

Medicinal Plants and Traditional Medical Practices in Nepal

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ABSTRACT

The World Health Organization has encouraged using indigenous and traditional medical practices of their own which have been practicing since many centuries. As a result, the medicinal plants of Nepal are nowadays revalued by extensive researches on medicinal plant species and their therapeutic principles, to ascertain safety and efficacy of traditional medicines and admit the benefits of medical pluralism. We reviewed the therapeutically useful plant species and assessed their value to consider them as a potential resource for complementary and alternative medicine in Nepal. Medicinal plants used for top ten disorders of Nepal followed by medicinal plants prioritized for conservation by Herbs and NTFPs Coordination Committee, selection criteria for DNA barcoding of plants in Nepal, and frequently referred to the earlier literature were reviewed and presented 100 highly valued medicinal plant species. The species are being used in rural and local pharmacopoeias, and they are potential in bioprospecting and pharmacology and drug discovery in Nepal. Different therapeutic traditions coexist in Nepalese medical system where people can opt medicine based on their preferences, cultural backgrounds and their specific illnesses, which we admit as a win-win situation for well-being of citizens. Communication of traditional useful medicinal plant species and their scopes of primary health care abridges traditional and modern medicines, and lay ground for medical pluralism.

Keywords: Ayurveda; Health disorders; Herbal medicine; Therapeutic uses; Tibetan medicine.

INTRODUCTION

Plant use in the Nepal Himalaya, recorded in the 6,500-year-old text of the Rigveda, ranks among the earliest uses of medicinal plants.¹ Another early account, the Saushrut Nighantu is perhaps the oldest Nepali medicinal plant book, which was produced during the rule of the King Man Dev in the 5th century, records the uses of 278 Nepalese medicinal plant species.² Later compendia of herbal pharmacopoeias such as Chandra Nighantu and Nepali Nighantu were published in 19th and 20th century, respectively described 750 plants and 971 articles.³ These seminal works are under the aegis and corpus of the Ayurveda. For the last 100 years, Ayurveda has been a national medical system in Nepal.⁴ When living in an Ayurvedic lifestyle, people develop a deep knowledge and extensive use of the plants that comprise their environment and apply that knowledge in everyday life.⁵ The Amchi or Tibetan medicine is also a comprehensive medical system much like Ayurveda addresses both mind and body through medicines made from plants, animals and minerals.

Besides cultural heritage, geographical diversity and biodiversity richness of the country spurred the evolution and uses of wide range of plant species.⁶ The rugged topography has created geographic isolation and numerous ecological niches to which different ethnic groups have adapted⁷ to use the high-value medicinal plants. Owing to diverse geography and bioclimates, it is estimated that Nepal comprises 13,000 species of plants,⁸ including about 7,000 species of flowering plants⁹ and 2,500 medicinal and aromatic plants.^{10,49,50} Medicinal plant species richness in Nepal peaks at the elevational range 1,000–2,500 m above sea level (asl) and mid-hills and mountainous areas of Nepal hold the highest number of medicinal plant species in use, which are also hailed as a repository of diverse ethnomedicinal knowledge and traditional practices.¹¹

The higher percentage of ethnomedicinal uses of plants is stemmed to the preferences given by local people to the traditional herbal remedies, and a situation of having no

alternative choices, as well as poverty and belief in the effectiveness of folklore herbal remedies¹² and therapeutic properties of the plants.¹³ Even in the modern medicine, about 40% of the commonly used medicines contain compounds isolated from plants. The World Health Organization (WHO) encourages using indigenous and traditional medical practices of their own which have been practicing since many centuries.¹⁴ Of importance, a variety of medicinal plants have shown promise to treat a number of viral complications, bacterial diseases and fungal infections.¹⁵ Hence interest in herbal medicine has gradually increased in recent years. As a result, the medicinal plants of country are nowadays revalued by extensive researches on base materials plant species and their therapeutic principles, to ascertain safety and efficacy of traditional medicines. In this pursuit, we reviewed the therapeutically useful plant species of the country and assessed their value to consider them as a potential resource for complementary and alternative medicine.

