioica</i> Roxb. ex Willd.		Climber	Root	Hoofrot of cattle (Bora 2001).
285.	<i>Monosis volkameriifolia</i> (DC.) H.Rob. & Skvarla (Asteraceae)	<i>Vernonia volkameriifolia</i> DC.	<i>Tajop Ei Nemmang</i>	Tree	Leaf	Burn (Murtem and Chaudhry 2016).
286.	<i>Morinda angustifolia</i> Roxb.	<i>Morinda angustifolia</i>	<i>Yacha</i>	Shrub	Leaf, Root	Body pain, cough (Srivastava & Nyishi 2010).



	(Rubiaceae)	Roxb.				
287.	<i>Bergera koenigii</i> L. (Rutaceae)	<i>Murraya koenigii</i> (L.) Spreng.	<i>Simyogomko</i>	Shrub	Leaf	Dysentery (Bora 2001).
288.	<i>Musa<sup>x</sup> paradisiaca</i> L. (Musaceae)	<i>Musa sapientum</i> L.	<i>Kol</i>	Herb	Leaf, stem	Swollen feet and skin disorders (Srivastava and Nyishi 2010).
289.	<i>Musa balbisiana</i> Colla (Musaceae)	<i>Musa balbisiana</i> Colla	<i>Kopak</i>	Herb	Flower	Abscesses (Bora 2001).
290.	<i>Ensete ventricosum</i> (Welw.) Cheesman (Musaceae)	<i>Musa ensete</i> J.F. Gmelin	<i>Kodum</i>	Herb	Flower	Cut, wound, liver and chest pain and indigestion (Jeri et al. 2011).
					Fruit	Antiseptic and astringent (Ayam 2017).
291.	<i>Musa velutina</i> H.Wendl & Drude (Musaceae)	<i>Musa velutina</i> Wendl. & Drude; <i>Musa velutina</i> H.Wendl. & Drude	<i>Kappalanchi, Kol</i>	Herb	Stem	Dysentery (Kar and Borthakur 2008).
					Stem	Dysentery (Srivastava and Nyishi 2010).
292.	<i>Mussaenda roxburghii</i> Hook. f. (Rubiaceae)	<i>Mussaenda roxburghii</i> Hook. f.	<i>Tangmeng</i>	Shrub	Whole plant	Acute gastroenteritis and blemish on the tongue (Balkrishna et al. 2021).
293.	<i>Mycetia longifolia</i> (Wall.) Kuntze (Rubiaceae)	<i>Mycetia longifolia</i> (Wall.) Kuntze	<i>Tangnge</i>	Shrub	Leaf	Inflammation, wound, ulcer and pain (Balkrishna et al. 2021).
294.	<i>Naravelia zeylanica</i> (L.) DC. (Ranunculaceae)	<i>Naravelia zeylanica</i> (L.) DC.	-	Climber	Stem	Toothache (Balkrishna et al. 2021).
295.	<i>Nephrolepis cordifolia</i> (L.) C.Presl. (Polypodiaceae)	<i>Nephrolepis cordifolia</i> (L.) C.Presl.	<i>Rokpomaya</i>	Herb	Root nodules	Scabies, skin diseases, headache, cough, cold (Bora 2001).
296.	<i>Nicotiana rustica</i> L. (Solanaceae)	<i>Nicotiana rustica</i> L.	<i>Tabengbayin</i>	Herb	Leaf	Sores, wound of cattle, leech removal (Bora 2001).
297.	<i>Nicotiana tabacum</i> L. (Solanaceae)	<i>Nicotiana tabacum</i> L.	<i>Taberig balm</i>	Herb	Leaf	Leech removal (Bora 2001).
298.	<i>Nyctanthes arbor-tristis</i> L. (Oleaceae)	<i>Nyctanthes arbor-tristis</i> L.	-	Tree	Bark, leaf	Bronchitis (Balkrishna et al. 2021).
299.	<i>Ocimum basilicum</i> L. (Lamiaceae)	<i>Ocimum basilicum</i> Linn.	<i>Tulsi</i>	Shrub	Seed, leaf	Cough and cold (Murtem and Chaudhry 2016).
					Leaf, seed	Cough, bronchitis, skin diseases and fever (Khongsai et al. 2011).
300.	<i>Ocimum tenuiflorum</i> L. (Lamiaceae)	<i>Ocimum sanctum</i> L.	<i>Tulsi</i>	Herb	Seed, leaf	Cough, bronchitis, skin diseases and fever (Khongsai et al. 2011).
					Whole plant	Cough and cold (Balkrishna et al. 2021).
301.	<i>Oldenlandia corymbosa</i> L. (Rubiaceae)	<i>Oldenlandia corymbosa</i> L.	<i>Kebomaku</i>	Herb	Whole plant	Fever and burning sensation of palm (Bora 2001).

302.	<i>Oenanthe javanica</i> (Blume) DC. (Apiaceae)	<i>Oenanthe javanica</i> DC.	<i>Bubu</i>	Herb	Leaf, stem	Blood pressure, insomnia, chest pain and indigestion (Jeri et al. 2011).
303.	<i>Oreocnide frutescens</i> (Thunb.) Miq. (Urticaceae)	<i>Villebrunea frutescens</i> Blume.	<i>Tappen</i>	Tree	Leaf	Wound (Murtem and Chaudhry 2016).
304.	<i>Ormosia robusta</i> (Wight) Voigt (Fabaceae)	<i>Ormosia robusta</i> Wight Syn.	<i>Porghum</i>	Tree	Leaf	Boil (Murtem and Chaudhry 2016).
305.	<i>Oroxylum indicum</i> (L.) Kurz (Bignoniaceae)	<i>Oroxylum indicum</i> (L.) Kurz or <i>Oroxylum indicum</i> Vent.	<i>Orok Tak Shein, Mano, Archangk awm</i>	Tree	Bark	Breast cancer (Tripathi et al. 2017)
					Fruit, bark	Dysentery, diarrhoea and leukoderma (Balkrishna et al. 2021).
					Bark	Dysentery (Kar and Borthakur 2008).
					Bark	Skin itching, swelling, liver and stomach problem (Murtem and Chaudhry 2016).
306.	<i>Oryza sativa</i> L. (Poaceae)	<i>Oryza sativa</i> L.	<i>Aam</i>	Herb	Grain	Diabetes, asthma and low stamina (Jeri et al. 2011).
307.	<i>Osbeckia stellata</i> Buch.-Ham. ex D.Don (Melastomataceae)	<i>Osbeckia stellata</i> Buch.-Ham. ex D.Don	<i>Builukham</i>	Shrub	Leaf	Toothache (Balkrishna et al. 2021).
308.	<i>Osbeckia nepalensis</i> Hook. (Melastomataceae)	<i>Osbeckia nepalensis</i> Hook.	<i>Kashying</i>	Shrub	Leaf	Abscesses, boils, disorder, gastro-intestinal, eye problem (Bora 2001).
309.	<i>Otochilus porrectus</i> Lindl. (Orchidaceae)	<i>Otochilus porrectus</i> Lindl.	<i>Awaon</i>	Herb	Pseudo-bulb, leaf	Burn injury (Srivastava and Nyishi 2010).
310.	<i>Oxalis acetosella</i> L. (Oxalidaceae)	<i>Oxalis acetosella</i> Ls. Syn.	<i>Pak Huku</i>	Herb	Whole plant	Cut and injury (Murtem and Chaudhry 2016).
311.	<i>Oxalis corniculata</i> L. (Oxalidaceae)	<i>Oxalis corniculata</i> L.	<i>Amrul, Pak Hukku, Sajang hobo, Sialthur</i>	Herb	Leaf	Cut, injury and redness of the eye (Srivastava and Nyishi 2010).
					Whole plant	Fire burn (Murtem and Chaudhry 2016).
					Whole plant, leaf	Urinary tract infection, fever and scurvy (Balkrishna et al. 2021).
					Whole plant, leaf	Bowel disorder, digestion and scurvy disease (Khongsai et al. 2011).
					Whole plant	Bowel disorder, digestion and scurvy (Khongsai et al. 2011).
312.	<i>Oxalis debilis</i> Kunth (Oxalidaceae)	<i>Oxalis debilis</i> H.B.K. Var <i>Corymbosa</i> (DC.) Lourt.	<i>Pak Hukku</i>	Herb	Whole plant	Cut and burn (Murtem and Chaudhry 2016).
					Whole plant	Scurvy and dysentery (Balkrishna et al. 2021).
313.	<i>Oxyspora paniculate</i> (D.Don) DC. (Melastomataceae)	<i>Oxyspora paniculate</i> DC.	<i>Dasa</i>	Shrub	Stem	Teeth related problem (Srivastava and Nyishi 2010, Perme et al. 2015).

314.	<i>Paederia foetida</i> L. (Rubiaceae)	<i>Paederia foetida</i> L.	<i>Upter Nemi, Tapinrimin</i>	Climber	Leaf, fruit	Gastric, applied against foul body odour, abscesses, allergy, stomach swelling and diarrhoea (Srivastava and Nyishi 2010).
					Leaf	Gastritis and loose motion (Tangjang et al. 2011)
					Leaf	Stomach trouble (Murtem and Chaudhry 2016).
315.	<i>Pandanus furcatus</i> Roxb. (Pandanaceae)	<i>Pandanus furcatus</i> Roxb.	-	Tree	Fruit	Rheumatic arthritis (Balkrishna et al. 2021).
316.	<i>Pavetta indica</i> L. (Rubiaceae)	<i>Pavetta indica</i> L.	-	Shrub	Root	Skin disorder (Balkrishna et al. 2021).
317.	<i>Paspalum scrobiculatum</i> L. (Poaceae)	<i>Paspalum scrobiculatum</i> L.	-	Herb	Whole plant	Ulcer and constipation (Balkrishna et al. 2021).
318.	<i>Peperomia pellucida</i> (L.) Kunth (Piperaceae)	<i>Peperomia pellucida</i> (L.) Kunth	<i>Marchang</i>	Herb	Whole plant	Fever (Bora 2001).
319.	<i>Pedaliium murex</i> L. (Pedaliaceae)	<i>Pedaliium murex</i> Linn.	<i>Un Nemi</i>	Herb	Whole plant	Wound (Murtem and Chaudhry 2016).
320.	<i>Perilla frutescens</i> (L.) Britton (Lamiaceae)	<i>Perilla frutescens</i> (L.) Britton; <i>Perilla ocimoides</i> L.	<i>Tanam</i>	Shrub	Seed	Headache and fever (Murtem and Chaudhry 2016; Srivastava and Nyishi 2010).
321.	<i>Persicaria barbata</i> (L.) H. Hara (Polygonaceae)	<i>Persicaria barbata</i> (L.) H. Hara	<i>Anbawng</i>	Herb	Root, seed	Colic (Balkrishna et al. 2021).
322.	<i>Persicaria chinensis</i> (L.) H. Gross (Polygonaceae)	<i>Persicaria chinensis</i> (L.) H. Gross	<i>Taham</i>	Herb	Whole plant	Scurvy (Balkrishna et al. 2021).
323.	<i>Persicaria hydropiper</i> (L.) Delarbre (Polygonaceae)	<i>Persicaria hydropiper</i> (L.) Delarbre	<i>Ban</i>	Herb	Whole plant	Ringworm, abscesses, wounds, tumours, swelling (Bora 2001).
324.	<i>Phaseolus vulgaris</i> L. (Fabaceae)	<i>Phaseolus vulgaris</i> Linnaeus	<i>Peren</i>	Herb	Pod, seed	Digestive, constipation and laxative (Jeri et al. 2011).
325.	<i>Phlogacanthus curviflorus</i> (Nees) Nees (Acanthaceae)	<i>Phlogacanthus curviflorus</i> Nees.	<i>Pilamola</i>	Shrub	Flower	Colic pain and purgative (Srivastava and Nyishi 2010).
					Stem, leaf	Cough and fever (Balakrishna et al. 2021).
326.	<i>Phlogacanthus tubiflorus</i> Nees (Acanthaceae)	<i>Phlogacanthus tubiflorus</i> Nees	-	Shrub	Flower	Cough (Srivastava and Nyishi 2010).
327.	<i>Phlogacanthus thyrsiformis</i> (Roxb. ex Hardw.) Mabb. (Acanthaceae)	<i>Phlogacanthus thyrsiformis</i> (Roxb. ex Hardw.) Mabb.	<i>Ranhing</i>	Shrub	Leaf	Fever, Rheumatism, cough and cold (Balakrishna et al. 2021).

328.	<i>Phyllanthus emblica</i> L. (Phyllanthaceae)	<i>Phyllanthus emblica</i> L. Hk.f. <i>Emblica officinalis</i> Gaertn.	<i>Amlaki schein,</i> <i>Amlaki ghoss,</i> <i>Sinhlu</i>	Tree	Fruit	Appetizer and mouth freshness (Murtem and Chaudhry (2016).
					Fruit	Cough, cold, haemorrhage, dyspepsia, jaundice, anaemia, dysentery and diarrhoea (Balkrishna et al. 2021).
					Fruit	Appetizer (Srivastava and Nyishi 2010).
329.	<i>Phyllanthus reticulatus</i> Poir. (Phyllanthaceae)	<i>Phyllanthus reticulatus</i> Poir.	-	Shrub	Bark, stem, leaf	Indigestion (Balkrishna et al. 2021).
330.	<i>Phyllanthus urinaria</i> L. (Phyllanthaceae)	<i>Phyllanthus urinaria</i> L.	-	Herb	Whole plant	Asthma, leprosy and bronchitis (Balkrishna et al. 2021).
331.	<i>Phyllanthus sp.</i> (Phyllanthaceae)	<i>Phyllanthus sp.</i>	<i>Omni</i>	Tree	Whole plant	Dysentery (Bora 2001).
332.	<i>Phyllostachys edulis</i> (Carriere) J.Houz. (Poaceae)	<i>Phyllostachys pubescens</i> Mazel ex Houz. De Lehaie	<i>Taab</i>	Herb	Young shoot	Low vitality, indigestion, lack of appetite and rheumatism (Jeri et al. 2011).
333.	<i>Physalis angulata</i> L. (Solanaceae)	<i>Physalis angulata</i> L.	<i>Phuligach</i>	Herb	Seed, fruit	Gastric trouble (Srivastava and Nyishi 2010).
					Stem, leaf, fruit	Indigestion (Balkrishna et al. 2021).
334.	<i>Physalis peruviana</i> L. (Solanaceae)	<i>Physalis peruviana</i> L.	<i>Donam As</i>	Herb	Fruit	Gastric (Murtem and Chaudhry 2016).
335.	<i>Picrorhiza kurroa</i> Royle ex Benth. (Plantaginaceae)	<i>Picrorhiza kurroa</i> Royale ex Benth	<i>Rente</i>	Herb	Whole plant	Stomach problems and malaria (Murtem and Chaudhry 2016).
336.	<i>Pilea crenulate</i> (Sw.) Urb. (Urticaceae)	<i>Pilea crenulate</i> (Sw.) Urb.		Herb	Young shoot	Gastritis (Murtem and Chaudhry 2016).
337.	<i>Gerbera piloselloides</i> (L.) Cass. (Asteraceae)	<i>Piloselloides hirsuta</i> (Forssk.) C.Jeffrey ex Cufod.		Shrub	Leaf	Rheumatic pain (Murtem and Chaudhry 2016).
338.	<i>Pinus roxburghii</i> Sarg. (Pinaceae)	<i>Pinus roxburghii</i> Sarg.	-	Tree	Resin	Inflammation, fever and rheumatism (Balkrishna et al. 2021).
339.	<i>Pinus wallichiana</i> A.B.Jacks. (Pinaceae)	<i>Pinus wallichiana</i> A.B.Jackson	<i>Pusasan</i>	Tree	Resin	Cracks of heel (Srivastava and Nyishi 2010).
340.	<i>Piper attenuatum</i> Buch.-Ham. ex Miq. (Piperaceae)	<i>Piper attenuatum</i> Buch.-Ham. ex Miq.	-	Climber	Stem, leaf	Urinary troubles and liver disease (Balkrishna et al. 2021).
341.	<i>Piper peepuloides</i> Roxb. (Piperaceae)	<i>Piper mullesua</i> ; <i>Piper brachystachyum</i> C.DC.; <i>Piper mullesua</i> D.Don.	<i>Rer Edik</i>	Climber	Leaf	Body ache (Tangiang et al. 2011).
					Seed	Cough (Srivastava and Nyishi 2010).
					Fruit	Cough and cold (Murtem and Chaudhry 2016).
					Leaf	Loose motion and gastritis



