Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong 2021 Plantaginaceae

Nomenclatural reference 1217 Govaerts, R. (2022): The World Checklist of Vascular Plants (WCVP). – Royal Botanic Gardens, Kew. Checklist dataset of 2022-12-08. Retrieved from https://sftp.kew.org/pub/data-repositories/WCVP/, viewed 4.3.2023.

Summary

Intrinsic Traits

Distribution	Neopicrorhiza scrophulariiflora is naturally distributed in Bhutan, China, India and Nepal.
Abundance	In Nepal, it can be regarded as common in its high altitudinal range.
Habitat	The species is found on rocky slopes, in open shrubland and alpine meadows at altitudes ranging from 3500 to 5200m.
Regeneration	The plants show extensive clonal growth through the production of vegetative offshoots (or ramets). They may root from stem nodes and underground rhizomes may sprout to form new rosettes at some distance from the mother plant.
Reproduction	Seeds are dispersed by wind, water and gravity and germinate in May or June. Germination rates are low and there is no persistent seed bank.
Plant Parts	Rhizomes and roots are used.
Lifeform	Perennial herb, about 10cm high.
Systematics	

Extrinsic Traits

Threat Status	Not assessed globally by IUCN. Listed as Vulnerable in Nepal during a 2001 CAMP workshop. Also listed as Endangered in China by an earlier red list.
Threats	Populations have reportedly declined in parts of the range owing to overharvest. Habitat loss is also considered to adversely affect populations.
Purpose	P. kurrooa and N. scrophulariiflora cannot be separated in trade; both species are traded under the name kutki. Kutki is widely used in Ayurvedic and Unani traditional medicines in India with the rhizomes prized for their efficacy as an antibiotic. It is regarded as one of the major components of Arogyavardhini, a potent Ayurvedic formulation used to treat liver ailments. Use of Kutki in traditional medicine is China is believed to date back at least to the first century AD [...]. It is said to have an effect on fever, malnutrition due to digestive disorders, jaundice, diarrhoea and dysentery. Kutki is also used in amchi medicine. In Bhutan, Kutki is used as a medicine for coughs, colds and fever.
Use Fields	
Trade Trend	The global annual production of Kutki for trade is estimated in the order of 650-1000 t, of which 50-300 t is believed to be Picrorhiza kurrooa and the remainder Neopicrorhiza scrophulariiflora. Approximately two-thirds of the Kutki in trade is believed to originate in Nepal, around 20% in India and the remaining 15% in Bhutan. There is no indication that demand for Kutki will decline in the foreseeable future.
Legislation	Neopicrorhiza scrophulariiflora is not included in the CITES Appendix II, but regulated nationally in Nepal. Its sister species, Picrorhiza kurrooa, is included in Appendix II of CITES.

Taxonomy and Identification

Taxonomy	*Reference*
"The genus Picrorhiza was originally considered monotypic, comprising the single wide-spread species P. kurrooa, until Pennell (1943) distinguished a second species, Picrorhiza scrophulariiflora, which was subsequently placed in a separate genus, Neopicrorhiza, by Hong (1984), although the original generic name is still widely used for the latter species. The two species are apparently largely or entirely allopatric, with P. kurrooa occurring in the Western Himalaya and N. (P.) scrophulariiflora found further east."	8347 Mulliken, T. & Crofton, P. (2008): Review of th
"N. scrophulariiflora is closely related to Picrorhiza kurrooa (the latter species is confined to western Himalaya). Both of these species are known without distinction as kutki in regional and international trade."	8619 Ghimire, S.K., Sapkota, I.B., Oli, B.R. & Paraj

"The species P. kurrooa and N. scrophulariiflora are distinguished solely on floral characteristics and there is currently no way of separating those parts in trade (rhizomes and various derivatives thereof), other than by inference when the collection locality is known."	8347	Mulliken, T. & Crofton, P. (2008): Review of th
"The vegetative parts of the two species are visually indistinguishable."	8347	