METHODS

Out of the important medicinal plants drawn from the review of literature,^{16,17} we shortlisted 100 important species following the priority species of HNCC and DNA barcoding.¹⁸ We followed the conventional selection procedure while selecting the species that adopt the species frequently referred to the earlier literature.^{1,3,5,19,20} Publications are the major source of information, therefore, consultation of published literature (books, book chapters, journal articles, project reports, etc.) on the theme have been used while compiling information. Another important criteria to figure out the 100 species list was the medicinal plant species used for important top ten health disorders in Nepal.²¹ Chaulagain²¹ revealed that top ten health disorders in Nepal are Gastritis, Upper respiratory tract infection (ENT: Eye, nose and throat problem; cough and cold, tonsillitis, pharyngitis), Headache (migraine, anxiety disorder, tumor), followed by fever, lower respiratory tract infection (chest infection, cardiac disorder: pneumonia, bronchitis), high blood pressure (35% population) resulting in to heart attack, cough, skin diseases (eczema, fungal infection, measles) and neurological problem such as back ache, spinal cord disorder, etc.

Nomenclature of each species is based on modern taxonomic system,²² comprising accepted Latin name with authority, respective family, and Nepali local names. Similarly, therapeutic categories used in this review have been broadly classified in to 13 categories.²³ These categories are as follows:

1. Cardio-vascular disorder (chest pain, diabetes, heart attack, high blood pressure),
2. Cuts and wound (haemorrhage, nose bleeding; rabies, snake bite, scorpion sting),
3. Dental/ Mouth disorder (incl. sore throat, gingivitis, pharyngitis, tonsillitis, mouth ulcer; toothache, swelling gums, pyorrhoea),
4. Dermatological disorder (incl. blisters, boils, sores, burn; eczema, measles, scabies, pimples, ringworm),
5. Fever and headache (incl. meningitis, sinusitis, high altitude sickness; malaria, typhoid),
6. Gastro-intestinal disorder (constipation, indigestion, colic, stomachache, diarrhea and dysentery, vomiting; piles, and worm infestation),
7. Genito-urinary disorder (bedwetting, urinary discharge, burning sensation, renal calculus, kidney disorder),
8. Gynaecological disorder (menstrual disorder, child birth complication, abortion, leucorrhoea, gonorrhoea, syphilis; impotency, sexual debility, tonic),
9. Liver disorder (incl. bile disorder, jaundice/ hepatitis),
10. Musculo-skeletal disorder (incl. bone dislocation, bone fracture, sprain, swelling; joint pain, backache; arthritis, gout, paralysis, leprosy),
11. Neurological – Mental disorder (incl. epilepsy, hysteria, insomnia),
12. Ophthalmological disorder (incl. cataracts, conjunctivitis, ophthalmia) and
13. Respiratory disorder (cough and cold, asthma, bronchitis; pneumonia, tuberculosis).

DIVERSITY OF MEDICINAL PLANTS

Globally plants are important source of medicine, and nearly 10 percent of the plants are considered to be of medicinal value. It is estimated that nearly 50,000 species of plants have medicinal value, however, so far 25,791 species of flowering plants are reported as the medicinal plants.²⁴ China and India comprise the highest number of medicinal plants with 11,146 species and 7,500 species respectively.²⁵

Based on published documents regarding the medicinal plants in Nepal, in context to non-vascular plants, 15 species of algae,^{26,27,48} 74 species of macrofungi,^{28,29,47} 8 species of lichens^{30,31,32} and 12 species of bryophytes (liverworts & mosses) are reported with medicinal value.³³ Similarly, 75 species of pteridophytes (ferns & fern allies) are used as alternative medicines in Nepal.^{19,34,35} Furthermore 2,069 species of phanerogams, representing one third species, are considered as medicinal plants in Nepal.¹⁶