						(Tangiang et al. 2011)
342.	<i>Piper pedicellatum</i> C. DC. (Piperaceae)	<i>Piper pedicellatum</i> C. DC.; <i>Piper pedicellosum</i> Wall. Or <i>Piper pedicellosum</i> C. DC.	Riir, Radhk	Climber	Leaf	Insomnia, bodyache, chest pain, cough and lack of appetite (Jeri et al. 2011).
					Leaf	Sprain (Srivastava and Nyishi 2010).
					Stem, leaf, fruit	Lack of appetite, cough, bodyache and insomnia (Balkrishna et al. 2021).
					Leaf	Bodyache, insomnia, chest pain, appetite and cough (Jeri et al. 2011).
343.	<i>Piper longum</i> L. (Piperaceae)	<i>Piper longum</i> L.	Saturikki	Herb	Root, fruit	Arthritis, fever and cough (Balkrishna et al. 2021).
344.	<i>Piper nigrum</i> L. (Piperaceae)	<i>Piper trioicum</i> Roxb. <i>Piper nigrum</i> Linn.	Redik, Ridik, Jaluk	Climber	Fruit	Cough, bronchitis and tonsillitis (Murtem and Chaudhry 2016).
					Seed	Dyspepsia, vertigo, fever, skin diseases, piles and toothache (Balkrishna et al. 2021).
					Leaf	Bodyache (Srivastava and Nyishi 2010).
345.	<i>Piper sylvaticum</i> Roxb. (Piperaceae)	<i>Piper sylvaticum</i> Roxb.	-	Climber	Fruit	Flatulence (Balkrishna et al. 2021).
346.	<i>Piper trioicum</i> Roxb. (Piperaceae)	<i>Piper trioicum</i> Roxb.	Ridik	Climber	Leaf	Muscular pain, bodyache (Murtem and Chaudhry 2016, Srivastava and Nyishi 2010).
347.	<i>Plantago asiatica</i> L. (Plantaginaceae)	<i>Plantago erosa</i> Wall.	Talak Ao	Herb	Leaf	Cut and wound (Murtem and Chaudhry 2016).
348.	<i>Plantago major</i> L. (Plantaginaceae)	<i>Plantago major</i> L.	Sot nyuru, Nido marto	Herb	Leaf	Blood dysentery (Srivastava and Nyishi 2010).
					Leaf	Lack of appetite, cough, chest inflammation and joint pain (Jeri et al. 2011).
349.	<i>Pleurolobus gangeticus</i> (L.) J.St.-Hil. ex H.Ohashi and K.Ohashi (Fabaceae)	<i>Pleurolobus gangeticus</i> (L.) J.St.-Hil. ex H.Ohashi and K.Ohashi	-	Shrub	Leaf, root	Scorpion sting, snakebite, asthma, vomiting, fever, cough and cold (Balkrishna et al. 2021).
350.	<i>Plumbago zeylanica</i> L. (Plumbaginaceae)	<i>Plumbago zeylanica</i> L.	-	Herb	Root	Digestion, appetite, dyspepsia, piles and skin diseases (Srivastava and Nyishi 2010).
351.	<i>Pogostemon auricularius</i> (L.) Hassk. (Lamiaceae)	<i>Pogostemon auricularius</i> (L.) Hassk.	-	Herb	Stem, whole plant	Rheumatism (Balkrishna et al. 2021).
352.	<i>Pogostemon benghalensis</i> (Burm.f.) Kuntze (Lamiaceae)	<i>Pogostemon benghalensis</i> (Burm.f) Kuntz	Khobu Tanam	Herb	Whole plant	Body pain and muscular pain (Murtem and Chaudhry 2016).
353.	<i>Poikilospermum suaveolens</i> (Blume) Merr. (Urticaceae)	<i>Poikilospermum suaveolens</i> (Blume) Merr.	Hogen ao	Liana	Stem	Eye pain (Murtem & Chaudhry 2016).
354.	<i>Pueraria montana</i> var. <i>lobata</i> (Willd.) Sanjappa and Pradeep (Fabaceae)	<i>Pueraria montana</i> var. <i>lobata</i> (Willd.) Sanjappa and Pradeep	-	Climber	Tuber	Stomachache and fever (Balkrishna et al. 2021).

355.	<i>Koenigia polystachya</i> (Wall. ex Meisn.) T.M.Schust. & Reveal (Polygonaceae)	<i>Polygonum molle</i> Wight	Yuru	Herb	Leaf	Sensational urination, constipation, boil and soreness (Jeri et al. 2011).
356.	<i>Pontederia hastata</i> L. (Pontederiaceae)	<i>Pontederia hastata</i> L.	Donye	Hydrophyte	Leaf	Caterpillar stings (Bora 2001).
357.	<i>Portulaca oleracea</i> L. (Portulacaceae)	<i>Portulaca oleracea</i> L.	Pali echi	Herb	Stem, leaf, flower	Skin allergy and rashes (Srivastava and Nyishi 2010).
358.	<i>Pothos chinensis</i> (Raf.) Merr. (Araceae)	<i>Pothos cathcartii</i> Schott	Anoti	Herb	Leaf	Dislocation of bones (Srivastava and Nyishi 2010).
359.	<i>Pothos scandens</i> L. (Araceae)	<i>Pothos scandens</i> L.	Lachi-Lomik, Ridik, Louchit	Climber	Stem, leaf	Constipation (Srivastava and Nyishi 2010).
					Whole plant	Bone fracture (Murtem and Chaudhry 2016).
					Stem	Asthma, smallpox and snakebite (Balkrishna et al. 2021).
360.	<i>Potssia laxiflora</i> (Blume) Kuntze* (Apocynaceae)	<i>Potssia laxiflora</i> (Blume) O.Ktze.	Nara Ei	Climber	Leaf	Bee sting (Murtem and Chaudhry 2016).
361.	<i>Pouzolzia zeylanica</i> (L.) Benn. (Urticaceae)	<i>Pouzolzia zeylanica</i> (L.) Benn. Wight	Notke	Herb	Whole plant	Cut and wound (Bora 2001)
362.	<i>Gonostegia triandra</i> (Blume) Miq. (Urticaceae)	<i>Pouzolzia bennettiana</i> Wight	Huyiek, Huik	Climber	Leaf	Laxative and difficulty in delivery (Jeri et al. 2011).
					Leaf	Constipation (Murtem and Chaudhry 2016; Balkrishna et al. 2021).
					Tender leaf	Difficult delivery and laxative (Jeri et al. 2011).
363.	<i>Guilandina bonduc</i> L. (Fabaceae)	<i>Guilandina bonduc</i> L.	Milko	Shrub	Root, Young shoot	Cough and cold, typhoid, pneumonia (Bora 2001)
364.	<i>Prunus persica</i> (L.) Batsch (Rosaceae)	<i>Prunus persica</i> (L.) Batsch	Chekom, Siikom	Tree	Leaf	Dysentery, insect bite, pain of the eye, wound and wound worm (Srivastava and Nyishi 2010).
					Fruit	Cough and constipation (Balkrishna et al. 2021).
					Fruit	Constipation and cough (Jeri et al. 2011).
					Leaf	Killing worms and boil of animals (Murtem and Chaudhry 2016).
365.	<i>Psidium guajava</i> L. (Myrtaceae)	<i>Psidium guajava</i> L.	Modhori, Madhuri	Tree	Leaf	Dysentery (Murtem and Chaudhry 2016).
					Leaf, fruit	Ulcer, vomiting and diarrhoea (Balkrishna et al. 2021).
366.	<i>Psychotria denticulata</i> Wall. (Rubiaceae)	<i>Psychotria denticulata</i> Wall.	Reeme	Shrub	Leaf	Cut by iron and wound (Srivastava and Nyishi 2010).
367.	<i>Pterospermum acerifolium</i> (L.) Willd. (Malvaceae)	<i>Pterospermum acerifolium</i> Willd.	Tanguru Changne	Tree	Calyx	Swelling in the body (Srivastava and Nyishi 2010).
					Bark	Leprosy, tumour, ulcer

						smallpox (Balkrishna et al. 2021).
368.	<i>Quercus semiserrata</i> Roxb. (Fagaceae)	<i>Quercus semiserrata</i> Roxb.	-	Tree	Bark, gall	Wound (Balkrishna et al. 2021).
369.	<i>Raphanus raphanistrum</i> subsp. <i>sativus</i> (L.) Domin. (Brassicaceae)	<i>Raphanus sativus</i> L.	-	Herb	Root, stem, bark	Antihelmintic, checks bleeding in childbirth, eye diseases, cooling, cholera, dysentery, diarrhoea, stomachache and pimples (Tripathi et al. 2017).
370.	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz. (Apocynaceae)	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz.	<i>Sarpagan dha</i>	Shrub	Root	Blood pressure (Khongsai et al. 2011).
					Root	Antihelmintic, snakebite, blood pressure, checks vomiting, insanity, insomnia and malaria (Tripathi et al. 2017)
371.	<i>Rauvolfia tetraphylla</i> L. (Apocynaceae)	<i>Rauvolfia tetraphylla</i> (L.) Benth. Ex. Kurz.	-	Shrub	Root	Antihelmintic, snakebite, blood pressure, checks vomiting, insanity, insomnia and malaria (Tripathi et al. 2017).
372.	<i>Rhynchosyilis retusa</i> (L.) Blume (Orchidaceae)	<i>Rhynchosyilis retusa</i> (L.) Blume	Oolom	Herb	Young shoot	Join pain, otorrhoea (Bora 2001).
373.	<i>Ricinus communis</i> L. (Euphorbiaceae)	<i>Ricinus communis</i> L.	<i>Porok Ekam, Rockrom, Mutih</i>	Shrub	Leaf	Abortion and stomach ache (Murtem and Chaudhry 2016).
					Root, leaf	Headache, leprosy, bronchitis, pain, asthma, fever and inflammation (Balkrishna et al. 2021).
					Seed, leaf	Seed oil is used for joint pain, and leaf used for abortion and muscular pain (Srivastava and Nyishi 2010).
374.	<i>Rohdea nepalensis</i> (Raf.) N.Tanaka (Asparagaceae)	<i>Tupistra aurantiaca</i> Wall.	<i>Rinkey</i>	Shrub	Stem	Malaria and stomach ache (Murtem and Chaudhry 2016).
375.	<i>Clerodendrum infortunatum</i> L. (Lamiaceae)	<i>Clerodendrum viscosum</i> Vent.	<i>Tapin</i>	Shrub	Flower	Blood purification (Murtem and Chaudhry 2016).
376.	<i>Clerodendrum indicum</i> (L.) Kuntze (Lamiaceae)	<i>Clerodendrum indicum</i> (L.) Kuntze	<i>Oti oing</i>	Herb	Stem, Leaf	Arthritis, cough, ringworm, eczema (Bora 2001).
377.	<i>Rosa indica</i> L. (Rosaceae)	<i>Rosa indica</i> L.	-	Shrub	Leaf, fruit	Ulcer and wound (Balkrishna et al. 2021).
378.	<i>Rothea serrata</i> (L.) Steane & Mabb. (Lamiaceae)	<i>Rothea serrata</i> (L.) Steane and Mabb.	-	Shrub	Whole plant	Fever, jaundice, high blood pressure, snakebite and malarial fever (Balkrishna et al. 2021).
379.	<i>Rubia cordifolia</i> L. (Rubiaceae)	<i>Rubia cordifolia</i>	<i>Tamen</i>	Climber	Root	Headache (Murtem and Chaudhry 2016).
380.	<i>Rubia manjith</i> Roxb. (Rubiaceae)	<i>Rubia manjith</i> Roxb. ex	<i>Tamin</i>	Climber herb	Root	Cold & cough and headache (Srivastava and Nyishi 2010).

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381.	<i>Rubus ellipticus</i> Sm. (Rosaceae)	<i>Rubus ellipticus</i> Smith	<i>Ngingek berek</i>	Shrub	Berry	Constipation, indigestion, asthma and brain stimulant (Jeri et al. 2011).
382.	<i>Rubus lineatus</i> Reinw. ex Blume (Rosaceae)	<i>Rubus lineatus</i> Reinwardt	<i>Ngintum bulum</i>	Shrub	Berry	Constipation, voice problem and indigestion (Jeri et al. 2011).
383.	<i>Rubus moluccanus</i> L. (Rosaceae)	<i>Rubus moluccanus</i> L.	<i>Tasin</i>	Shrub	Leaf, fruit	Nocturnal enuresis (Balkrishna et al. 2021).
384.	<i>Rubus niveus</i> Thunb. (Rosaceae)	<i>Rubus niveus</i> Thunberg	<i>Kib-lukpum hench</i>	Shrub	Berry	Asthma, indigestion and constipation (Jeri et al. 2011).
385.	<i>Rubus alceifolius</i> Poir. (Rosaceae)	<i>Rubus alceifolius</i> Poir	-	Shrub	Stem	Cough (Srivastava and Nyishi 2010).
386.	<i>Rubus rugosus</i> Sm. (Rosaceae)	<i>Rubus rugosus</i> Sm.	<i>Pokkom Tayin</i>	Shrub	Young shoot	Pneumonia (Bora 2001).
387.	<i>Toxicodendron succedaneum</i> (L.) Kuntze (Anacardiaceae)	<i>Rhus succedanea</i> L.	-	Tree	Leaf, flower	Blister (Balkrishna et al. 2021).
388.	<i>Saccharum officinarum</i> L. (Poaceae)	<i>Saccharum officinarum</i> L.	<i>Fu</i>	Herb	Stem	Jaundice (Balkrishna et al. 2014).
					Tuberous root	Tonic, cough and cold (Tiwari et al. 2009).
389.	<i>Saccharum spontaneum</i> L. (Poaceae)	<i>Saccharum spontaneum</i> L.	-	Herb	Root	Gynaecological, piles and urinary disorder (Balkrishna et al. 2021).
390.	<i>Sacciolepis indica</i> (L.) Chase (Poaceae)	<i>Sacciolepis indica</i> (L.) Chase	-	Herb	Whole plant	Throat problem (Balkrishna et al. 2021).
391.	<i>Saurauia armata</i> Kurz (Actinidiaceae)	<i>Saurauia armata</i> Kurz. Syn.	<i>Hero, Heru, Poprar</i>	Tree	Leaf	Wound (Murtem and Chaudhry 2016).
					Leaf	Cut and wound (Srivastava and Nyishi (2007).
392.	<i>Saurauia napaulensis</i> DC. (Actinidiaceae)	<i>Saurauia napaulensis</i> DC.	<i>Sicho hench</i>	Tree	Berry	Asthma, constipation and indigestion (Jeri et al. 2011).
393.	<i>Heptapleurum venulosum</i> (Wight & Arn.) Seem. (Araliaceae)	<i>Schefflera venulosa</i> Harms.	<i>Paleh</i>	Tree	Leaf	Pain reliver (Srivastava and Nyishi 2010).
394.	<i>Schima wallichii</i> (DC.) Korth. (Theaceae)	<i>Schima wallichii</i> (DC.) Korth.	<i>Khiang, Salsang Sagne</i>	Tree	Seed	Stomach trouble (Murtem and Chaudhry 2016).
					Bark, seed	Stomach trouble (Balkrishna et al. 2021).
395.	<i>Scoparia dulcis</i> L. (Plantaginaceae)	<i>Scoparia dulcis</i> L.	<i>Mithipatti</i>	Herb	Leaf	Boils (Tangiang et al. 2011).
					Leaf	Stomachache (Balkrishna et al. 2021).
					Whole plant	Jaundice and diabetes (Srivastava and Nyishi (2007).
396.	<i>Selagineela megaphylla</i> Baker (Selaginellaceae)	<i>Selagineela megaphylla</i> Baker	<i>Ngemang</i>	Herb	Leaf, Root	Sprain, headache (Bora 2001).
397.	<i>Selagineela wallichii</i> (Hook. &	<i>Selagineela wallichii</i>		Herb	Leaf	Lice removing (Murtem & Chaudhry 2016).