Synonyms

Synonym	Eval	Ref	
Picrorhiza scrophulariiflora Pennell		1217	Govaerts, R. (2022): The World Checklist of Vascular Plants (WCVP). –

Taxon Present in Pharmacopoeias and other References

Name as used in Source	Status	Reference	
Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong		1180	GRIN (17.3.2015): Download World Economic Plants report from GRIN Taxonomy for the query. Medizin = 'Alle Nutzungen'. Retrieved from http://www.ars-grin.gov/cgi-bin/npgs/html/taxecon.pl?language=de
Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong		3221	Goraya, G.S. & Ved, D.K. (2017): Medicinal plants in India. An assessment of their demand and supply. National Medicinal Plants Board & Indian Council of Forestry Research & Education, New Delhi & Dehradun. Retrieved from http://www.rcfceast.org/wp-conten
Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong		3439	Shih-Chung Chen (ed.) (2019): Taiwan Herbal Pharmacopoeia. 3rd edition. English version. Ministry Health and Welfare, Taipei. Retrieved from https://www.mohw.gov.tw/lp-3690-2.html, viewed: 28.04.2020.
Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong		3561	Quattrocchi, U. (2012): World dictionary of medicinal and poisonous plants. Common names, scientific names, eponyms, synonyms, and etymology. CRC Press, Boca Raton.
Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong		6369	McGuffin, M., Kartesz, J.T., Leung, A.Y. & Tucker, A.O. (2000): Herbs of commerce. 2nd edition. AHPA, Silver Spring, USA.
Neopicrorhiza scrophulariiflora (Pennell) Hong		3145	Brinckmann, J.A., Kathe, W., Berkhoudt, K, Harter, D.E.V. & Schippmann, U. (2022): A new global estimation of medicinal and aromatic plant species in commercial cultivation and their conservation status. Economic Botany 22(10): 1-15.
Neopicrorhiza scrophulariiflora (Pennell) Hong		9003	Anon. (2009): Monograph on medicinal plants of Bhutan. Volume 2. Institut of Traditional Medicine Services, Thimphu. Retrieved from http://herbalnet.healthrepository.org/bitstream/123456789/2054/5/Monograph%20on%20Medicinal%20Plants%20of%20Bhutan%20Volume
Neopicrorhiza scrophulariiflora Hong		8460	Anon. (2009): WHO monographs on selected medicinal plants 4. WHO, Geneva.
Picrorhiza scrophulariiflora Pennell		2156	FRLHT - Indian Medicinal Plants Database - http://www.medicinalplants.in/
Picrorhiza scrophulariiflora Pennell		3091	National Pharmacopoeia Commission (ed.) (2020): Zhōnghuá rénmín gònghéguó yàodiǎn. 2020 Niánbǎn. Yī bù [Pharmacopoeia of the People's Republic of China. 2020 edition. Volume 1; in Chinese]. China Medical Science and Technology Press, Beijing.
Picrorhiza scrophulariiflora Pennell		3221	Goraya, G.S. & Ved, D.K. (2017): Medicinal plants in India. An assessment of their demand and supply. National Medicinal Plants Board & Indian Council of Forestry Research & Education, New Delhi & Dehradun. Retrieved from http://www.rcfceast.org/wp-conten
Picrorhiza scrophulariiflora Pennell		6667	Manandhar, N.P. & Manandhar, S. (2002): Plants and people of Nepal. Timber Press, Portland.
Picrorhiza scrophulariiflora Pennell		8374	China Pharmacopoeia Commission (ed.) (2005): Pharmacopoeia of the People's Republic of China 2005. 3 volumes. People's Medical Publishing House, Beijing.
Picrorhiza scrophulariiflora Pennell		8547	Ved, D.K. & Goraya, G.S. (2008): Demand and supply of medicinal plants in India. FRLHT, Bangalore.
Picrorhiza scrophulariiflora Pennell		8871	China Pharmacopoeia Commission (ed.) (2010): Pharmacopoeia of the People's Republic of China. English edition. Ed. 9. Stationery Office Books, s.loc.
Picrorrhiza scrophulariflora		8394	Therapeutic Goods Administration (ed.) (2007): Substances that may be used in listed medicines in Australia. Therapeutic Goods Administration, Symonston. Retrieved from http://www.tga.gov.au/cm/listsubs.pdf, viewed: 25.01.2009.