COMMON HEALTH DISORDERS AND THERAPEUTICALLY USEFUL MEDICINAL PLANTS

Among the selected 100 species (Table 1), one species each belong to fungi and lichen, 3 species of pteridophytes, 4 species of gymnosperms, and 91 species of angiosperms. Among them top 10 mostly used species with more than seven therapeutic uses (in alphabetical order) are: *Artemisia indica* (Titepati), *Asparagus racemosus* (Satawari), *Berberis aristata* (chutro), *Bergenia ciliata* (pakhanved), *Centella asiatica* (ghodtapre), *Ephedra gerardiana* (somla), *Juniperus indica* (dhupi), *Neopicrorhiza scrophulariiflora* (kutki), *Swertia chirayita* (chiraito) and *Tinospora sinensis* (gurjo). Of them, *Bergenia ciliata*, *Centella asiatica*, *Juniperus indica*, *Neopicrorhiza scrophulariiflora*, *Swertia chirayita* and *Tinospora sinensis* were found frequently used in primary health care.^{11,19,20,37,43} However, in terms of trade value and popular medicinal plants in local health care, top 10 species of medicinal plants in Nepal, among selective 100 species, include *Aconitum spicatum* (bikh), *Bergenia ciliata*, *Dactylorhiza hatagirea* (panch aunle), *Nardostachys jatamansi* (jatamasi), *Neopicrorhiza scrophulariiflora*, *Ophiocordyceps sinensis* (yartsagumba), *Podophyllum*

hexandrum (laghupatra), *Rheum australe* (padamchal), *Swertia chirayita* and *Tinospora sinensis*.

Analysis of existing data (Table 1) revealed that among the selected 100 species of popular medicinal plants, 68 species are used for gastro-intestinal disorder, followed by 58 species for fever and headache disorder, 52 species for respiratory disorder, 41 species for Dermatological disorder, 40 species for Genito-urinary disorder and 39 species each for Gynaecological disorder and Musculo-skeletal disorder. Similarly, 36 species of medicinal plants are used in Cuts and Wounds, 29 species in Liver disorder, 28 species in Cardio-vascular disorder (chest pain, heart attack, high blood pressure), 25 species in Dental and mouth disorder, 20 species in Neurological-mental disorder, and 18 species in Ophthalmological complications. These medicinal plants are being used in several medicinal system and practices in Nepal including Ayurveda, Vaidhya, Amchi Tibetan medicine, Gurau, folklores and home herbal remedy.^{30,38,44-46} Diverse forms of medicine and therapeutic traditions coexist in a pluralistic healthcare system where people can opt medicine based on their preferences, cultural backgrounds and their specific illnesses.

Table 1: Popular medicinal plant species for traditional medical practices in Nepal

Taxa	Family	Nepali name	CV (28)	CW (36)	DE (41)	DM (25)	FH (58)	GI (68)	GU (40)	GY (39)	LI (29)	MS (39)	NM (20)	OP (18)	RE (52)	Total disorder	Selective References
<i>Abies spectabilis</i> (D.Don) Mirb.	Pinaceae (G)	gobre salla, talis patra					+	+		+	+	+			+	6	3, 19, 20, 28, 30, 36, 40, 42, 50
<i>Achyranthes aspera</i> L.	Amaranthaceae	datiun, ulte kuro		+	+	+		+		+					+	6	3, 19, 20, 30, 36, 41
<i>Aconitum ferox</i> Wall. ex Ser.	Ranunculaceae	nilo bikh	+		+		+					+	+			5	30, 36, 39, 42, 50
<i>Aconitum spicatum</i> (Brühl) Stapf	Ranunculaceae	bikh	+				+						+	+		4	3, 30, 36, 40
<i>Acorus calamus</i> L.	Acoraceae	bojho				+	+	+					+		+	5	3, 19, 20, 36, 40, 50
<i>Aegle marmelos</i> (L.) Corrêa	Rutaceae	bel						+						+	+	3	3, 19, 20, 36
<i>Ageratina adenophora</i> (Spreng.) R.M.King & H. Rob [Eupatorium adenophorum Spreng.]	Asteraceae	banmara		+	+		+						+			4	19, 20, 40, 41, 42
<i>Ageratum conyzoides</i> L.	Asteraceae	gandhe jhar		+			+	+				+				4	19, 20, 36, 37, 42
<i>Aloe vera</i> (L.) Burm.f.	Asphodelaceae	ghiu kumari	+		+				+		+					4	3, 20, 36, 41
<i>Alstonia scholaris</i> (L.) R.Br.	Apocynaceae	chhatiwan			+		+	+								3	3, 19, 20, 36, 50