	Grev.) Spring (Selaginellaceae)	(Hook. & Grev.) Spring				
398.	<i>Senna occidentalis</i> (L.) Link (Fabaceae)	<i>Senna occidentalis</i> (L.) Link	-	Shrub	Leaf	Fever and rheumatism (Balkrishna et al. 2021).
399.	<i>Senna alata</i> (L.) Roxb. (Fabaceae)	<i>Cassia alata</i> L.	-	Shrub	Leaf	Ringworm (Tangjang et al. 2011)
					Leaf, seed	Ringworm, eczema, skin disorder and low blood pressure (Balkrishna et al. 2021).
400.	<i>Senna sophora</i> (L.) Roxb. (Fabaceae)	<i>Senna sophora</i> (L.) Roxb.	Orgin	Herb	Leaf, Root	Skin diseases, ringworm, scorpion bites (Bora 2001).
401.	<i>Senna tora</i> (L.) Roxb. (Fabaceae)	<i>Cassia tora</i> L.	-	Shrub	Leaf	Ringworm and skin diseases (Murtem and Chaudhry 2016).
402.	<i>Sesamum indicum</i> L. (Pedaliaceae)	<i>Sesamum indicum</i> L.	-	Herb	Seed	Piles, ulcers, eye diseases, joint pain and diarrhoea (Balkrishna et al. 2021).
403.	<i>Setaria italica</i> (L.) P.Beauv. (Poaceae)	<i>Setaria italica</i> (L.) P. Beauvois	Tayak	Shrub	Grain	Chest suffocation, diabetes and blood sugar (Jeri et al. 2011).
404.	<i>Sida acuta</i> Burm.f. (Malvaceae)	<i>Sida acuta</i> Burm.f.	Talam	Shrub	Root	Blood disorder and urinary disease (Balkrishna et al. 2021).
					Leaf	Post delivery complication (Bora 2001).
405.	<i>Sida cordifolia</i> L. (Malvaceae)	<i>Sida cordifolia</i> L.	Tagung	Herb	Whole plant	Women delivery (Bora 2001).
406.	<i>Sida rhombifolia</i> L. (Malvaceae)	<i>Sida rhombifolia</i> L.	-	Shrub	Root	Blood disorder and urinary disease (Balkrishna et al. 2021).
407.	<i>Smilax blumei</i> A.DC. (Smilacaceae)	<i>Smilax blumei</i> A.DC.	Lema losut	Climber	Fruit, Root	Tooth ache, appetite loss, urinary trouble (Bora 2001, Tag & Das 2004).
408.	<i>Smilax ovalifolia</i> Roxb. ex D.Don (Smilacaceae)	<i>Smilax ovalifolia</i> Roxb. ex D. Don	Kaihapui	Climber	Root	Gonorrhoea, rheumatic pain and jaundice (Balkrishna et al. 2021).
409.	<i>Smilax perfoliata</i> Lour. (Smilacaceae)	<i>Smilax perfoliata</i> Lour.	-	Climber	Root	Blood dysentery (Balkrishna et al. 2021).
410.	<i>Solanum aculeatissimum</i> Jacq. (Solanaceae)	<i>Solanum aculeatissimu m</i> Jacquin	Kasi biik	Herb	Fruit	Cough, indigestion, chest pain, liver disorder and stomach pain (Jeri et al. 2011).
411.	<i>Solanum nigrum</i> L. (Solanaceae)	<i>Solanum nigrum</i> L.	Byako, Hor, Hoor, Hora	Herb	Stem, leaf	Digestive and liver tonic (Srivastava and Nyishi (2007).
					Leaf, fruit	Hepatomegaly, diarrhoea, stomach pain, diabetes and fever (Balkrishna et al. 2021).
					Leaf	Gastric (Murtem and Chaudhry 2016).
					Leaf	Cough, diabetes and stomach pain (Jeri et al. 2011).
412.	<i>Solanum violaceum</i> Ortega. (Solanaceae)	<i>Solanum indicum</i> L.; <i>Solanum kurzi</i> Br.; <i>Solanum</i>	Paitae bakey, Beyak, Biik	Shrub	Fruit	Stimulant (Khongsai et al. 2011).
					Fruit	Worm infestation and stomach pain (Srivastava and Nyishi 2010).

		<i>kurzii</i> Brace ex Prain ; <i>Solanum</i> <i>violaceum</i> Ortega			Fruit	Stomach disorder (Murtem and Chaudhry 2016).
					Fruit	Cough, chest pain, fever, stomachache, toothache and liver disorder (Jeri et al. 2011).
413.	<i>Solanum</i> <i>myriacanthum</i> Dunal (Solanaceae)	<i>Solanum</i> <i>myriacanthu</i> <i>m</i> Dun	Byoka, Thitbyako	Shrub	Root	Malaria fever and teeth worm (Srivastava and Nyishi 2010).
					Whole plant	Dental disorder (Balkrishna et al. 2021).
414.	<i>Solanum</i> <i>nigrescens</i> M.Martens & Galeotti (Solanaceae)	<i>Solanum</i> <i>nigrescens</i> M.Martens & Galeotti	Oryange hora	Herb	Leaf	Liver problem, constipation, gastritis, malaria (Srivastava and Nyishi 2010).
415.	<i>Solanum torvum</i> Sw. (Solanaceae)	<i>Solanum</i> <i>torvum</i> Swartz	<i>Sot biik</i> , <i>Byakta</i>	Shrub	Fruit, seed	Skin disorder, teeth worm and toothache (Srivastava and Nyishi 2010).
					Fruit	Skin diseases, toothache, cough, fever, chest pain, liver disorder and spleen disorder (Balkrishna et al. 2021).
416.	<i>Solanum viarum</i> Dunal (Solanaceae)	<i>Solanum</i> <i>viarum</i> Dunal	<i>Athlo</i> , <i>Sibin biik</i>	Shrub	Fruit	Liver disorder, chest pain, fever, cough, stomachache and toothache (Jeri et al. 2011).
					Fruit, seed	Toothache, stomachache, cough, fever, chest pain, liver disorder and dental caries (Balkrishna et al. 2021).
417.	<i>Solanum</i> <i>melongena</i> L. (Solanaceae)	<i>Solanum</i> <i>melongena</i> L.		Herb	Fruit	Nerve problem (Khongsai et al. 2011).
418.	<i>Solanum</i> <i>virginianum</i> L. (Solanaceae)	<i>Solanum</i> <i>virginianum</i> L.	<i>Chatbakh</i>	Herb	Fruit	Leech bite (Bora 2001).
419.	<i>Sonchus arvensis</i> L. (Asteraceae)	<i>Sonchus</i> <i>arvensis</i> L.	<i>Tuku rubu</i>	Herb	Leaf	Cough, diarrhoea, inflamed skin and liver disorder (Jeri et al. 2011).
420.	<i>Solena</i> <i>heterophylla</i> Lour. (Cucurbitaceae)	<i>Solena</i> <i>heterophylla</i> Lour.	<i>Chiak</i> , <i>Yazang</i> <i>pipe</i>	Climber	Tuber, Root, Whole plants	Foot and mouth diseases, itching, headache, malaria, fever (Bora 2001).
					Tuber	Fever, malarial fever and headache and skin itching (Srivastava and Nyishi 2010).
					Root	Spermatorrhoea (Balkrishna et al. 2021).
421.	<i>Spermacoce</i> <i>articularis</i> L.f. (Rubiaceae)	<i>Spermacoce</i> <i>articularis</i> L.f.	<i>Rokatara</i>	Herb	Whole plant	Sprain, tooth worms (Bora 2001).
422.	<i>Spondias pinnata</i> (L. f.) Kurz (Anacardiaceae)	<i>Spondias</i> <i>pinnata</i> (L. f.) Kurz	<i>Pakka</i>	Tree	Fruit	Cough, skin inflammation, fever and liver disorder (Jeri et al. 2011).
423.	<i>Stauranthera</i> <i>grandifolia</i> Benth. (Gesneriaceae)	<i>Stauranthera</i> <i>grandifolia</i> Benth.	<i>Beeh</i>	Herb	Stem	Rheumatic pain and joint pain (Srivastava and Nyishi 2010).
424.	<i>Stellaria media</i> (L.) Vill. (Caryophylla- ceae)	<i>Stellaria</i> <i>media</i> (Linn.) Vill.	<i>Tai Auy</i> <i>Nab</i>	Herb	Whole plant	Wound (Murtem and Chaudhry 2016).

425.	<i>Stephania elegans</i> Hook.f. & Thomson (Menispermaceae)	<i>Stephania elegans</i> Hook.f. & Thomson	<i>Dipo talo</i>	Climber	Leaf, Root	Uterine haemorrhage, maggot infection (Bora 2001).
426.	<i>Stephania glandulifera</i> Miers (Menispermaceae)	<i>Stephania glandulifera</i> Miers	<i>Teplar, Rabaka</i>	Herb	Corm, leaf	Childbirth, abdominal pain, internal injury, fever, malaria and dysentery (Srivastava and Nyishi 2010).
427.	<i>Stephania japonica</i> (Thunb.) Miers (Menispermaceae)	<i>Stephania japonica</i> Miers.	<i>Yapom Geep, Raikey</i>	Climber	Stem	Dysentery and malarial fever (Murtem and Chaudhry 2016).
428.	<i>Sterculia villosa</i> Roxb. ex Sm. (Malvaceae)	<i>Sterculia villosa</i> Roxb.	Khaupui	Tree	Bark	Throat pain, diarrhoea and dysentery (Balkrishna et al. 2021).
429.	<i>Stereospermum chelonoides</i> (L.f.) DC. (Bignoniaceae)	<i>Stereospermum suaveolens</i> DC.	<i>Damium, Zinghal</i>	Tree	Leaf	Relieve sprain (Srivastava and Nyishi 2010).
					Root, bark	Renal disorder and cough (Balkrishna et al. 2021).
430.	<i>Styrax serrulatus</i> Roxb. (Styracaceae)	<i>Styrax serrulatus</i> Roxb.	-	Tree	Resin	Wound (Balkrishna et al. 2021).
431.	<i>Syzygium cumini</i> (L.) Skeels (Myrtaceae)	<i>Syzygium cumini</i> (L.) Skeels	<i>Jamun</i>	Tree	Bark, fruit, seed	Diabetes and dyspepsia (Balkrishna et al. 2021).
432.	<i>Syzygium jambos</i> (L.) Alston (Myrtaceae)	<i>Syzygium jambos</i> (L.) Alston	<i>Komker</i>	Tree	Flower	Diarrhoea, dysentery, liver disorder (Bora 2001).
433.	<i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. and Schult. (Apocynaceae)	<i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. and Schult.	<i>Pararsi</i>	Shrub	Root, latex	Eye trouble and toothache (Balkrishna et al. 2021).
434.	<i>Tagetes erecta</i> L. (Asteraceae)	<i>Tagetes erecta</i> L.	<i>Derhken</i>	Herb	Leaf	Piles, eye problem and boils (Balakrishna et al. 2021).
435.	<i>Tacca integrifolia</i> Kar Gawl. (Dioscoreaceae)	<i>Tacca integrifolia</i> Ker. Gawl.; <i>Tacca integrifolia</i> var. Grawl.	<i>Pisir, Paser</i>	Herb	Rhizome, berry	Wound, crack of heels, dysentery, stomach disorder, blood dysentery and acute diarrhoea (Srivastava and Nyishi 2010).
					Rhizome, berry	Wound and stomach trouble (Murtem and Chaudhry 2016).
436.	<i>Tectona grandis</i> L. f. (Lamiaceae)	<i>Tectona grandis</i> L. f.	<i>Teak</i>	Tree	Bark	Dyspepsia and inflammation (Balkrishna et al. 2021).
437.	<i>Terminalia bellirica</i> (Gaertn.) Roxb. (Combretaceae)	<i>Terminalia bellirica</i> Roxb.	<i>Bahid</i>	Tree	Fruit	Constipation and appetizer (Srivastava and Nyishi 2010).
					Fruit	Astringent, tonic, laxative, antipyretic, dyspepsia, piles, dropsy, diarrhoea and headache (Tripathi et al. 2017).
438.	<i>Terminalia</i>	<i>Terminalia chebula</i> Retz.	<i>Bumura</i>	Tree	Fruit	Cough and stomachic (Srivastava and Nyishi 2010).