Common Names

Common Name	Typ	Language	Country	Ref	
gorki	tra	Tibetan	NP	6667	Manandhar, N.P. & Manandhar, S. (2002):
hodfing	tra	Sherpa	NP	6667	
hong-len	tra	Tibetan	NP	6667	
hu huang lian				1180	GRIN (17.3.2015): Download World Econo
Hu huang lian	ver	Chinese		1100	GRIN Database (Germplasm Resources In
kuraki	tra	Tamang	NP	6667	Manandhar, N.P. & Manandhar, S. (2002):
kutaki	tra	Gurung	NP	6667	
kutaki	tra	Nepali	NP	6667	
Kutki	ver	Nepali		4140	Malla, S.B., Shakya, P.R., Rajbhandari, K.
picrorhiza	scn			6369	McGuffin, M., Kartesz, J.T., Leung, A.Y. &
picrorhiza				1180	GRIN (17.3.2015): Download World Econo

Picrorhiza	ver	English	1100	GRIN Database (Germplasm Resources In
xi zang hu huang lian			1180	GRIN (17.3.2015): Download World Econo
Xi zang hu huang lian	ver	Chinese	1100	GRIN Database (Germplasm Resources In

Distribution Range

Distribution Range	Ref	
"Native: ASIA-TEMPERATE: China - Sichuan [w.], Xizang [s.], Yunnan [n.w.]; ASIA-TROPICAL: Bhutan; India - Sikkim; Nepal; Myanmar [n.]"	1100	GRIN Database (Germplasm Resources Info
"Picrorhiza kurrooa is found mainly in India, its range extending into Pakistan. Neopicrorhiza scrophulariiflora is found throughout much of Himalayan Nepal. Its range extends into China and both westwards and eastwards into India, with N. scrophulariiflora and Picrorhiza kurrooa having overlapping ranges in Uttaranchal, and only Neopicrorhiza scrophulariiflora being found in Sikkim. N. scrophulariiflora also occurs in Bhutan."	8347	Mulliken, T. & Crofton, P. (2008): Review of t
"recorded from Bhutan, China, India and Nepal"	8347	Mulliken, T. & Crofton, P. (2008): Review of t
"Sino-Himalayan. NW India, Nepal (W, C & E), Sikkim, Bhutan, N Myanmar, S & E Tibet, China" [includes P. kurrooa]	8619	Ghimire, S.K., Sapkota, I.B., Oli, B.R. & Par
"The two species are apparently largely or entirely allopatric, with P. kurrooa occurring in the Western Himalaya and N. (P.) scrophulariiflora found further east."	8347	Mulliken, T. & Crofton, P. (2008): Review of t
"throughout Nepal, [...] also in northern India, Bhutan, southeastern Tibet, western China, and northern Myanmar" [includes P. kurrooa]	6667	Manandhar, N.P. & Manandhar, S. (2002): P
China; Ind. Subcont., Indo-China	1180	GRIN (17.3.2015): Download World Econom
Distributed throughout Nepal at 3500-4800 m on open, rocky pastureland but the gathering of its rhizomes for sale in the trade endangers plant populations; also in northern India, Bhutan, southeastern Tibet, western China, and northern Myanmar.	6667	Manandhar, N.P. & Manandhar, S. (2002): P

Distribution

Continent	Region	ICC	Status	Free Text	Ref
3 Asia-Temporate	36 China	CN			1109
		CN		"CHT-XI"	1109
		CN		"CHC-YU"	1109
		CN			8347
4 Asia-Tropical	40 Indian Subcontinent	BT			8347
		IN			8347
		NP			6667
		NP			8347
	41 Indo-China	MM			1100