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<i>Amaranthus spinosus</i> L.	Amaranthaceae	kande lunde			+		+		+	+						4	19, 20, 36
<i>Arisaema flavum</i> (Forssk.) Schott	Araceae	sanko, sarpako makai			+			+		+						3	20, 30, 36, 38
<i>Artemisia dubia</i> Wall. ex Bess.	Asteraceae	tite pati	+	+		+		+	+							5	20, 30, 36, 41
<i>Artemisia indica</i> Willd.	Asteraceae	tite pati		+	+			+	+	+		+			+	7	3, 20, 30, 39, 40, 42
<i>Asparagus racemosus</i> Willd.	Asparagaceae	satawari					+	+	+	+	+		+		+	7	3, 19, 20, 30, 36, 40, 42, 50
<i>Azadirachta indica</i> A.Juss.	Meliaceae	neem		+	+	+	+		+		+					6	3, 20, 41, 50
<i>Berberis aristata</i> DC.	Berberidaceae	barhamase chutro			+	+	+	+	+					+		7	3, 19, 20, 30, 36, 38, 39
<i>Berberis asiatica</i> Roxb. ex DC.	Berberidaceae	chutro			+		+	+			+			+		5	20, 36, 37, 40, 41, 42
<i>Bergenia ciliata</i> (Haw.) Sternb.	Saxifragaceae	pakhanved	+		+		+	+	+			+			+	7	3, 36, 38, 39, 40, 41, 42, 43, 50
<i>Betula utilis</i> D.Don	Betulaceae	bhoj patra		+						+		+	+		+	5	20, 30, 36, 37
<i>Boerhavia diffusa</i> L.	Nyctaginaceae	punarnava	+		+				+	+	+	+			+	7	3, 20, 30, 36
<i>Bombax ceiba</i> L.	Malvaceae	simal	+	+	+			+	+	+						6	3, 19, 20, 36
<i>Butea monosperma</i> (Lam.) Kuntze	Fabaceae	palans			+			+		+		+				4	3, 19, 30, 36
<i>Calotropis gigantea</i> (L.) W.T.Aiton	Apocynaceae	aank			+		+	+				+			+	5	19, 20, 36
<i>Cannabis sativa</i> L.	Cannabaceae	bhang, ganja			+		+	+		+				+	+	6	3, 20, 30, 40, 42
<i>Capsella bursa-pastoris</i> (L.) Medik.	Brassicaceae	chamsure jhar						+	+				+			3	19, 20, 30, 36
<i>Cassia fistula</i> L.	Fabaceae	rajbrichya	+	+	+		+	+				+				6	3, 20, 36
<i>Centella asiatica</i> (L.) Urb.	Apiaceae	ghodtapre	+		+	+		+	+	+			+	+		8	3, 19, 20, 36, 41, 42
<i>Chrysopogon zizanioides</i> (L.) Roberty [Vetiveria zizanioides (L.) Nash]	Poaceae	khaskhas	+		+		+	+	+				+		+	7	3, 30, 36, 37
<i>Cinnamomum tamala</i> (Buch.-Ham.) Nees & Eberm.	Lauraceae	tejpat						+						+		2	20, 30, 36, 37
<i>Cirsium wallichii</i> DC.	Asteraceae	thakal					+	+	+					+	+	5	19, 20, 30, 37, 41, 42