	<i>chebula</i> Retz. (Combretaceae)				Bark	2010). Bark diuretic, cardiotonic, fruit astringent, laxative and chronic ulcer (Tripathi et al. (2017).
439.	<i>Terminalia citrina</i> (Gaertn.) Roxb. (Combretaceae)	<i>Terminalia citrina</i> Roxb. ex Flem.	<i>Hilika</i>	Tree	Fruit	Cough and colic (Srivastava and Nyishi 2010).
					Fruit	Constipation and gastric (Murtem and Chaudhry 2016).
440.	<i>Terminalia catappa</i> L. (Combretaceae)	<i>Terminalia catappa</i> L.	Vaiumkh al	Tree	Bark, leaf	Leprosy and skin infection (Balkrishna et al. 2021).
441.	<i>Thunbergia grandiflora</i> Roxb. (Acanthaceae)	<i>Thunbergia grandiflora</i> Roxb.	Zawngafi an Vako	Climber	Leaf	Boils and abdominal disorder (Balkrishna et al. 2021).
442.	<i>Thalictrum foliolosum</i> DC. (Ranunculaceae)	<i>Thalictrum foliolosum</i> DC.	<i>Tayo</i>	Shrub	Rhizome	Dysentery (Kar and Borthakur 2008).
					Whole plant	Fever and eye diseases (Murtem and Chaudhry 2016).
443.	<i>Thelypteris glandulifera</i> (Brack.) C.F.Reed (Aspleniaceae)	<i>Thelypteris glandulifera</i> (Kunze) Ching	<i>Nipiati</i>	Herb	Bark	Killing rat (Srivastava and Nyishi (2007).
444.	<i>Thelypteris opulenta</i> (Kaulf.) Fosberg (Aspleniaceae)	<i>Thelypteris opulenta</i> (Kaulf.) Fosberg	<i>Oyik</i>	Herb	Leaf and Rhizome	Body pain, fever, malaria (Bora 2001).
					Leaf	Body ache (Tangjang et al. 2011).
445.	<i>Tinospora cordifolia</i> (Willd.) Hook.f. & Thomson (Menispermaceae)	<i>Tinospora cordifolia</i> (Willd.) Hook.f. & Thoms. Or <i>Tinospora cordifolia</i> Miers.	<i>Swein kije, Nyam rak</i>	Climber	Stem	Gastric, dysentery, fever and swollen muscles (Srivastava and Nyishi 2010).
					Stem	Stomach trouble, dysentery and skin diseases (Murtem and Chaudhry 2016).
446.	<i>Trema orientale</i> (L.) Blume (Cannabaceae)	<i>Trema orientalis</i> (L.) Blume	<i>Belphuar</i>	Shrub	Whole plant	Epilepsy (Balkrishna et al. 2021).
447.	<i>Triumfetta rhomboidea</i> Jacq. (Malvaceae)	<i>Triumfetta rhomboidea</i> Jacq.	-	Shrub	Root, leaf, flower, fruit	Gonorrhoea (Balkrishna et al. 2021).
448.	<i>Trigastrotheca pentaphylla</i> (L.) Thulin (Molluginaceae)	<i>Trigastrothec a pentaphylla</i> (L.) Thulin	-	Herb	Whole plant	Skin diseases, scabies and wound (Balkrishna et al. 2021).
449.	<i>Zanthoxylum asiaticum</i> (L.) Appelhans, Gröppo & J.Wen (Rutaceae)	<i>Toddalia asiatica</i> (L.) Lamarck; <i>Torenia asiatica</i> L.	<i>Suji Ei, Koche taa, Hankay</i>	Herb	Fruit	Constipation and indigestion (Jeri et al. 2011).
					Bark, leaf, fruit	Indigestion, constipation and fever (Balkrishna et al. 2021).
					Leaf	Stomach trouble, gastric and appetite (Srivastava and Nyishi 2010).
					Leaf	Stomach disorder (Murtem and Chaudhry 2016).
450.	<i>Torenia diffusa</i> D.Don (Linderniaceae)	<i>Torenia diffusa</i> D.Don	<i>Ocheng</i>	Herb	Whole plant	Fever and headache (Srivastava and Nyishi 2010).

					Leaf	Stomach disorder (Murtem and Chaudhry 2016).
451.	<i>Torenia thouarsii</i> (Cham. & Schltdl.) Kuntze (Linderniaceae)	<i>Torenia parviflora</i> Ham.	<i>Suji Ei</i>	Herb	Leaf	Gastric (Murtem and Chaudhry 2016).
452.	<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis. (Araliaceae)	<i>Trevesia palmata</i> Visiani	<i>Tago-meyo, Kawhte-bel, Tagomeyo</i>	Shrub	Flower	Indigestion, liver disorder and asthma (Jeri et al. 2011).
					Leaf, flower	Stomachache, indigestion, asthma, liver disorder and high blood pressure (Balkrishna et al. 2021).
453.	<i>Trichosanthes tricuspidata</i> Lour. (Cucurbitaceae)	<i>Trichosanthes tricuspidata</i> Lour.; <i>Trichosanthes tricuspidata</i> D. Don.	<i>Yappen, Rikay</i>	Climber	Root, stem	Dysentery (Srivastava and Nyishi 2010).
					Stem, root	Fever, cold and cough (Murtem and Chaudhry 2016).
454.	<i>Urena lobata</i> L. (Malvaceae)	<i>Urena lobata</i> L.	<i>Borival, Sitoyorik</i>	Shrub	Root	Hyperacidity and dysentery (Srivastava and Nyishi 2010).
					Root	Rheumatism (Balkrishna et al. 2021).
455.	<i>Urtica ardens</i> Link (Urticaceae)	<i>Urtica parviflora</i> Roxb.	<i>Posh Phon, Push pun</i>	Herb	Leaf	Muscular pain (Murtem and Chaudhry 2016).
					Leaf	Constipation, stimulant and numbness (Jeri et al. 2011).
456.	<i>Vachellia farnesiana</i> (L.) Wight & Arn. (Fabaceae)	<i>Vachellia farnesiana</i> (L.) Wight & Arn.	<i>Pokkiyato</i>	Shrub	Stem, bark	Dysentery (Bora 2001).
457.	<i>Viburnum colebrookeanum</i> Wall. ex DC. (Viburnaceae)	<i>Viburnum colebrookianum</i>	<i>Tarko Kusus</i>	Shrub	Leaf	Old sores (Murtem and Chaudhry 2016).
458.	<i>Vitex negundo</i> L. (Lamiaceae)	<i>Vitex negundo</i> L.	<i>Ringte</i>	Shrub	Leaf	Malaria (Bora 2001).
459.	<i>Wedantia</i> sp.** (Vitaceae)	<i>Wedantia scarab</i> Kurz. Syn.	<i>Kepo Ae</i>	Shrub	Root	Chlorea and dysentery (Murtem and Chaudhry 2016).
460.	<i>Wrightia arborea</i> (Dennst.) Mabb. (Apocynaceae)	<i>Wrightia arborea</i> (Dennst.) Mabb.	-	Tree	Bark	Renal complaints and menstrual (Balkrishna et al. 2021).
461.	<i>Xanthium strumarium</i> L. (Asteraceae)	<i>Xanthium strumarium</i> L.	<i>Baibam</i>	Herb	Leaf	Ulcer and worm infestation in animals (Bora 2001).
462.	<i>Zanthoxylum acanthopodium</i> DC. (Rutaceae)	<i>Zanthoxylum acanthopodium</i> DC.	<i>Honior</i>	Shrub	Leaf	Chest pain, laxative, stimulant and mental retardation (Jeri et al. 2011).
463.	<i>Zanthoxylum armatum</i> DC. (Rutaceae)	<i>Zanthoxylum armatum</i> DC.	<i>Honyum, Wenier</i>	Shrub	Fruit	Stomach disorder (Srivastava and Nyishi 2010).
					Leaf	Eradication of lice (Khongsai et al. 2011).
464.	<i>Zanthoxylum nitidum</i> var. <i>nitidum</i> (Rutaceae)	<i>Zanthoxylum hamiltonianum</i> Wall.	<i>Honyor</i>	Shrub	Leaf	Constipation and cold (Srivastava and Nyishi 2010).
465.	<i>Zanthoxylum rhetsa</i> (Roxb.) DC. (Rutaceae)	<i>Zanthoxylum rhetsa</i> DC.	<i>Honior</i>	Tree	Seed, leaf	Stimulant, digestive laxative and numbness (Jeri et al. 2011).



466.	<i>Zea mays</i> L. (Poaceae)	<i>Zea mays</i> L.	<i>Toop</i>	Herb	Grain	Nutrient supplement for the chronic patients and debility (Jeri et al. 2011).
467.	<i>Ziziphus jujuba</i> Mill. (Rhamnaceae)	<i>Ziziphus jujuba</i> Mill.	-	Tree	Root, bark	Diarrhoea, gout and rheumatism (Balkrishna et al. 2021).
468.	<i>Ziziphus oenopolia</i> (L.) Mill. (Rhamnaceae)	<i>Ziziphus oenopolia</i> (L.) Mill.	-	Tree	Bark	Stomach disorder (Balkrishna et al. 2021).
469.	<i>Zingiber officinale</i> Roscoe (Zingiberaceae)	<i>Zingiber officinale</i> Roscoe	<i>Take, Taikke</i>	Herb	Rhizome	Vermicide, stimulant, debility and brain dampness.
					Rhizome	Cough, cold and tonsillitis (Murtem and Chaudhry 2016).

# as per <https://powo.science.kew.org>

\* as per <http://www.theplantlist.org>

\*\* Not mention neither in POWO 2021 nor in <http://www.theplantlist.org>

In the present study, 112 plant families were reported. Of these, Fabaceae was the dominant family with 28 spp., followed by Asteraceae (26 spp.), Lamiaceae (21 spp.), Poaceae (19 spp.), Rubiaceae and Solanaceae (16 spp. each), Cucurbitaceae (14 spp.), etc. (Fig. 2). Similar finding is found in other studies such as Fabaceae and Asteraceae in Nyishi, Tagin and Hill Miri (Toku et al. 2021), etc. The number of families in present study is found higher than in other studies viz., Adi with 44 families (Jeyaprakash et al. 2017), Adi, Idu and Khamba tribes with 36 families (Ghosh et al. 2014), Adi with 31 families (Kagyung et al. 2010), Apatani tribe with 22 families (Ayam 2017), Adi tribe with 20 families (Danggen et al. 2018), Adi tribe with 18 families (Gibji et al. 2012), etc.

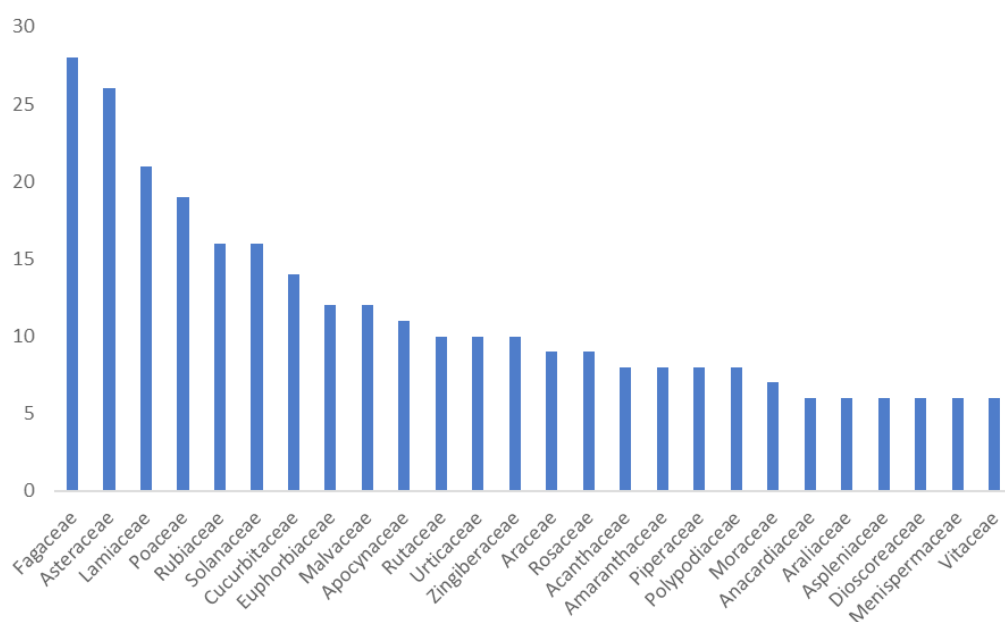


Fig. 2: Plant families and number of plant species.

Among all plant parts, leaf was the dominant part used by the *Nyishi* tribe with 229 plant species, followed by root (82 spp.), fruits (74 spp.), whole plant (68 spp.), bark (59 spp.), stem (53 spp.), etc. (Fig. 3). Similar finding is reported from Adi tribe (Danggen et al. 2018; Gibji et al. 2012), Apatani tribe (Kala 2005), Monpa tribe (Pangging et al. 2021), etc.

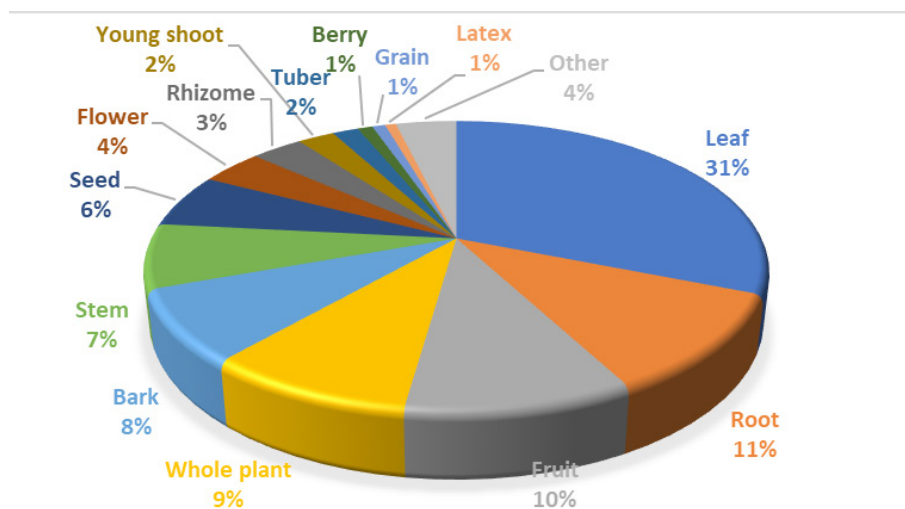


Fig. 3: Plants parts used for medicinal purposes by Nyishi tribe.

In medicinal plants, herb was the dominant plant form with 192 spp. followed by shrub (109 spp.), tree (96 spp.), etc. (Fig. 4). Similar finding is reported from Adi tribe (Danggen et al. 2018), Apatani tribe (Hage et al. 2021; Toku et al. 2021), Monpa tribe (Pangging et al. 2021), etc. However, shrub as the dominant form was reported from Adi tribe (Gibji et al. 2012), etc.

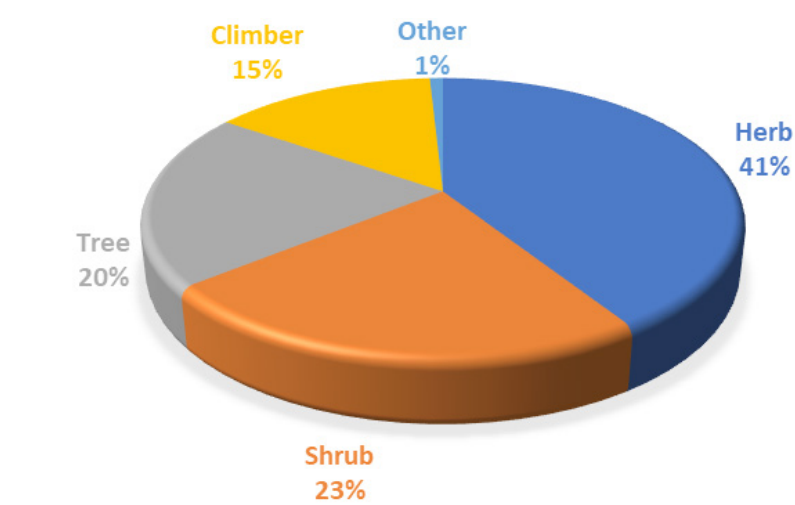
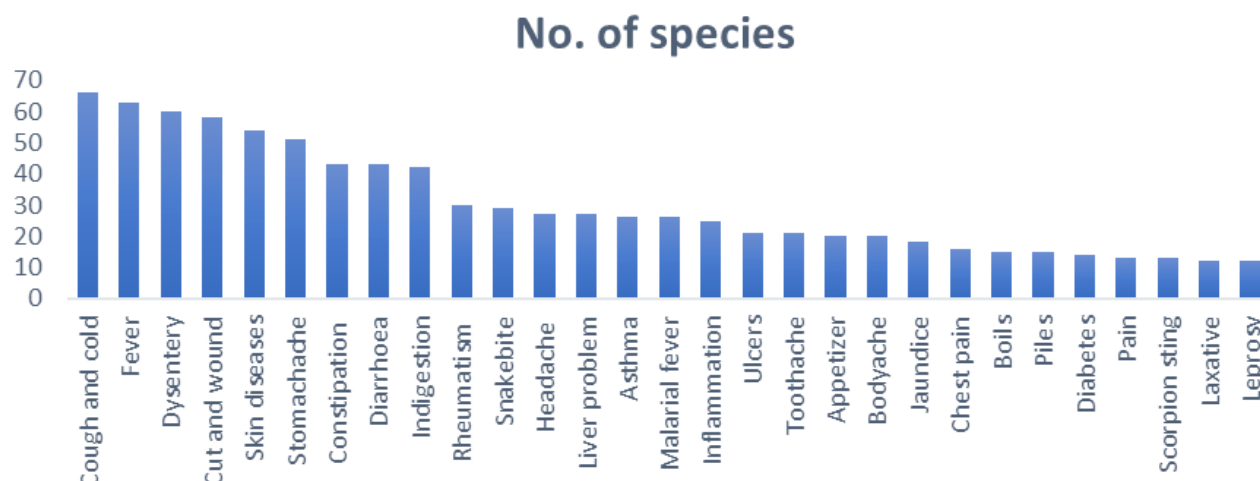


Fig. 4: Habits of medicinal plants used by Nyishi tribe.