Abundance / Local Population Size

ICC	Abundance	Reference	
	"Occurrence: common"	8619	Ghimire, S.K., Sapkota, I.B., O

Ecology

TypeEc	ICC	Ecology	Ref	
alti		4300-5200m	8347	Mulliken, T. & Crofton, P. (2008)
alti	NP	3500-4800m	6667	Manandhar, N.P. & Manandhar,
alti	NP	3500-4800m	8619	Ghimire, S.K., Sapkota, I.B., Oli
grow	NP	"slow growing and longlived species"	8619	
habit		"preferred habitat homogeneous, broken rocky substrate, mainly on moist acidic soils rich in organic matter in meadows and shrublands, including open rocky pasture land, and on stony slopes, with a preference for rocky crevices"	8347	Mulliken, T. & Crofton, P. (2008)
habit		"wide ranging in suitable habitat"	8347	
habit	NP	"open, rocky pastureland"	6667	Manandhar, N.P. & Manandhar,
habit	NP	"Rocky slopes, shrubland, alpine meadows"	8619	Ghimire, S.K., Sapkota, I.B., Oli
regen		"Plants may root from stem nodes. In addition, underground rhizomes may sprout to form new rosettes some distance from the mother plant."	8347	Mulliken, T. & Crofton, P. (2008)
regen	NP	"extensive clonal growth through the production of vegetative offshoots (or ramets). [...] vegetatively growing shoots could attain maturity stage after 2-3 years"	8619	Ghimire, S.K., Sapkota, I.B., Oli
repro		"Plants regenerated from seeds take 4-5 or more years to become mature."	8347	Mulliken, T. & Crofton, P. (2008)
repro		"seed germination rate appears to be very low"	8347	
repro		"Seeds of N. scrophulariiflora are dispersed by wind, water and gravity, and germinate in May or June but germination rates are low and there is no persistent seed bank"	8347	
repro	NP	"Seed viability is short. [...] In natural conditions, seedling recruitment is low (10-20%)."	8619	Ghimire, S.K., Sapkota, I.B., Oli

Life Form

LF_Standard	Duration	Lifeform	Woodiness	Height	Ref	
		herb			3221	Goraya, G.S. & Ved, D.K. (201
		herb		about 10 cm high	6667	Manandhar, N.P. & Manandhar
			herb	about 10cm high	6667	Manandhar, N.P. & Manandhar
	perennial				8347	Mulliken, T. & Crofton, P. (200
perennial herb	perennial		herb	4-12cm tall	8619	Ghimire, S.K., Sapkota, I.B., O

Threat Situation

ICC	PopulationStatus	Ref	
	"deforestation, forest fires, grazing and agriculture have contributed to habitat loss, but [...] unregulated overharvesting [considered] to be the main threat"	8347	Mulliken, T. & Crofton, P. (200
	"highly threatened throughout the Himalayas, mainly due to commercial harvesting pressure."	8619	Ghimire, S.K., Sapkota, I.B., O
	"N. scrophulariiflora appeared to be much less susceptible to the effects of indiscriminate harvest than Nardostachys grandiflora. This was because in harvesting N. scrophulariiflora, it was very likely that fragments of rhizomes extending laterally underground from the mother plant would be left behind and would be capable of regenerating the following season."	8347	Mulliken, T. & Crofton, P. (200
	"Populations have reportedly declined in parts of the range owing to overharvest. Habitat loss is also considered to have adversely affected populations."	8347	
BT	"very rare"	8347	
CN	"endangered in the China Red Data Book"	8347	
IN	"vulnerable" (P. kurrooa sensu lato, that is, including any Indian populations of N. scrophulariiflora)	8347	
NP	"assessed as Vulnerable in Nepal during a 2001 CAMP workshop"	8347	
NP	"gathering of its rhizomes for sale in the trade endangers plant populations"	6667	Manandhar, N.P. & Manandhai
NP	"In Nepal it has vulnerable status"	8619	Ghimire, S.K., Sapkota, I.B., O