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<i>Clematis buchaniana</i> DC.	Ranunculaceae	pinase lahara		+			+	+				+				4	20, 37, 41, 42
<i>Crateva unilocularis</i> Buch.-Ham.	Capparidaceae	siplikan		+			+		+	+		+				5	3, 20, 36, 37
<i>Curculigo orchoides</i> Gaertn.	Hypoxidaceae	kalo musli		+	+			+	+	+	+				+	7	3, 20, 36
<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	akash beli, amarlata			+		+	+			+	+				5	19, 20, 36, 41
<i>Cynoglossum zeylanicum</i> (Lehm.) Brand [<i>Cynoglossum furcatum</i> Wall.]	Boraginaceae	kanike kurro		+	+					+		+				4	20, 30, 36, 38
<i>Dactylorhiza hatagirea</i> (D. Don) Soó	Orchidaceae	panch aunle		+				+	+	+		+			+	6	3, 19, 30, 36, 38, 39, 40, 41
<i>Delphinium brunonianum</i> Royle	Ranunculaceae	mauromulo	+		+		+							+	+	5	30, 36, 38
<i>Dolichousnea longissima</i> (Ach.) Articus [<i>Usnea longissima</i> Ach.]	Parmeliaceae (L)	jhyau		+			+						+			3	30, 36, 38
<i>Drymaria cordata</i> Willd. ex Schult.	Caryophyllaceae	abhijalao				+	+	+							+	4	20, 36, 37, 41
<i>Eclipta prostrata</i> (L.) L.	Asteraceae	bhringaraj		+	+		+		+	+	+			+	+	8	3, 20, 36
<i>Ephedra Gerardiana</i> Wall. ex Klotzsch & Garcke	Ephedraceae (G)	som lata	+	+			+		+			+		+	+	7	3, 19, 20, 30, 38, 40, 42
<i>Equisetum diffusum</i> D. Don	Equisetaceae (P)	ankhle jhar, kurkure ghans		+	+				+	+	+				+	6	19, 20, 41, 42
<i>Fritillaria cirrhosa</i> D. Don	Liliaceae	kakoli					+	+		+		+	+		+	6	3, 19, 20, 30, 36, 42
<i>Gaultheria fragrantissima</i> Wall.	Ericaceae	dhasingare		+				+				+				3	3, 20, 37, 41
<i>Girardinia diversifolia</i> (Link) Friis	Urticaceae	allo			+		+	+				+				4	20, 35, 37, 41
<i>Hellenia speciosa</i> (J. Koenig) S. R. Dutta [<i>Costus speciosus</i> (J. Koenig) Sm.]	Costaceae	bet lauri		+				+	+	+					+	5	3, 19, 20, 36, 42
<i>Herpetospermum pedunculatum</i> (Ser.) C. B. Clarke	Cucurbitaceae	ban karela					+	+			+					3	19, 20, 30, 38
<i>Hippophae salicifolia</i> D. Don	Elaeagnaceae	dale chuk				+		+		+		+				4	36, 38, 40, 42
<i>Holarrhena pubescens</i> Wall. ex G. Don	Apocynaceae	ban khirro			+		+	+							+	4	3, 19, 20, 36