Among all the diseases, cough & cold had the highest number of species used i.e., 66 spp., followed by fever (63 spp.), dysentery (60 spp.), cut and wound (58 spp.), skin diseases (54 spp.), stomachache (51 spp.), constipation (43 spp.), diarrhoea (43 spp.), indigestion (42 spp.), Rheumatism (30 spp.), snake bite (29 spp.), etc. (Fig 5). A similar finding is reported from Apatani tribe (Ayam 2017; Toku et al. 2021), etc. However, the highest no. of plants are used for curing other diseases in some other studies viz., indigestion in Apatani tribe (Kala 2005), dysentery and diarrhoea diseases in Monpa tribe (Pangging et al. 2021), diarrhoea and dysentery in Adi tribe (Ghosh et al. 2014), cancer in Apatani tribe (Hage et al. 2020), fever (Hage et al. 2021), etc.



**Fig. 5: Number of plant species used for treating different ailments by Nyishi tribe.**

### Conclusion

The review of medicinal plants used in health care system of Nyishi tribe of Arunachal Pradesh was done and we recorded 469 plant species belonging to 112 plant families with 333 genera used for this purpose. The dominant family was Fabaceae and the genus was Solanum with 9 spp. The dominant plant part used reported was leaf with 229 spp., followed by root (82 spp.), fruit (74 spp.), etc. Herb was the dominant plant form with 192 spp. followed by shrub (109 spp.), tree (96 spp.), etc. The highest number of medicinal plants (66 spp.) were used to treat cough and cold, followed by fever (63 spp.), dysentery (60 spp.), etc. The databased generated through this review study will help in updating the biodiversity register at respective Biodiversity Management Committee (BMC) level under National Biodiversity Act 2002 and Biodiversity rules 2004.

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## Existence and composition of trees in different dense forest of three divisions of Kupwara

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### Abstract.

The present study was carried out in the Kupwara Forest divisions with Latitude: 34° 01' 60.00" N and Longitude: 74° 15' 60.00" E in Kashmir Valley of Jammu and Kashmir, Union Territory of India. The study area was divided into three divisions (Kamraj, Kehmil and Langate forest divisions) and study period was of seven months duration from March 2022 to September 2022. Stratified random sampling technique was used to study the community composition and phyto-sociological parameters of the vegetation. A total of 10 plant species *Abies pindrow*, *Cedrus deodara*, *Abies spectabilis*, *Robinia pseudo acacia* L, *Taxus wallichiana*, *Celtis australis*, *Crataegus songarica*, *Picea simithiana*, *Berberis lycium* Royle, and *Pinus wallichiana* belonging to 6 families were considered including 08 trees, 02 shrubs. In high altitude between 1830 to 2950 meters all three forest divisions of study area have presence of trees with high importance value index (IVI) of *Cedrus deodara* with 83.23 followed by *Picea simithiana* 78.32 and *Pinus wallichiana* 72.67. Low IVI of *Berberis lyceum* Royle with 1.52, *Crataegus songarica* 2.29, *Taxus wallichiana* 2.34, *Celtis australis* 3.67. In lower altitude of 1500 to 1830 meters altitude with open forest the difference of IVI and abundances (Ab) of all the species were considerably low with lowest value of 1.76. The Shannon diversity index showed a decreasing trend from 2.06 to 1.76 lower to higher altitude in all three divisions. The Simpson Dominance Index and species evenness index of different species are affected by various factors and can be used for management and conservation. Hence, the present study can form a baseline for implementing management aspects for conservation, regeneration strategies and application of species wise silvicultural systems at different altitudes.

**Key words:** Diversity, *Cedrus deodara*, Altitude, Kupwara forest, Species, forest trees, Regeneration.

## 1. Introduction

The inventorying of plant diversity and geographic distribution of the plants have advanced satisfactorily in several areas of the Indian Himalayan region. More than 64% of species, according to Rawal and Dhar (1997), are native. With a total area of 10.13 million hectares inside the line of control, the state of Jammu and Kashmir contributes significantly to the northwestern Himalayan Phyto-geographical region. In Kashmir, woods cover around 51% (8128 km<sup>2</sup>) of the country's total land area, which is 15,948 km<sup>2</sup>. A total of 2379 km<sup>2</sup> are covered by the Kupwara Forest Division, of which 1160 km<sup>2</sup> are under the administrative jurisdiction of territorial forest. Research in various Himalayan locations (Iqbal et al., 2012; Pala et al., 2013, 2015; Bhardwaj et al., 2016, Bhat et al., 2020; Pala et al., 2017) has revealed the phyto-sociological status of various hilly regions. The enormous tracts of Kupwara forests, which are defended by the impressive Pir Panjal mountain range, have not yet been thoroughly examined for its Phyto-sociological makeup and structure (Khan et al., 2022). As a result, we attempted to investigate (i) Floristic diversity in the study area (ii) Variation of species diversity in three different divisions in the current study. Temperate forests are more frequently subjected to intense biotic pressure and human effect than any other forest type because they are the most important, wealthy, and affluent biological communities (biodiversity and ecosystem services).

One of the biodiversity-rich and ecologically significant mountainous regions of the Kashmir Himalaya hotspot, harbor large regions of Himalayan temperate forest types (Haq et al., 2020), with a forest cover of 51% (Forest Survey of India, 2017). In phytosociological studies in recent times, the application of statistical techniques such as classification and ordination of vegetation data has meaningfully improved the understanding of community composition and structure, and vegetation patterns which determine the magnitude of biodiversity more objectively (Shaheen et al., 2011; Khan et al., 2023, 2017; Haq et al., 2017). In contrast to other Himalayan regions of India, such study is insufficient in the Kashmir Himalaya.

Local climate, economic conditions, natural disasters, and soil erosion all have an impact on the vegetation cover in mountainous areas. (Brang et al., 2001; Khan et al., 2023, Suresh, 2006). Geographical variables play a significant effect in the spread of

plant species. (Enright et al., 2005; Shank and Noorie, 1950). Therefore, knowledge of species diversity and vegetation is essential for maintaining natural areas. (Fetene et al., 2006; Muhumuza and Byarugaba, 2009). Physiographic characteristics, productivity, climate, and altitude all affect species richness. (Sharma et al., 2009; Brown, 2001). Studying species composition and organization is important for explaining ecosystems and their purposes. (Loreau et al., 2001). Due to numerous anthropogenic pressures, biodiversity is changing globally, which might have an impact on community and population dynamics (Pala et al., 2015). (Shaforth et al., 2002). Tansley (1920) noted the significance of phyto-sociological studies for habitat research and the necessity of quantitative inventories for preserving natural plant communities. (Keel et al., 1993). Floristic composition is one of the primary distinguishing characteristics of a community (Dansereau, 1960), hence any decrease in biodiversity is certain to change the characteristics of the community.

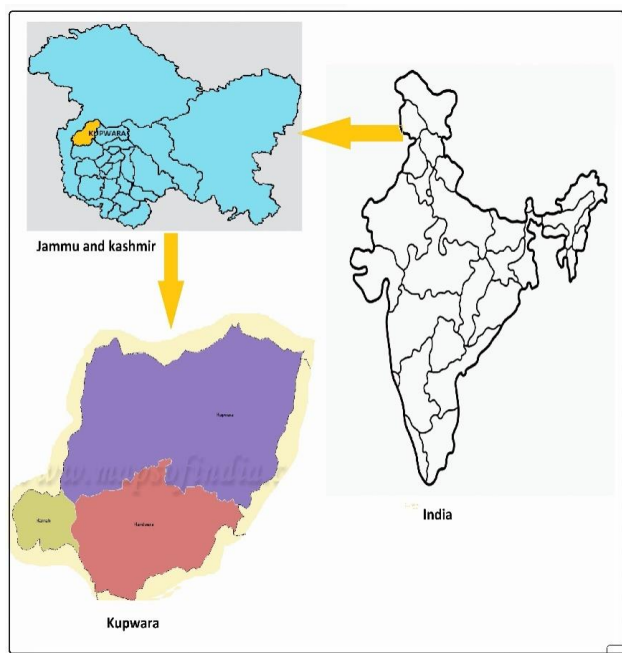
The current study was carried out to describe the comparative vegetation pattern in the Kupwara Forest Division in the Kashmir Himalaya. We looked into how the various anthropogenic impact levels affected the phyto-sociological associations in the research area's forest ecosystem. The following research questions were specifically addressed in our work: (i) what is the vegetation composition of the Pir Panjal Range of the Kashmir Himalaya's chosen forest sites? What different anthropogenic disturbances are there, and how do they affect the patterns of forest vegetation? By responding to these inquiries, we demonstrate how anthropogenic causes affect the composition of the forest and phyto-sociological characteristics, as well as how their interactions affect the patterns of vegetation. Such empirical data can aid in the creation of management and policy tools for successfully reducing anthropogenic disturbances in the forest ecosystems of this Himalayan region.

## 2. Materials and methods

### 2.1. Study area.

The Kupwara Forest Divisions (KFD) is where the current study was carried out. The elevations of the hills range from 2000 m to 3500 m above sea level (masl), and they are situated between 34°18' and 34°47' north latitude and 73°45' to 74°3' east longitude (Fig. 1).

The region is mountainous, with a continental



**Fig 1 : Study area of Kupwara district Jammu and Kashmir, India.**

temperate highs of (35°C) and lows of (-10°C) and 66–167 cm of precipitation annually. Coniferous forest vegetation predominates. (Romshoo et al., 2020). The area experiences mild summers and chilly winters, with snowfall occurring from December to February. Broad-leaved tree species like *Acer caesium*, *Prunus cornuta*, and *Robinia pseudoacacia* make up the majority of the forest's vegetation, while conifer species like *Abies pindrow*, *Picea simithiana*, *Cedrus deodara*, and *Pinus wallichiana*, as well as shrubs like *Rosa webbiana*, *Berberis lycium*, and *Indigo ferox*, are also present. While *Robinia pseudoacacia* is an invasive alien tree species in the area, coniferous tree species are native to the area.

## 2.2. Sampling design and measurements

In 2021 and 2022, field sampling was done. We chose the Kamraj, Langate, and Kehmil forest divisions from among Kupwara's three forest divisions. The three forest divisions are distributed over a gradient in canopy (very dense; all lands with tree cover of canopy density of 70% and above. Moderately dense forest; All lands with tree cover of canopy density between 40% and 70% and Open forest with canopy of less than 40%) as per FSI Dehradun 2019.

For administrative and record-keeping purposes, a division is a permanent subdivision of a forest. We collected information on floristic diversity at eight square-shaped, 31.6 m x 31.6 m (0.1 hectare) (hereafter ha) sites each compartment (i.e., 4 x 8 = 32 plots) using a systematic random sampling method (Shaheen et al., 2012). We noted the quantity of living stems (stem having living branches and roots) in each plot to sample trees. Each tree's DBH (diameter at breast height, or at a height of 1.37 m from ground level) and tree species composition were noted. Within each plot, four 5m<sup>2</sup> square subplots were used to sample shrubs. Finally, five square subplots (1m<sup>2</sup>), one in each corner and one in the middle of each plot, were used to sample the variety of the herbaceous species. In the present study, samples were taken from a total of 126 (4 subplots x 8 plots x 4 compartments = 128) (5m<sup>2</sup>) sub plots for shrubs and 156 (5 subplots x 8 plots x 4 compartments = 160) (1m<sup>2</sup>) sub plots for herbs.

We determined each plant species' important value index (henceforth IVI) for each compartment. Using the Curtis and McIntosh formula, the IVI was calculated as the sum of the relative values of density (Measure the space between three to five plants in a row using a measuring tape, and other tools, then divide by the total number of plants.) frequency, and dominance. (1950). Because the IVI is a widely used ecological method to assess the dominance of plant species within an ecosystem, we utilized it. Simply counting the species in that particular, chosen forest section, the overall number of species was calculated.  $D = 1 - (N - 1) / n$  is the Simpson index. (n - 1) where N is the total number of individuals across all species, n is the number of individuals in a species, and D is the diversity index. According to Simpson (1949), the concentration of dominance (Cd), often known as the Simpson index,  $\frac{n_i}{N}$  is calculated as follows: Index of dominance  $Cd = \left(\frac{n_i}{N}\right)^2$  where  $n_i$  is the percentage of individuals belonging to each species, and N is the overall number of individuals.

## 2.3. Data analysis

Using PAST software ver. 3.14, the widely used diversity indices Shannon and Wiener (1963), Simpson (1949), Dominance index, and Evenness Index (Pielou, 1975) were calculated. (Linkid=163338, available at <https://www.techworld.com/download/office-business/past-314-3330821>). Finally, we compared differences

S.NO	SPECIES	Plant species status and forest type					
		Very dense		Moderate		Open	
		Ab	IVI	Ab	IVI	Ab	IVI
1	<i>Abies pindrow</i> ,	15	32.45	11	31.87	8	18.60
2	<i>Cedrus deodara</i> ,	12	83.23	14	73.62	11	78.67
3	<i>Abies spectabilis</i> ,	16	43.00	10	29.79	05	11.76
4	<i>Robinia pseudoacacia L</i>	2	3.24	5	9.12	06	17.33
5	<i>Aesculus indica</i> ,	1	2.34	1	1.04	01	04.43
6	<i>Celtis australis</i> ,	4	3.67	4	6.80	03	05.34
7	<i>Crataegus songarica</i> ,	3	2.29	1	0.22	01	0.05
8	<i>Picea simithiana</i>	12	78.32	10	61.32	10	58.54
9	<i>Berberis lycium Royle</i> .	1	1.52	2	1.02	2	06.56
10	<i>Pinus wallichiana</i>	17	72.67	15	55.77	11	61.86

**Table 1: Plant Species Status in very dense, moderate and open forest plantation of Kamraj forest division**

in vegetation composition between the tested forest compartments using -diversity analysis.

To examine the community makeup and phytosociological aspects of the vegetation, stratified random sampling was performed. A, 1800M-2100M, A, 2100- 1 2400M, and A, 2400-2700M) were chosen as the three altitudinal gradients to conduct three different altitude of all dense types). Along these altitudinal gradients, field surveys were conducted, and quadrates were laid out for data analysis. Trees were counted in 10 m x 10 m quadrates, while shrubs and herbs were counted in two 5 m x 5 m quadrates and four 1 m x 1 m quadrates, respectively, within the same quadrate.

Frequency and density were calculated using the floristic data. (Curtis and McIntosh, 1950). According to Philips, the relative frequencies, densities, and dominance values were calculated. (1959). to illustrate the dominance and ecological success of each species, these values were added to form the IVI (Important Value Index). (Curtis, 1959). The concentration of dominance, also known as Simpson's index of dominance, was derived in accordance with Simpson's (1949), and Margalaf's "Shannon- Weiner" diversity function was used to calculate the diversity index. (1968).