Threat Status: Global and Supranational

Glo	Threat Category		Criteria	Ass.	Publ.	Ref	
glo	E	Endangered			1997	1109	UNEP-WCMC Threatened Species Database. Download of 1997 regional threat assessments sent 15.6.2011 by H. Gillett. Cambridge, UK (cf. Walter & Gillett, 1997 IUCN Red List of threatened plants)
		Name used in redlist:	Neopicrorhiza scrophulariiflora (Pennell) Hong	Accepted		Name used in redlist:	Neopicrorhiza scrophulariiflora (Pennell) Hong

Threat Status: Countries

ICC	Region	Threat Category		Assd.	Publ.	Ref	
CN		EN	Endangered		2017	3293	Haining Qin & al. (2017): Threatened species list of
		Name used in redlist:	Neopicrorhiza scrophulariiflora	Accepted		Accepted Name:	Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong
CN		EN	Endangered – 濒危		2013	3319	Chinese Academy of Sciences (2013): Chinese biodi
		Name used in redlist:	Neopicrorhiza scrophulariiflora	Accepted		Accepted Name:	Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong
CN		E	Endangered		1997	1109	UNEP-WCMC Threatened Species Database. Downl
		Name used in redlist:	Neopicrorhiza scrophulariiflora (Pennell)	Accepted		Accepted Name:	Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong
NP		VU	Vulnerable		2002	6664	Bhattarai, N. (2002): Conservation assessment and
		Name used in redlist:				Accepted Name:	
NP		V	Vulnerable		1996	3359	Shrestha, T.B. Joshi, R.M. (1996): Rare, endemic an
		Name used in redlist:	Picrorhiza scrophulariiflora	Synonym		Accepted Name:	Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong

Purpose of Use

Purpose		Ref
medicine - general	"In Bhutan, Kutki is used as a medicine for coughs, colds and fever."	8347
	"The rhizome is bitter, cathartic, stomachic, and purgative. Juice of the rhizome is given for feaver, stomachache, and dropsy. A paste of the rhizome is used for coughs and colds."	6667
	The rhizome is bitter, cathartic, stomachic, and purgative. Juice of the rhizome is given for fever, stomachache, and dropsy. A paste of the rhizome is used for cough and colds.	6667
medicine - traditional Asian medicine	"Kutki is widely used in Ayurvedic and Unani traditional medicines in India with the rhizomes prized for their efficacy as an antibiotic. It is regarded as one of the major components of Arogyavardhini, a potent Ayurvedic formulation used to treat liver ailments."	8347
	"Use of Kutki in traditional medicine is China is believed to date back at least to the first century AD [...]. It is said to have an effect on fever, malnutrition due to digestive disorders, jaundice, diarrhoea and dysentery."	8347
medicine - traditional herbal medicine	"In amchi medicine in Dolpa, rhizomes and roots are used in bile disorders, blood and lung fevers, high blood pressure, sore throat, gastritis, intestinal pain, conjunctivitis, cold and cough"	8619
	Medic. (folklore)	1180
	Medicines: folklore (fide F ChinaEng; Herbs Commerce ed2; Chin Herb Med, as Picrorhiza scrophulariiflora)	1100

Purpose: Standardized Use Fields

Purpose: Fields of Use	Frequency
medicine - general	3
medicine - traditional Asian medicine	2
medicine - traditional herbal medicine	3

Purpose: Number of Use Fields

Purpose: Number of use fields
Taxon used in 3 different standardized use categories (max. 27 categories possible).