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<i>Hydrangea febrifuga</i> (Lour.) Y.De Smet & Granados [<i>Dichroa febrifuga</i> Lour.]	Hydrangeaceae	aseru					+	+							+	3	19, 20, 36, 37
<i>Incarvillea mairei</i> (H.Lev.) Grierson	Bignoniaceae	kanwalphool				+	+	+							+	4	30, 37, 38
<i>Juglans regia</i> L.	Juglandaceae	okhar			+	+		+							+	4	20, 30, 36, 38
<i>Juniperus indica</i> Bertol.	Cupressaceae (G)	dhupi	+			+		+	+	+	+	+	+	+	+	9	3, 30, 36, 38
<i>Justicia adhatoda</i> L.	Acanthaceae	asuro	+				+					+			+	4	3, 19, 20, 30, 36, 40
<i>Lobelia pyramidalis</i> Wall.	Campanulaceae	eklebir					+	+			+				+	4	20, 36, 41
<i>Lycopodium clavatum</i> L.	Lycopodiaceae (P)	nagbeli		+	+			+	+						+	5	3, 36, 40, 42
<i>Lyonia ovalifolia</i> (Wall.) Drude	Ericaceae	angeri		+	+											2	19, 20, 36, 37, 40, 41
<i>Maharanga emodi</i> (Wall.) A.DC. [<i>Onosma emodi</i> Wall.]	Boraginaceae	maharangi					+	+						+	+	4	3, 20, 36, 37
<i>Mahonia napaulensis</i> DC.	Berberidaceae	jamane mandro						+	+					+		3	19, 20, 36, 40, 50
<i>Meconopsis horridula</i> Hook.f. & Thomson	Papaveraceae	kyasar		+	+		+							+		4	19, 36, 38
<i>Mimosa pudica</i> L.	Fabaceae	buhari jhar					+	+	+	+					+	5	19, 20, 36, 41
<i>Myrica esculenta</i> Buch.-Ham. ex D.Don	Myricaceae	kafal		+				+						+		4	3, 19, 20, 36, 41, 42
<i>Nardostachys jatamansi</i> (D.Don) DC. [<i>Nardostachys grandiflora</i> (D.Don) DC.]	Caprifoliaceae	jatamasi	+				+	+	+				+		+	6	3, 19, 20, 36, 38, 40, 42, 50
<i>Neopicrorhiza scrophulariiflora</i> (Pennell) D.Y.Hong [<i>Picrorhiza scrophulariiflora</i> Pennell]	Plantaginaceae	kutki	+			+	+	+			+			+	+	7	3, 19, 20, 36, 38, 42, 50
<i>Nephrolepis cordifolia</i> (L.) C.Presl.	Nephrolepidaceae (P)	pani amala					+				+					2	19, 20, 34
<i>Ocimum tenuiflorum</i> L.	Lamiaceae	tulasi		+		+	+	+	+	+					+	7	3, 20, 36