### 3. Results and Discussion.

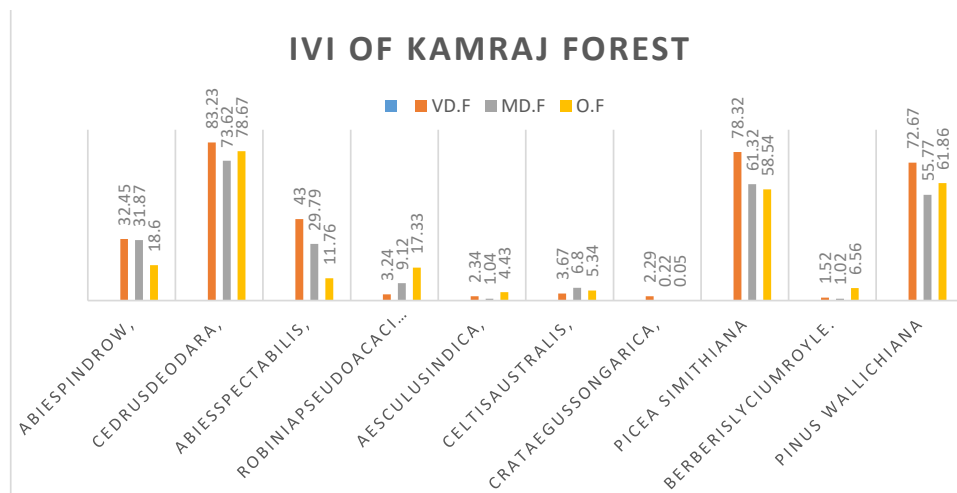
#### 3.1 Kamraj Forest Division

##### ● Very Dense Forest

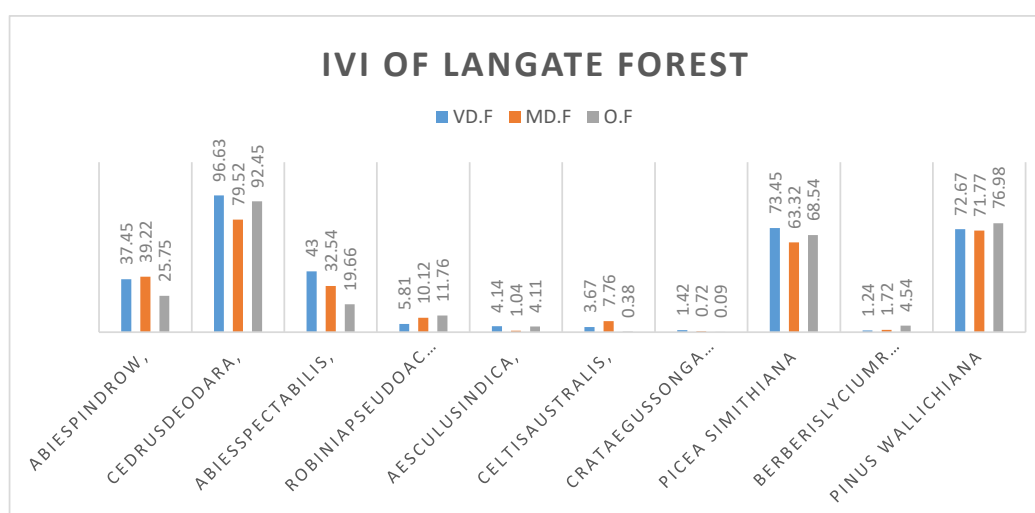
Phytosociological studies in the very dense forest of Kamraj forest division showed presence of various species. Sampling were conducting in dense forest type in 5 ranges I,e Kupwara, south Lolab, north Lolab, Kandi and Machil. The understorey vegetation was full of *Abie spindrow*, *Abies spectabilis*, *Aesculusindica*, *Cedrus deodara*, *Celtis australis*, *Crataegus songarica*, *Picea simithiana*, *Pinus wallichiana*, *Berberis lycium Royle*, *Robinia pseudoacacia L*. Thus, though it was a dense forest, *Abies pindrow*, *Abies spectabilis*, *Picea simithiana*, *Pinus wallichiana* and *Cedrus deodara*, showed high abundance and IVI. Trees of *Robinia pseudoacacia L*, *Taxus wallichiana*, *Celtis australis*, *Crataegus songarica*, *Berberis lycium Royle*, were also fairly abundant (Table 1).

The distribution of species was not even as seen from the evenness index. Since the diversity index was high, the Simpson diversity Index was 0.85. It could be seen that only five of them showing a very high dominance, the Shannon-Wiener Diversity Index was 1.97 and Evenness index was 0.85.(Table 2).

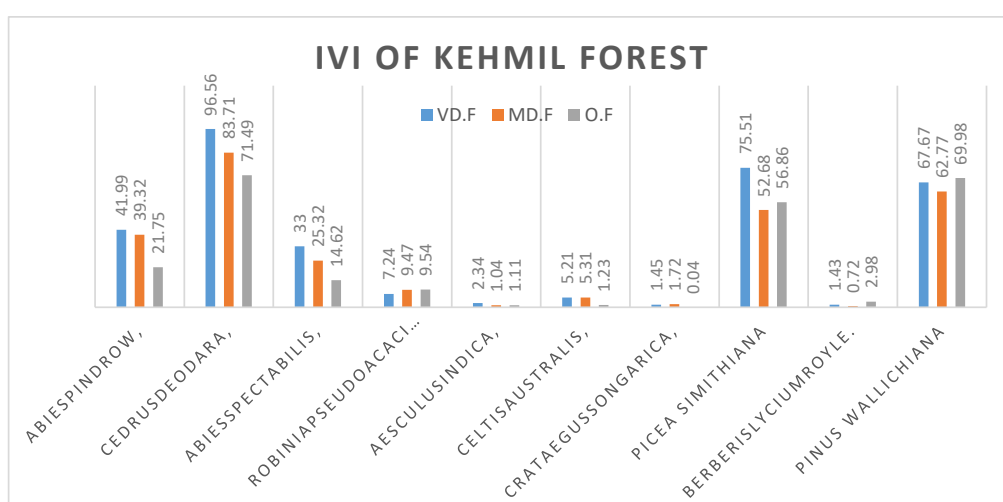




**Figure 2. Importance Value Indices (IVIs) of the 10 common species with the highest IVI in very dense moderate and open forest plantation of Kamraj forest division.**



**Figure 3. Importance Value Indices (IVIs) of the 10 common species with the highest IVI in very dense moderate and open forest plantation of Langate forest division.**



**Figure 4. Importance Value Indices (IVIs) of the 10 common species with the highest IVI in very dense moderate and open forest plantation of Kehmil forest division.**



### ● **Moderate Dense Forest**

Phytosociological studies in the moderate dense forest of Kamraj forest division showed different distributions and density as compared to very dense forest. The understorey vegetation of recorded plants in different samples were noted. *Cedrus deodara* showed high abundance and IVI followed by *Picea simithiana* and *Pinus wallichiana*. Trees of *Aesculus indica* and *Robinia pseudoacacia* L were also fairly abundant (Table 1).

Simpson Diversity Index in moderate dense forest was 0.86 and the distribution of species was moderate as seen from the evenness index which was 0.882. Since the Shannon diversity index was high as it could be seen that only five of them showing a very high dominance in moderate dense forest (Table 2).

### ● **Open Forest.**

Phytosociological studies in open forest of Kamraj forest division showed dominance and high IVI of *Cedrus deodara* followed by *Pinus wallichiana*, *picea simithiana* and *Abiespindrow*. The highest dominance and IVI of *Cedrusdeodara*as compared to other two forest types were noted in open forest type. *Abies spectabilis* showed lesser ab and IVI as compared to moderate dense forest. *Robiniap pseudoacacia* shows great increase in Ab and IVI from moderate dense forest. Trees of *Taxus wallichiana*, *Crataegus songarica*, *Berberis lyceum* Royle are also fairly abundant (Table 1).

The distribution of species in open forest of Kamraj forest of Kupwara was even as seen from the evenness index. Since the diversity index was high, the Simpson Dominance Index was noted as 0.87, Shannon-wiener

Diversity index was 2.06 and evenness index was calculated as 0.89. (Table 2).

## 3.2. Langate Forest Division

### ● **Very Dense Forest**

Phytosociological studies in the very dense forest of Langate forest division showed same presence of species with little difference in the dominance, abundance, and IVI. 30 samples were set in three forest types in 4 ranges I,e Magam, Mawar, Rafiaband and Rajwar. The altitude range of dense forest type was taken greater than 3500m as in Kamraj division. The understorey vegetation was full of *Abies pindrow*, *Abies spectabilis*, *Taxus wallichiana*, *Cedrus deodara*, *Celtis australis*, *Crataegus songarica*, *Picea simithiana*, *Pinus wallichiana*. *Berberis lycium* Royle, *Robinia pseudoacacia* L.

In dense forest type, *Abies pindrow*, *Abies spectabilis*, *Picea simithiana*, *Pinus wallichiana* and *Cedrus deodara*, showed high abundance and IVI. Other species have very less record and shows less abundance, density and IVI (Table 3).

The distribution of species was same as in Kamraj forest division as seen from the all indices. Since the diversity index was high, the Simpson diversity Index was 0.85. It could be seen that only five of them (*Abies pindrow*, *Cedrus deodara*, *Abies spectabilis*, *Picea simithiana*, and *Pinus wallichiana*) showing a very high dominance, the Shannon-Wiener Diversity Index was 1.96 and Evenness index was 0.85. (Table 4).

### ● **Moderate Dense Forest.**

Phytosociological studies in the moderate dense forest of Langate forest division showed variable

Index	Forest type and index values		
Index	Very dense	Moderate	Open
Simpson diversity Index	0.85	0.86	0.87
Shannon-Wiener Diversity Index	1.97	2.03	2.06
Evenness Index	0.857	0.882	0.89

**Table 2. Vegetational indices estimated from very dense, moderate and open forest plantation of Kamraj forest division.**

S.NO	SPECIES	Plant species status and forest type					
		Very dense		Moderate		Open	
		Ab	IVI	Ab	IVI	Ab	IVI
1	<i>Abies pindrow</i> ,	19	37.45	12	39.22	8	25.75
2	<i>Cedrus deodara</i> ,	15	96.63	26	79.52	12	92.45
3	<i>Abies spectabilis</i> ,	8	43	14	32.54	6	19.66
4	<i>Robinia pseudoacacia L</i>	2	5.81	3	10.12	01	11.76
5	<i>Aesculus indica</i> ,	2	4.14	2	1.04	02	04.11
6	<i>Celtis australis</i> ,	4	3.67	4	7.76	01	0.38
7	<i>Crataegus songarica</i> ,	2	1.42	1	0.72	01	0.09
8	<i>Picea simithiana</i>	15	73.45	9	63.32	12	68.54
9	<i>Berberis lycium Royle</i> .	1	1.24	1	1.72	1	04.54
10	<i>Pinus wallichiana</i>	13	72.67	14	71.77	13	76.98

**Table 3: Plant Species Status in very dense, moderate and open forest plantation of Langate forest division**

distributions and density as compared to very dense forest. The vegetation of plants recorded through different samples were noted. *Cedrus deodara* showed high abundance and IVI followed by *Picea simithiana* and *Pinus wallichiana*. Trees of *Abies spectabilis* and *Robinia pseudoacacia L* were fairly abundant (Table 3).

In moderate dense forest Simpson Diversity Index was 0.83 and the distribution of species was moderate as seen from the evenness index as 0.882. Since the Shannon diversity index was 1.91 as it could be seen that only five of them showing a very high dominance in moderate dense forest (Table 4).

#### ● Open Forest .

Phytosociological studies in open forest of Langate forest division showed the high dominance and IVI value of *Cedrus deodara*, *Pinus wallichiana*, *picea simithiana* and *Abies pindrow*. There is slightly less value of abundance and IVI of *Cedrus deodara* in Langate division as compared to Kamraj division. The highest abundance and IVI of *Cedrus deodara* as compared to other two forest types of Langate division was noted in open forest type. *Abies spectabilis* showed lesser Ab and IVI as compared to moderate dense

forest. *Robinia pseudoacacia* showed decline in Ab and IVI from moderate dense forest. Trees of *Taxus wallichiana*, *Crataegus songarica*, *Berberis lycium Royle* are also fairly abundant (Table 3).

The distribution of species in open forest of Langate forest division of Kupwara was less as compared to moderate and dense forest of the division as seen from the evenness index. Since the diversity index was high, the Simpson Dominance Index was noted as 0.84, Shannon-wiener Diversity index was less than the open forest of Kamraj division as 1.91 and evenness index was calculated as 0.828. (Table 4).

### 3.3. Kehmil Forest Division.

#### ● Very Dense Forest.

Phytosociological studies in the very dense forest of Kehmil forest division showed same presence of species as we have covered in Kamraj and Langate divisions with little difference in the dominance, abundance, and IVI. 30 samples were set in three forest types in 4 ranges I.e Ramhal, Nairhari, Keran and Karnah. The altitude range of dense forest type was taken greater than 3500m as same in Kamraj and Langate divisions. The understorey vegetation was full of *Abies*

Index	Forest type and index values		
Index	Very dense	Moderate	Open
Simpson diversity Index	0.85	0.83	0.84
Shannon-Wiener Diversity Index	1.96	1.91	1.91
Evenness Index	0.85	0.831	0.828

#### plantation of Langate forest division.

**Table 4. Vegetational indices estimated from very dense, moderate and open forest plantation of Langate forest division.**

*pindrow*, *Abies spectabilis*, *Taxus wallichiana*, *Cedrus deodara*, *Celtis australis*, *Crataegus songarica*, *Picea simithiana*, *Pinus wallichiana*. *Berberis lycium* Royle, *Robinia pseudo acacia* L.

In dense forest type Kehmil forest division, *Abies pindrow*, *Abies spectabilis*, *Picea simithiana*, *Pinus wallichiana* and *Cedrus deodara*, showed high abundance and IVI. *Abies pindrow* showed great number in Ab, IVI and dominance values as compared to Kamraj and Langate divisions. *Cedrus deodara* showed little increase in the number of Ab, IVI and dominance from the previous two divisions. Other species have very less recorded shows less abundance, density and IVI (Table 5).

The distribution of species was same in very dense forest of Kamraj division as seen from the all indexes. Since the Simpson diversity Index was 0.82, the Shannon-Wiener Diversity Index was low as compared to Langate dense forest division as 1.85 and Evenness index was 0.805. (Table 6)

#### ● Moderate Dense Forest

Phytosociological studies in the moderate dense forest of Kehmil forest division showed variable abundance, IVI and density as compared to very dense forest. The status of plants species recorded through different samples were noted. *Cedrus deodara* showed high abundance and IVI followed by *Picea simithiana* and *Pinus wallichiana*. *Abies pindrow* showed less record as compared to very dense forest type of Langate forest division. Trees of *Abies spectabilis* and *Robinia pseudoacacia* L are also fairly abundant (Table 5).

In moderate dense forest of Kehmil forest division Simpson Diversity Index was 0.82 slightly less than langate division and the distribution of species was moderate as seen from the evenness index as 0.813. Since the Shannon diversity index was 1.87 as its less than Langate forest division index record. (Table 6).