Plant Parts Used

Plant Part (standardized)	Plant Part (free text)	Remark	Ref	
root	"rhizomes and, to a lesser extent, roots"		8347	Mulliken, T. & Crofton, P. (2008): Review of t
root	"rhizome"		8619	Ghimire, S.K., Sapkota, I.B., Oli, B.R. & Para
root	Root(Rhizome)		3221	Goraya, G.S. & Ved, D.K. (2017): Medicinal p

Scale and Trend of Trade

ICC	Trade Trend	Ref	
	"Collection is said to have increased in Nepal and the eastern Himalaya (i.e. within the range of N. scrophulariiflora) but to have decreased in the Kashmir Himalaya (where the species present is P. kurrooa) as a result of which populations there are reportedly regenerating rapidly."	8347	Mulliken, T. & Crofton, P. (2008): Review of the status, harvest, trade and management of seven Asian CITES-listed medicinal and aromatic plant species. Bundesamt für Naturschutz, Bonn (BfN-Skripten 227). Retrieved from http://www.bfn.de/fileadmin/MDB/documents/service/skript227.pdf, viewed: 05.02.2010.
	"There is no indication that demand for Kutki, and therefore harvest to meet it, will decline in the foreseeable future."	8347	

Utilization: Commodity, Cultivation, Harvest, Sustainability, Trade

Type	ICC	Utilization	Ref	
cul	IN	Natural Fostering; Himachal Pradesh, Uttaranchal	3145	Brinckmann, J.A., Kathe, W.,
cul	NP	cultivated	3145	
cul	NP	cultivated: Agroforestry	3145	
cul	NP	Natural Fostering; Districts of Jumla and Lamjung	3145	
cul	NP	Propagated by seeds or rhizomes.	6667	Manandhar, N.P. & Manandha
exp	NP	97,5 tons exported per year	4140	Malla, S.B., Shakya, P.R., Raj
har		"It appears that the common practice throughout the range of the species is to uproot the entire plant during collection, but to use only the rhizome, and possibly also the roots. Mature plants – those three to four years old – are considered most suitable for harvest, particularly after fruiting and especially when dor-mant as this is when the content of the active ingredients is highest."	8347	Mulliken, T. & Crofton, P. (200
har	IN	wild harvested	3221	Goraya, G.S. & Ved, D.K. (201
sus		"Harvesting should follow a combination of selective collection of matured rhizomes and replanting of the younger ones in situ. The whole rhizome should not be harvested from the clone and other plants in the vicinity should not be removed. Harvesting should be done on a rotational basis (with a rotation period of at least 4-5 years)."	8619	Ghimire, S.K., Sapkota, I.B., O
sus		"in harvesting N. scrophulariiflora, it was very likely that fragments of rhizomes extending laterally underground from the mother plant would be left behind and would be capable of regenerating the following season. They observed significant regeneration even in study plots where 100% of plants were harvested in a season. Such regeneration was thought much more likely to be from rhizome fragments than from seed – as noted above, seed germination rate appears to be very low."	8347	Mulliken, T. & Crofton, P. (200
tra		"N. scrophulariiflora is closely related to Picrorhiza kurrooa (the latter species is confined to western Himalaya). Both of these species are known without distinction as kutki in regional and international trade. The global amount of trade of kutki has been estimated to be 650-1000 ton (of which a maximum of 50-300 ton are from Picrorhiza kurrooa and the rest from N. scrophulariiflora) [...]. The bulk (66%) of international trade in kutki has been said to mainly represent air-dried rhizomes of N. scrophulariiflora originating from Nepal, followed by India (19%) and Bhutan (14%)."	8619	Ghimire, S.K., Sapkota, I.B., O
tra		"OLSEN (2005a) estimated that global annual production of Kutki for trade was in the order of 650-1000 t, of which a maximum of 50-300 t was believed on the basis of origin to be Picrorhiza kurrooa and the remainder Neopicrorhiza scrophulariiflora. This figure excluded production within China and Pakistan. Amounts produced in each of these countries are unknown, but are unlikely to be very large, given the apparently limited range of the species in these two countries. Approximately two-thirds of the Kutki in trade was believed to originate in Nepal, around 20% in India and the remaining 15% in Bhutan."	8347	Mulliken, T. & Crofton, P. (200

tra		"The main demand for Kutki is within India, where the rhizomes are used for the preparation of traditional medicines. This demand is met by both domestic and foreign harvests, with Nepal the main source of foreign supply, and trade also taking place from Bhutan and possibly Pakistan. China, where the species is also used in traditional medicines, obtains supplies both from domestic populations and through imports from Nepal."	8347	
tra	IN	Estimated annual trade: 100-200 metric tonnes	3221	Goraya, G.S. & Ved, D.K. (201
tra	US	"sold in this country"	6369	McGuffin, M., Kartesz, J.T., Le