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<i>Ophiocordyceps sinensis</i> (Berk.) G.H.Sung et al. [<i>Cordyceps sinensis</i> Berk.]	Ophiocordycipitaceae (F)	yartsa gumba	+						+	+	+				+	5	3, 30, 36, 38, 39, 40, 42, 50
<i>Oroxylum indicum</i> (L.) Kurz	Bignoniaceae	tatelo		+			+	+			+	+				5	3, 20, 36, 41, 42
<i>Osyris lanceolata</i> Hochst. & Steud. [<i>Osyris wightiana</i> Wall.ex Wight]	Santalaceae	nundhiki								+		+		+		3	3, 19, 20, 36
<i>Oxalis corniculata</i> L.	Oxalidaceae	chari amilo		+		+	+	+	+					+		6	19, 20, 37
<i>Paris polyphylla</i> Sm.	Melanthiaceae	satuwā	+	+		+	+	+							+	6	3, 19, 20, 30, 39, 40, 42, 50
<i>Phyllanthus emblica</i> L.	Phyllanthaceae	amala	+					+	+		+				+	5	3, 20, 36, 41, 50
<i>Piper longum</i> L.	Piperaceae	pipla	+				+	+	+	+			+		+	7	3, 30, 36, 37
<i>Podophyllum hexandrum</i> Royle	Berberidaceae	laghupatra		+	+				+	+	+		+			6	19, 20, 30, 36, 38, 42
<i>Polygonatum cirrhifolium</i> (Wall.) Royle	Asparagaceae	khiraunla							+	+	+					3	20, 30, 36, 38
<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Apocynaceae	sarpagandha	+	+			+	+					+			5	19, 20, 36, 42, 50
<i>Rheum australe</i> D.Don	Polygonaceae	padamchal		+			+	+	+	+		+				6	3, 20, 30, 36, 38, 39, 40, 41, 50
<i>Rhododendron arboreum</i> Sm.	Ericaceae	lali gurans					+	+		+	+	+			+	6	36, 37, 41, 42
<i>Brucea javanica</i> Merr. [<i>Rhus javanica</i> L.]	Simaroubaceae	bhaki amilo				+	+	+				+		+	+	6	20, 38, 43
<i>Rosa sericea</i> Lindl.	Rosaceae	jangali gulaf					+			+	+			+		4	19, 30, 36, 38
<i>Rubia manjith</i> Roxb.	Rubiaceae	majitho		+	+			+								3	3, 20, 36, 39, 40, 41, 42, 50
<i>Saussurea gossipiflora</i> D.Don	Asteraceae	kapase phool		+	+		+			+	+		+		+	7	20, 30, 36, 38, 39, 41
<i>Schima wallichii</i> (DC.) Choisy	Theaceae	chilaune		+				+	+	+	+	+				6	20, 36, 37, 44
<i>Semecarpus anacardium</i> L.f.	Anacardiaceae	bhalayo		+	+							+			+	4	3, 20, 36, 42
<i>Senegalia catechu</i> (L.f.) P.J.H.Hurter & Mabb. [<i>Acacia catechu</i> (L.f.) Willd.]	Fabaceae	khayar	+		+	+	+		+			+			+	7	3, 30, 35, 36

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Taxa	Family	Nepali name	CV (28)	CW (36)	DE (41)	DM (25)	FH (58)	GI (68)	GU (40)	GY (39)	LI (29)	MS (39)	NM (20)	OP (18)	RE (52)	Total disorder	Selective References
<i>Swertia chirayita</i> (Roxb.) H.Karst.	Gentianaceae	chiraito	+	+	+		+	+			+				+	7	19, 20, 36, 39, 40, 41
<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	jamun	+			+		+	+						+	5	3, 19, 20, 36
<i>Taxus wallichiana</i> Zucc.	Taxaceae (G)	lauth salla	+				+					+	+		+	5	30, 36, 39, 40, 41, 42
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	barro			+		+	+							+	4	3, 19, 20, 36, 41, 42
<i>Terminalia chebula</i> Retz.	Combretaceae	harro	+			+		+					+	+		5	3, 20, 36
<i>Thymus linearis</i> Benth.	Lamiaceae	ghoda mar-cha	+			+		+			+				+	5	20, 30, 36, 38
<i>Tinospora sinensis</i> (Lour.) Merr.	Menispermaceae	gurjo, guduchi					+	+	+	+	+	+			+	7	20, 30, 36, 39, 50
<i>Urtica dioica</i> L.	Urticaceae	sisnu	+			+			+	+	+	+				6	19, 20, 36, 37, 39
<i>Valeriana jatamansi</i> Jones [Valeriana wallichii DC.]	Caprifoliaceae	sugandhawal		+		+						+	+	+	+	6	19, 20, 36, 38, 40, 41, 42, 50
<i>Viscum album</i> L.	Santalaceae	hadchur		+		+				+		+				4	3, 18, 20, 28, 36, 39
<i>Woodfordia fruticosa</i> Kurz	Lythraceae	dhayero					+	+	+	+						4	3, 19, 20, 36
<i>Zanthoxylum armatum</i> DC.	Rutaceae	timmur			+	+	+	+							+	5	3, 20, 30, 36, 39, 40, 41, 42
<i>Zingiber officinale</i> Roscoe	Zingiberaceae	aduwa, sutho					+	+		+			+		+	5	3, 20, 30, 36, 39

Note: F (Fungi), G (Gymnosperm), L (Lichen), P (Pteridophyte)

CV (Cardio-vascular disorder), CW (Cuts and wound), DE (Dermatological disorder), DM (Dental-mouth disorder), FH (Fever & Headache), GI (Gastro-intestinal disorder), GY (Gynaecological disorder), LI (Liver disorder), MS (Musculo-skeletal disorder), NM (Neurological-Mental disorder), OP (Ophthalmological disorder), and RE (Respiratory disorder).