#### ● Open Forest.

Phytosociological studies in open forest of Kehmil forest division showed the high dominance and IVI value of *Cedrus deodara*, *Picea simithiana*, *Pinus wallichiana* and *Abies pindrow*. There is slightly less value of abundance and IVI of *Cedrus deodara* in Kehmil forest division as compared to Kamraj and Langate forest division. The highest abundance and IVI of *Cedrus deodara* as compared to other two forest types of Langate division were noted in open forest type. *Abies spectabilis* showed lesser Ab and IVI as compared to moderate dense forest. *Robinia pseudoacacia* showed decline in Ab and IVI from moderate dense forest. Trees of *Taxus wallichiana*, *Crataegus songarica*, *Berberis lyceum* Royle are also fairly abundant (Table 5).

The distribution of species in open forest of Kehmil forest division of Kupwara was less as compared to moderate and dense forest of the Kehmil forest division as seen from the evenness index. Since the diversity index of the Simpson Dominance Index was noted as 0.81, Shannon-wiener Diversity index was less than the open forest of Kehmil division as 1.76 and evenness index was calculated as 0.76, less than the Langate and Kamraaj forest divisions (Table 6).

S.NO	SPECIES	Plant species status and forest type					
		Very dense		Moderate		Open	
		Ab	IVI	Ab	IVI	Ab	IVI
1	<i>Abies pindrow</i> ,	14	41.99	10	39.32	6	21.75
2	<i>Cedrus deodara</i> ,	24	96.56	21	83.71	17	71.49
3	<i>Abies spectabilis</i> ,	6	33	08	25.32	05	14.62
4	<i>Robinia pseudoacacia</i> <i>L</i>	1	7.24	2	9.47	01	09.54
5	<i>Aesculus indica</i> ,	2	2.34	1	1.04	01	01.11
6	<i>Celtis australis</i> ,	3	5.21	2	5.31	01	1.23
7	<i>Crataegus songarica</i> ,	1	1.45	1	1.72	01	0.04
8	<i>Picea simithiana</i>	12	75.51	9	52.68	16	56.86
9	<i>Berberis lycium</i> Royle.	1	1.43	1	0.72	1	02.98
10	<i>Pinus wallichiana</i>	13	67.67	7	62.77	19	69.98

**Table 5: Plant Species Status in very dense, moderate and open forest plantation of Kehmil forest division**

Index	Forest type and index values		
Index	Very dense	Moderate	Open
Simpson diversity Index	0.82	0.82	0.81
Shannon-Wiener Diversity Index	1.85	1.87	1.76
Evenness Index	0.805	0.813	0.76

**plantation of Kehmil forest division.**

**Table 6. Vegetational indices estimated from very dense, moderate and open forest plantation of Kehmil forest division.**

#### 4. Discussion.

It is clear from our results that the composition and structure of the Kamraj forest plantations have changed over very dense, moderate dense and open forest, with the plantations being a highly dynamic system. (Khan et al., 2023 and Bhat et al., 2014) made the observations and analysis at various sites indicates that *Cedrus deodara* shows maximum values for all the parameters

except frequency index and relative frequency. It was the dominant species of the region having abundance (17.80), density (17.8), relative density (49.58) and IV (93.06). *Cedrus deodara* was followed by *Pinus excelsa* with abundance of (12.90), density (12.90), relative density (12.9) and IV (79.41). There has been decrease in the relative IVI of species from dense to open forest. Other changes in species loss were largely



due to deforestation in the moderate and open forest of Kamraj forest division (Fig 2). We draw on our current results to recommend a modified set of prescriptions for small holder and community tree plantations.

In Langate forest division our results of composition and structure of the phytosociology have showed variations over very dense, moderate dense and open forest, with the plantations being a highly to moderate dynamic system. There has been decrease in the relative IVI of species from very dense to open forest similar to that of Kamraj forest division. Other changes in species loss were largely due to deforestation in the moderate and open forest of Kamraj forest division (Fig 3). We draw on our current results to recommend for this division as same as for Kamraj forest division a modified set of prescriptions for small holder and community tree plantations.

In Kehmil forest division the composition and structure of the phytosociology showed variations over very dense, moderate dense and open forest. There has been decrease in the relative IVI of species from very dense to open forest similar to that of Kamraj and Langate forest division. Other changes in species loss were largely due to deforestation in the moderate and open forest of Kehmil forest division (Fig 4).

## 5. Conclusions:

Synthetic measure of the structure, complexity and stability of a community is considered as an outcome of evaluation of species in a biogeographic region (Hubble and Foster, 1983). In the present study general structure of vegetation at three dense forests depicted different frequency as well as IVI of *Abies pindrow*, *Cedrus deodara*, *Abies spectabilis*, *Robinia pseudo acacia* L, *Taxus wallichiana*, *Celtis australis*, *Crataegus songarica*, *Picea simithiana*, *Pinus wallichiana* and *Berberis lycium* Royle. Also the altitude plays an important role in the distribution of species as seen in the table 1 to 6.

A total of 10 plant species belonging to 6 families were considered including 08 trees and 02 shrubs. In high altitude of all three forest divisions of study area the presence of trees with high IVI of *Cedrus deodara* was followed by *Picea simithiana*, *Pinus wallichiana*, and low IVI of *Crataegus songarica*, *Taxus wallichiana*, *Celtis australis* and *Berberis lyceum* Royle. In lower altitude with open forest the difference if IVI and Ab of all the species were considerably low. The Shannon

diversity index showed a decreasing trend from lower altitude to higher one in all three divisions. The distribution and species richness pattern of different species are affected by various locality factors and can be used for managerial aspects. The Shannon diversity index showed a decreasing trend from lower altitude to higher in all three divisions. The distribution and species richness pattern of different species are affected by various locality factors and can be used for management. Hence, the present study can form a baseline for implementing management aspects for conservation, regeneration strategies and application of silvicultural systems at different altitudes. Poverty reduction strategy of the community with low dependence on firewood is advised so that timber source dependence is minimized for livelihood.

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## Challenges faced by Kalbeliya nomadic tribe during COVID-19 pandemic

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### Abstract:

Kalbeliya is a nomadic community (also known as Saper, Jogi Nath, etc.) mostly found in Rajasthan but now dispersed across the country. Kalbeliya the community is known for its dance and snake charming. This study focuses on the challenges faced by the Kalbeliya community during complete lockdown during COVID-19 pandemic. The findings of the study show that Kalbeliya people were impacted by COVID-19. Most of the people struggled for basic amenities like food, water, livelihood and obtaining essential things for the preventions of the COVID-19 infection and its spread.

### Introduction

In India, several communities are included in the nomadic tribes including Kalbeliya tribe. The people of the Kalbeliya community move from place to place for their livelihood, along with their families. During complete lockdown, they had to stop walking, which affected their day-to-day lives. This research paper has been focused on the various aspects of Kalbeliya communities including health, livelihood, education, etc. during the Covid-19 pandemic. Pandemics are hazards where an outbreak of infectious disease occurs over a large area, leading to social, economic, and political losses and increased morbidity and mortality (Madhav et al., 2017; Cheval et al., 2020). When they impact a large number of people with chances of long-term impact it is a disaster (Cheval et al., 2020; (Mishra et al. 2021; Kumar et al. 2017a).

The lockdown affected earnings of several communities that had a long-term impact on their survival and livelihood (Kumar et al. 2017b,c; Thakur et al. 2019 and 2020) and the effect has been felt globally including in USA, China, Germany, Sweden, Australia, Italy, India, and the Netherlands (Ahmed

et al., 2020; Nghiem et al., 2020; Mallapaty, 2020). The difficulties and problems faced by the nomadic Kalbeliya community during COVID-19 are presented in this study.

### Aims and Objectives of the Study

1. To study the changes and challenges in the lifestyle of Kalbeliya nomadic tribe during lockdown.
2. To know the actions taken by the government and the role of local people and organizations towards these communities during this pandemic.
3. To analyse the living status of the Kalbeliya nomadic tribe after lockdown.

### Methodology

By the random sampling method 50 people of Kalbeliya nomadic tribe were selected for the collection of the primary data including 25 females and 25 males from personal and telephonic interviews. The study area was 3 villages of Nagaur district of Rajasthan state namely Dhankoli, Maulasar, and Chugani.

The questionnaire comprised of following questions:

1. Are they aware or know about COVID-19 pandemic?
2. Where did they get information about COVID-19?
3. Are they following preventive measures? Are they affected by corona virus? If yes, then what kind of treatment they are taking?
4. Did they face economic problems due to COVID-19?
5. Did COVID-19 affect the education of their children, if yes what were the effects?
6. Did anyone come to help you during the lockdown?
7. How did the pandemic affect their lives?

### Results

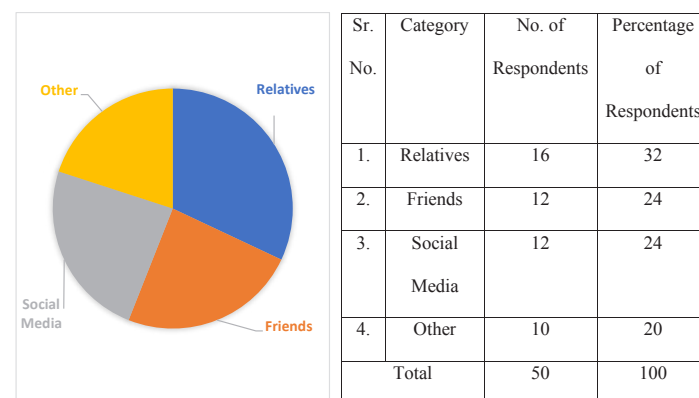
The members of the Kalbeliya community felt the effects of COVID-19 and lockdown. Every aspect of their lives was impacted, including health, education, way of life, income, etc.

**Awareness about Covid-19:** 36 respondents stated that they were unaware of the COVID-19 in its early stages but became aware as time passed, whereas 5 respondents stated that they were aware of the COVID-19 and coronavirus. According to them, it is a major ailment that is rapidly spreading throughout the country and the world. 9 respondents stated that they are unsure what it is. Two responders indicated it is a natural disaster. Three persons stated that it is a rumour.

Some of them claimed it was a little animal that was roaming around.

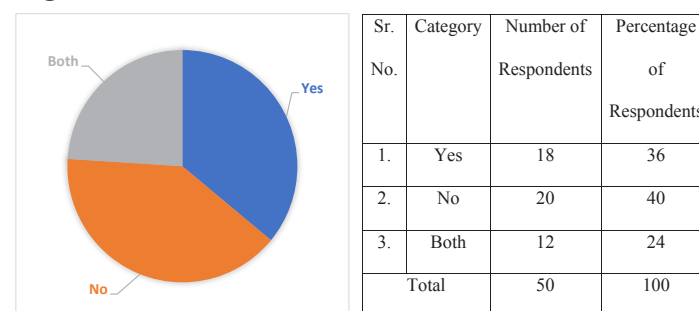
They had obtained the information about COVID-19 from relatives, friends, social media or other sources. With the help of graph and table number two it can be understood easily.

**Figure1 and Table1: Source of information about COVID-19**



**Awareness about preventive measures during the pandemic:** 18 respondents aware about the preventive measures for COVID-19 but were not fully following them. Whereas 20 respondents said that they were unaware or did not believe in them. 12 respondents said that they knew few measures but not all.

**Figure2 and Table2: Awareness about COVID-19**

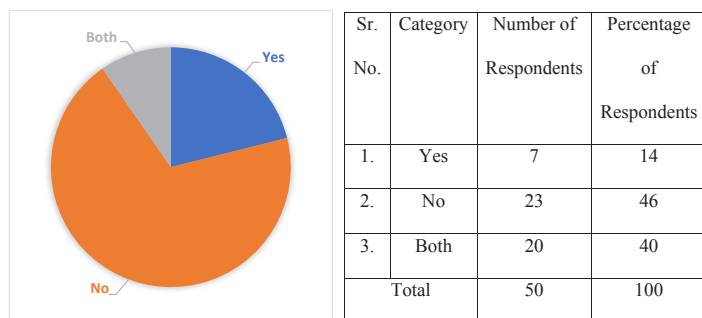


### Implementation of preventive measures during the pandemic

Out of the 50 respondents, 18 were aware of the preventive measures, but only 7 were following them. 23 respondents were not following any measures. Some believed that the virus will not reach them, so there was no need to follow any preventive measures. Some were unaware and some did not have time to follow them. Few respondents informed that they faced scarcity of water, masks, and sanitizer. Financially, they were not able to purchase them. 20 respondents sometimes followed a few measures but not all the time.

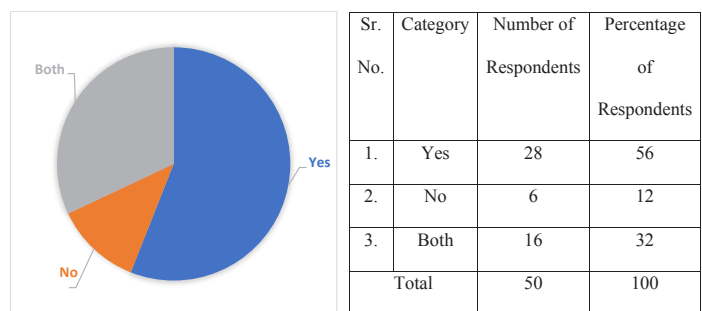


**Figure3 and Table3: Implementation of preventive measures during COVID-19**



**Infection in family:** 8 respondents informed that someone in their family was affected by the coronavirus. Some of them took home remedies to cure the infection. Some of them went to the hospital to get proper treatment, whereas many people just felt that it was nothing more than a viral fever, cold, and cough. Few people in their community believed that with the help of Jhaad-Phuuk (local remedies), they could come out of the coronavirus infection.

**Figure 4 and Table 4: Economic problems during COVID-19**



### Economic problems due to COVID-19

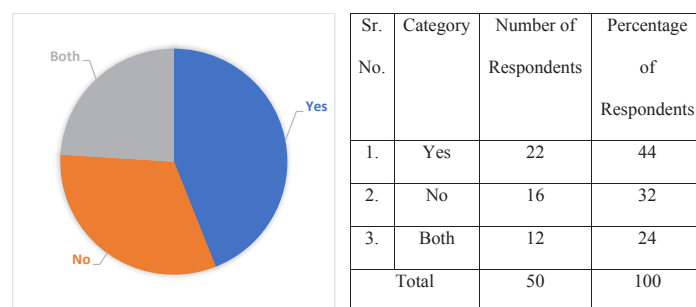
28 people, said that they were facing various kinds of economic problems due to limitations on moving from one place to another during complete lockdown. According to them, they were not able to travel, and without travelling, their earnings were not possible. They travel to collect the products, and after that, they have to travel from village to village to sell their products. They were not able to collect the food as well. In lockdown, people stigmatized them and labelled them as coronavirus carriers. Most of the people did not give them entry to go to a village or their colony. The people of their communities were treated as strangers who came from outside. Six respondents said that they did not face problems during lockdown. According to them, they had some stock of food, so they did not feel the need to go outside and go for earnings during the

lockdown. 16 respondents said that they sometimes faced problems but, on the other hand, they felt that it was good that they did not need to go out. Some of them were facing problems due to being stuck in other districts and states without access to rations and fodder for the livestock.

### Effect of COVID-19 on the education of their children

22 respondents stated that the education of their children was adversely affected. Some of them had started sending their children to school in the past few years, but due to lockdown, they were not able to send them to school or teach them online because of poverty and lack of proper internet facilities, electricity, and many of them do not have Android mobile phones, laptops, computers, etc. 16 respondents had never sent their kids to schools, so they did not have any problems due to lockdown. According to them, they are not able to send their kids to school because they are living a nomadic way of life. They do not live at a place for long, so their kids are not able to go to school. 12 respondents said that sometimes they feel that yes, their kids were not able to go to school due to lockdown, but on the other side, they saw that before lockdown, their kids did not go regularly to school, so it was not a big loss or change for their kids.