Legislation

Regulation

ICC	Regulation	Ref	
NP	"Initially, it was banned for collection and export from Nepal, but recently its ban has been lifted with the following provisions: (i) the identity of species harvested as kutki should be Neopicrorhiza scrophulariiflora and not Picrorhiza kurrooa, the latter being included in the CITES Appendix II; and this identity should be verified and certified by Department of Plant Resources; and (ii) DFO issue collection permit by ensuring that there is sufficient amount of available stock of kutki in its growing sites."	8619	Ghimire, S.K., Sapkota, I.B., O

Bibliography

1100 GRIN Database (Germplasm Resources Information Network). USDA-ARS. Retrieved from https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysearch.aspx

1109 UNEP-WCMC Threatened Species Database. Download of 1997 regional threat assessments sent 15.6.2011 by H. Gillett. Cambridge, UK (cf. Walter & Gillett, 1997 IUCN Red List of threatened plants)

1180 GRIN (17.3.2015): Download World Economic Plants report from GRIN Taxonomy for the query. Medizin = 'Alle Nutzungen'. Retrieved from http://www.ars-grin.gov/cgi-bin/npgs/html/taxecon.pl?language=de

1217 Govaerts, R. (2022): The World Checklist of Vascular Plants (WCVP). – Royal Botanic Gardens, Kew. Checklist dataset of 2022-12-08. Retrieved from https://sftp.kew.org/pub/data-repositories/WCVP/, viewed 4.3.2023.

2156 FRLHT - Indian Medicinal Plants Database - http://www.medicinalplants.in/

3091 National Pharmacopoeia Commission (ed.) (2020): Zhōnghuá rénmín gònghéguó yàodiǎn. 2020 Niánbǎn. Yī bù [Pharmacopoeia of the People's Republic of China. 2020 edition. Volume 1; in Chinese]. China Medical Science and Technology Press, Beijing.

3145 Brinckmann, J.A., Kathe, W., Berkhoudt, K, Harter, D.E.V. & Schippmann, U. (2022): A new global estimation of medicinal and aromatic plant species in commercial cultivation and their conservation status. Economic Botany 22(10): 1-15.

3221 Goraya, G.S. & Ved, D.K. (2017): Medicinal plants in India. An assessment of their demand and supply. National Medicinal Plants Board & Indian Council of Forestry Research & Education, New Delhi & Dehradun. Retrieved from http://www.rcfceast.org/wp-conten

3293 Haining Qin & al. (2017): Threatened species list of China's higher plants [in Chinese and English]. Biodiversity Science 25(7): 696-744. Retrieved from https://www.nationalredlist.org/files/2018/01/China-Higher-Plant-Red-List-BIODIVERSITY-SCIENCE.pdf, vi

3319 Chinese Academy of Sciences (2013): Chinese biodiversity red list for higher plants. Ministry of Environmental Protection of the People's Republic of China, Beijing. Retrieved from http://www.mee.gov.cn/gkml/hbb/bgg/201309/t20130912_260061.htm, viewed: 08

3359 Shrestha, T.B. Joshi, R.M. (1996): Rare, endemic and endangered plants of Nepal. WWW Nepal Program, Kathmandu.

3439 Shih-Chung Chen (ed.) (2019): Taiwan Herbal Pharmacopoeia. 3rd edition. English version. Ministry Health and Welfare, Taipei. Retrieved from https://www.mohw.gov.tw/lp-3690-2.html, viewed: 28.04.2020.