1. *Asparagus racemosus*: Kurilo (Asparagaceae)



2. *Azadirachta indica*: Neem (Meliaceae)



3. *Berberis aristata*: Chutro (Berberidaceae)



4. *Bergenia ciliata*: Pakhanved (Saxifragaceae)



5. *Bombax ceiba*: Simal (Malvaceae)



6. *Centella asiatica*: Ghodtapre (Apiaceae)



7. *Cinnamomum tamala*: Tejpat (Lauraceae)



8. *Ephedra gerardiana*: Somlata (Ephedraceae)



9. *Aconitum ferox*: Nilo bikh (Ranunculaceae)



10. *Fritillaria cirrhosa*: kakoli (Liliaceae)



11. *Butea monosperma*: Palans (Fabaceae)



12. *Hydrangea febrifuga*: Aseru (Hydrangeaceae)



13. *Juniperus indica*: Dhupi (Cupressaceae)



14. *Lycopodium clavatum*: Nagbeli (Lycopodiaceae)



15. *Mahonia napaulensis*: Jamanemandro (Berberidaceae)



16. *Nardostachys jatamansi*: Jatamasi (Caprifoliaceae)



17. *Mimosa pudica*: Buhari jhar (Fabaceae)



18. *Neopicrorhiza scrophulariiflora*: Kutki (Plantaginaceae)



19. *Oroxylum indicum*: Tatelo (Bignoniaceae)



20. *Oxalis corniculata*: Chari amilo (Oxalidaceae)



21. *Paris polyphylla*: Satuwa (Melanthiaceae)



22. *Phyllanthus emblica*: Amala (Phyllanthaceae)



23. *Rauvolfia serpentina*: Sarpagandha (Apocynaceae)



24. *Rhododendron arboreum*: Lali gurans (Ericaceae),



25. *Rubia manjith*: Majitho (Rubiaceae)



26. *Saussurea gossiphora*: Kapase phool (Asteraceae)



27. *Thymus linearis*: Ghodamarcha (Lamiaceae)



28. *Tinospora sinensis*: Gurjo (Menispermaceae)



29. *Swertia chirayita*: Chiraito (Gentianaceae)



30. *Woodfordia fruticosa*: Dhaiyero (Lythraceae)



31. *Zathoxylum armatum*: Timmur (Rutaceae)

Photo credit: All photos (Krishna K. Shrestha), except: *Bombax ceiba* (Narendra N. Tiwari), *Hydrangea febrifuga* (Prabin Bhandari), *Phyllanthus emblica* (Narendra N. Tiwari), and *Tinospora sinensis* (Ripu M. Kunwar).

CONCLUSION

Many medicinal plants including *Bergenia ciliata*, *Centella asiatica*, *Juniperus indica*, *Neopicrorhiza scrophulariiflora*, *Swertia chirayita* and *Tinospora sinensis* were found frequently used in primary health care in Nepal. The medicinal plants are found used in treatment of more than seven common health disorders of Nepal. Traditional medicinal system and practices in Nepal including Ayurveda, Vaidhya, Amchi, Tibetan medicine, folklores and home herbal remedy collect these medicinal plants and prepare medicine as home herbal healing. The practices are prevalent in rural and remote

areas as there is no alternative choice, and the poverty and cultural belief substantially motivated the practices. Application of both allopathic and traditional medicinal practices offer choices of medicine to the patients acknowledging the preferences, cultural backgrounds and illnesses of the patients. We admit medical pluralism as a win-win situation for well-being of citizens.

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