**Figure 5 and Table 5: Effect of education during COVID-19**



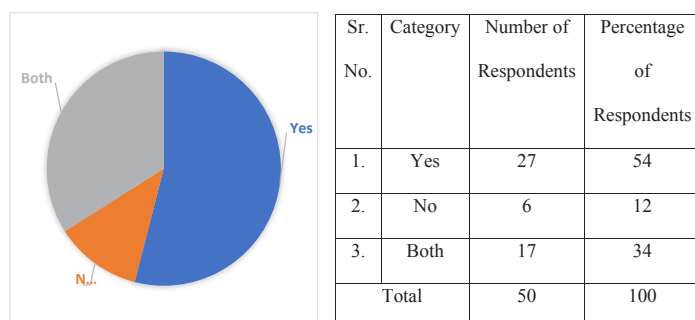
### Reactions of others towards Kalbeliya community during this pandemic.

27 respondents received help during lockdown. 7 respondents said that the local people provided food and 10 respondents said that NGOs reached out to them and provided them packaged food and COVID-19 Prevention kits. According to 10 respondents the government servants visited them during complete lockdown. They provided them masks, sanitizer, and medicines. They taught them about corona virus and



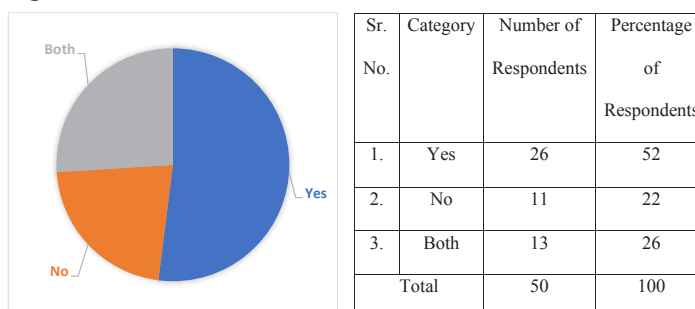
how it was spreading and how to take care of yourself and family members. They also discussed about the rules and regulations and instructions given by the Government. They also did screening for COVID-19. 6 respondents said that no one contacted them for any kind of help during complete lockdown. They had struggled for everything including food, water and medical treatment. 17 respondents said that sometimes people contacted them to provide food, but they did not have sufficient food for their families, and that it was distributed among some people of their community.

**Figure 6 and Table 6: Reactions of others during COVID-19**



**Status of the Kalbeliya Nomadic Tribe after lockdown.** 26 respondents faced many problems in their day-to-day activities during the lockdown which had changed and affected their traditional culture, their way of thinking, their way of living, their customs, and rituals. Before the coronavirus's existence, they got food easily from anywhere, but after the lockdown, people did not treat them properly, they showed them that they were coronavirus carriers, so they mistreated them and did not help them. 11 respondents said that they did not feel any changes in their lives. Before lockdown, they had to go out to collect the food, which is the same thing they are doing after lockdown was lifted, so there was no change for them. 13 respondents were uncertain about any post lockdown effects on their lives.

**Figure 7 and Table 7: Status after COVID-19**



**Conclusions and recommendations:** More than 72% of the Kalbeliya community was not aware of COVID-19. 32% of respondents got information about Covid-19 from relatives, 24% from friends, and 24% from social media platforms. More than 40% of the respondents were not aware of the preventive measures and 46% did not follow any preventive measures against COVID-19. 56% of the respondents faced problems with their livelihoods during the lockdown. Most of the families of Kalbeliya nomadic community are daily wage earners and faced problems in getting food and money as well as other means of earning to survive in complete lockdown. 44% of respondents in the Kalbeliya community were not able to educate their children during lockdown. More than 54% of respondents got various kinds of help from different sources during complete lockdown. 52% of respondents felt that their lives had changed after the lockdown. Despite the fact that the lockdown has been in effect since March 24, 2020, the government has yet to formulate a comprehensive policy for nomadic tribes to help them live and combat similar situations in the future.

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## Gangrene of the distal left leg of House Sparrow (*Passer domesticus*) chick- A case report

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**Abstract:** The House Sparrow [*Passer domesticus* (Linnaeus, 1758)] is associated with human dwellings. Once reported as a common bird, now its population is declining. The present study was conducted during April and May 2019. Out of several nest boxes deployed to study the breeding biology of House Sparrow at Jejuri, Pune, Maharashtra; in one nest box on 13 April 2019, one egg was present and the clutch size on 20 April 2019 was 3. On 28 April 2019, a 1-day-old hatchling was observed in the nest box with two eggs. The chick was examined and found to have gangrene of the left-tarsometatarsus. This could be a result of tissue damage due to ischemia as a consequence of a circumferential constriction of the left leg proximal to the disease. Amniotic bands are known to cause such congenital defects. On the third day of examination, the toes were dark reddish-brown to black and were edematous. On the sixth day, the chick was found dead and decayed in the nest box. Two eggs remained unhatched. We present a rare report on a House Sparrow chick with gangrene of the distal part of the left leg.

**Keywords:** House Sparrow, *Passer domesticus*, Gangrene, Hatchling, Toes

**Introduction:** In Agenda 21 of the Earth Summit, the sustainable developmental goal 15 has been proposed to improve biodiversity conservation. The Rio +20 emphasizes in its 2030 agenda on halting biodiversity loss and support the Convention on Biological Diversity (Biodiversity and Ecosystems 2021). Ultimately, there is a necessity to study precise scientific facts for biodiversity conservation.

The House Sparrow (*Passer domesticus*) is closely associated with human and human habitats; however, the species census is inversely proportional to the

human census (Peach et al. 2008). There are reports from several parts of the world on the dwindling population of the species (Summers-Smith 2003; Shaw et al. 2008; Pande 2018). We report gangrene of the distal left leg of House Sparrow.

**Methodology:** Out of several nest boxes (each numbered) deployed to study the breeding biology of House Sparrow (*Passer domesticus*) at Jejuri (18°16'49.7"N 74°09'23.9"E), Pune, Maharashtra, we also studied the clutch size and breeding success of nest box number 563. We made morphometry of eggs. The first time, only one egg was present and it was measured on 13<sup>th</sup> and on 20<sup>th</sup> April 2019, all three eggs were measured when the clutch was complete. From 28 April 2019, we made serial morphometry of the House Sparrow chick every third day till 4<sup>th</sup> May 2019, when morphometry was done for both the legs of the diseased chick.

Following measurements were made: biomass of eggs and chick, using electronic weighing balance (make: Bajinath Premnath, least count= 0.01g); length (from tip to base of longer or major axis) and width (diameter or maximum breadth) of eggs and length of tarsus (the joint between tarsus and toes to the

intertarsal joint), toes (from the base of the claws to the joint between toes and tarsus on the dorsal side) and claws (length of the arc of a circle between dorsal exit of the claw of toe from the skin to the tip of the claw) of chick, using digital vernier caliper (make: amiciTools, least count= 0.06mm); wing chord (from the carpal joint to the tip of the wing) and tail (from the base to the tip of the tail) of chick, using a stopped wing ruler (make: Ajanta, least count= 1mm). Chick was examined for any signs of disease or abnormalities on each visit.

**Permissions:** The present study was conducted as per the provisions of the Wildlife (Protection) Act, 1972 as a part of \*RS's doctoral research and is a part of the House Sparrow conservation project of Ela Foundation jointly with the Maharashtra Forest Department [Research Wing] (Pande et al. 2018).

**Results:** In nest box number 563 at Jejuri, the clutch size of House Sparrow (*Passer domesticus*) was 3 and the egg morphometry results are as reported in Table 1. On 28 April 2019, a 1-day-old hatchling was observed in the nest box with two eggs. The chick was examined and found to have gangrene of the left-tarsometatarsus.

**Table 1: Morphometry of the House Sparrow (*Passer domesticus*) eggs**

Egg	Date of examination	Biomass (g)	Egg length (mm)	Egg width (mm)	Hatching status
1	13/04/2019	2.35	20.01	15.91	Hatched
2	20/04/2019	1.20	19.90	15.12	Remained unhatched
3	20/04/2019	1.85	19.28	14.98	Remained unhatched

**Table 2: Serial morphometry of the House Sparrow (*Passer domesticus*) chick**

Date of Examination (day-wise)	Chick age	Biomass (g)	Wing Chord (mm)	Tail (mm)	Tarsus (mm)	Central Toe (mm)	Central Claw (mm)
28/04/2019	1 day	2.82	5	< 1	6.81	4.50	0.95
01/05/2019	4 day	5.25	7	< 1	10.56	5.70	1.13
04/05/2019	Was dead and decayed	Not taken	Not taken	Not taken	Not taken	Not taken	Not taken

**Table 3: Morphometry of the toes and claws of the left (gangrenous) and right (normal) leg of a four-day-old chick (dated: 01/05/2019)**

Foot	Tarsus (mm)	Hind Toe (mm)	Inner Toe (mm)	Central Toe (mm)	Outer Toe (mm)	Hind Claw (mm)	Inner Claw (mm)	Central Claw (mm)	Outer Claw (mm)
<b>Left (Gangrenous leg)</b>	9.72	3.18	2.37	3.50	2.87	0.95	0.42	1.09	Absent
<b>Right (Normal Leg)</b>	10.56	3.94	2.62	5.70	3.70	1.36	0.49	1.13	0.45

The toes of a 4-day-old chick were dark reddish-brown to black and were edematous. On 4<sup>th</sup> May 2019, the chick was found dead and decayed in the nest box. Two eggs were unhatched. The serial chick morphometry from 28<sup>th</sup> April 2019 to 04<sup>th</sup> May 2019 is as reported in Table 2. The morphometry of the toes and claws of the left (gangrenous) and right (normal) legs of a 4-day-old chick is as reported in Table 3. Figure 1 shows series of photographs of a House Sparrow chick with gangrene of the distal left leg.

**Discussion:** Gangrene is a consequence of tissue damage due to ischemia or infection or both (Buttolph and Sapra 2020). In birds like Eclectus Parrots (*Eclectus roratus*) and African Grey Parrots (*Psittacus erithacus*) tissue necrosis of toe was reported due to the syndrome called constricted toe syndrome. It can be caused due to scabs, fibres or necrotic tissues (Fiskett and Reavill 2004). The condition is commonly observed in juveniles (Burgmann 1995). Tissue necrosis and swelling can be observed in affected areas (What Is Your Diagnosis, 2004). In this case, we found a circumferential constriction of the left leg proximal to the disease. Amniotic bands are known to cause such congenital defects and are referred to as amniotic constriction band syndrome in humans (He et al. 2020), and not much literature is available on birds. This may be the first instance.

**Conclusion:** In our study in nest box number 563, the following observations on the breeding biology of House Sparrow (*Passer domesticus*) were recorded: Clutch size-3, number of hatchlings- 1, hatching

success- 33.33 %, fledging success- 0 %, and breeding success- 0 %. One House Sparrow (*Passer domesticus*) chick showed gangrene of the distal left leg due to a circumferential constriction. It subsequently died.

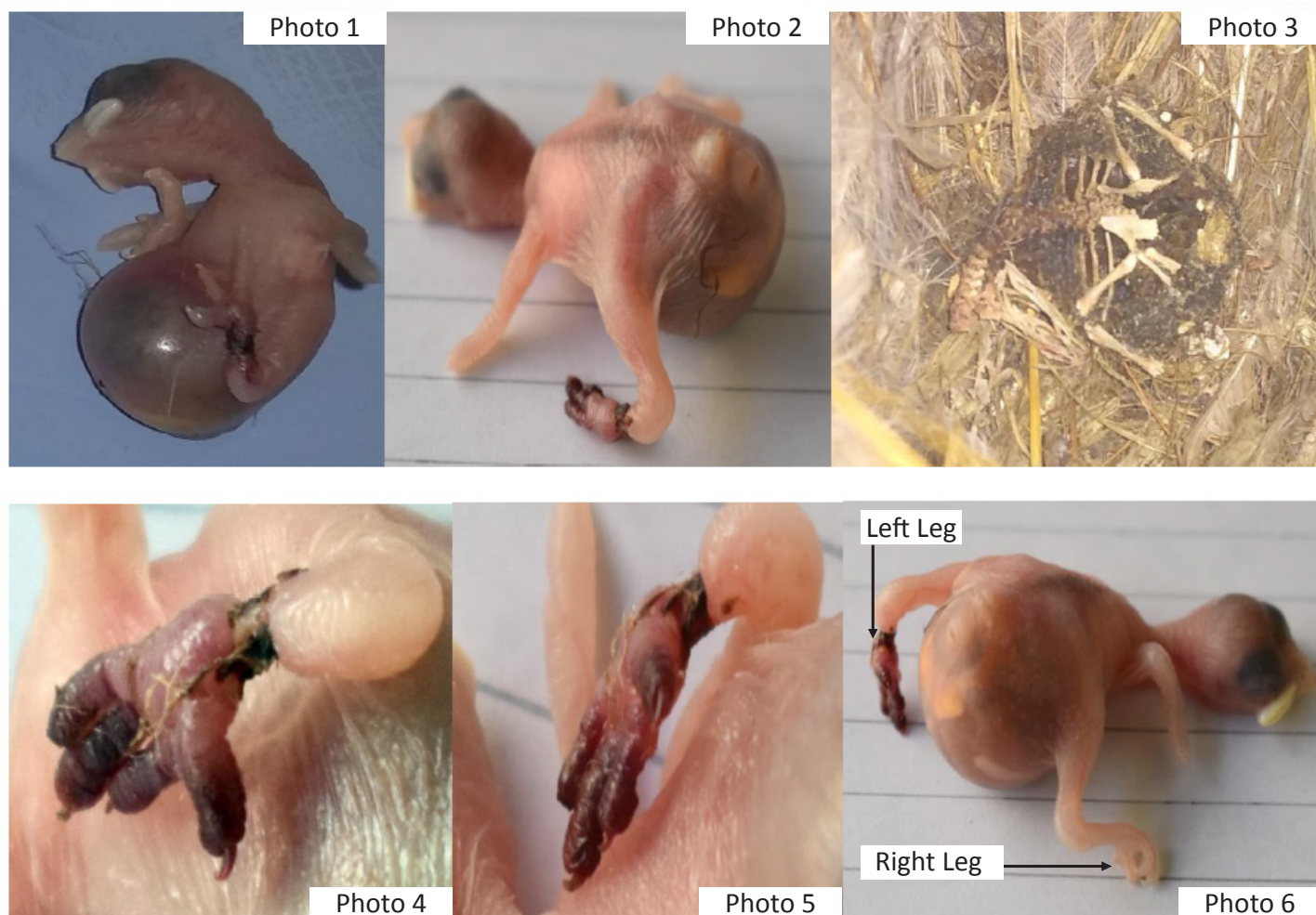
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**Conflicts of Interest:** None

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**Figure 1:** Serial photographs from our study showing gangrene of the distal left leg of House Sparrow (*Passer domesticus*) chick (Photo 1: 1-day-old chick shows a circumferential constriction on distal left leg; Photo 2: 4-day-old chick shows gangrenous distal left leg; Photo 3: Dead and decayed chick; Photo 4: Dark reddish-brown to black, edematous left leg on day-four; Photo 5: 4-day-old chick side view of gangrenous leg; Photo 6: 4-day-old chick with normal right leg and gangrenous left leg), (Pictures © Rushikesh Sankpal)

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Cover and Back cover : Pramod Deshpande,  
Male and Female House Sparrow

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