3561 Quattrocchi, U. (2012): World dictionary of medicinal and poisonous plants. Common names, scientific names, eponyms, synonyms, and etymology. CRC Press, Boca Raton.

4140 Malla, S.B., Shakya, P.R., Rajbhandari, K.R., Bhattarai, N.K. & Subedi, N.N. (1995): Minor forest products of Nepal. General status and trade. Forest Resource Informat. System Project, Kathmandu (FRIS Project Paper 4).

6369 McGuffin, M., Kartesz, J.T., Leung, A.Y. & Tucker, A.O. (2000): Herbs of commerce. 2nd edition. AHPA, Silver Spring, USA.

6664 Bhattarai, N. (2002): Conservation assessment and management planning (CAMP) workshop. Experience from Nepal. Medplant Network News 2 (2): 8-9.

6667 Manandhar, N.P. & Manandhar, S. (2002): Plants and people of Nepal. Timber Press, Portland.

8347 Mulliken, T. & Crofton, P. (2008): Review of the status, harvest, trade and management of seven Asian CITES-listed medicinal and aromatic plant species. Bundesamt für Naturschutz, Bonn (BfN-Skripten 227). Retrieved from http://www.bfn.de/fileadmin/MDB/doc

8374 China Pharmacopoeia Commission (ed.) (2005): Pharmacopoeia of the People's Republic of China 2005. 3 volumes. People's Medical Publishing House, Beijing.

8394 Therapeutic Goods Administration (ed.) (2007): Substances that may be used in listed medicines in Australia. Therapeutic Goods Administration, Symonston. Retrieved from http://www.tga.gov.au/cm/listsubs.pdf, viewed: 25.01.2009.

8460 Anon. (2009): WHO monographs on selected medicinal plants 4. WHO, Geneva.

8547 Ved, D.K. & Goraya, G.S. (2008): Demand and supply of medicinal plants in India. FRLHT, Bangalore.

8619 Ghimire, S.K., Sapkota, I.B., Oli, B.R. & Parajuli, R.R. (2008): Non-timber forest products of Nepal Himalaya. Database of some important species found in the mountain protected areas and surrounding regions. WWF Nepal, Kathmandu.

8871 China Pharmacopoeia Commission (ed.) (2010): Pharmacopoeia of the People's Republic of China. English edition. Ed. 9. Stationery Office Books, s.loc.

9003 Anon. (2009): Monograph on medicinal plants of Bhutan. Volume 2. Institut of Traditional Medicine Services, Thimphu. Retrieved from http://herbalnet.healthrepository.org/bitstream/123456789/2054/5/Monograph%20on%20Medicinal%20Plants%20of%20Bhutan%20Volume

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Abbreviations and Standards

ICC = ISO Country Codes **Ref = literature reference**

Altitude: **Low / High = minimum and maximum limits of altitude range [m]**

Legislation: **Source Taxon = name of taxon as contained in legislation**

Utilization: TypeUtil

TypeUtil	*TypeUtilLong*
com	commodity
cul	cultivation
exp	export
har	harvest
imp	import
man	management
price	price
rem	remark
socu	socio-cultural significance
sus	sustainability
tra	trade
trend	trend and scale of trade

Distribution Status: Standard

Status	*Explanation*
chk	check entry
nat	native
int	introd., established
adv	introduced, not established
ocd	occurrence doubtful
unc	status unclear
ext	extinct
cul	cultivated
sou	source doubtful
ica	introduced (casual or naturalized)
don	doubtfully native
pex	(presumably) extinct
ali	casual alien
nzd	naturalized
nna	not native
dpn	status doubtful, possibly native
abs	absent but reported in error

Common names: Type

TypeShort	*Type*
?	<unknown>
ayn	ayurvedic name
hom	homoeopathic name
pha	pharmaceutical name
scn	standardized common name
tra	trade name
ver	vernacular name

Ecology: TypeEcol

TypeEcol	*Explanation*
alti	altitude
grow	growth rate
habit	habitat
morph	morphology
regen	regeneration
repro	reproduction