

***Dendrobium officinale* Kimura & Migo**

1982

Orchidaceae

**Nomenclatural reference** 1208 RBG Kew (2021): World Checklist of Vascular Plants (WCVP). - Download wcvp\_v6\_sep\_2021, last modified 2021-09-15. Retrieved from <http://sftp.kew.org/pub/data-repositories/WCVP/>, viewed 15.10.2021.

**Summary**

Distribution	<i>Dendrobium catenatum</i> is found in south-east China, Taiwan and southern Japan, and extends to the northern parts of Myanmar, Sikkim (northwest India) and Nepal.
Legislation	The species is listed in CITES Appendix II.
Threat Category	Assessed globally as Critically Endangered by IUCN in 2004; needs updating.
Threat	Has increasingly suffered from overexploitation for medicinal purposes.
Abundance	Remaining populations are small and sparsely distributed.
Habitat	The species grows on tree trunks, rocks and cliffs in sparse limestone area woodlands up to 1600 m.
Regeneration	Slow vegetative propagation (one clone per stem and year).
Reproduction	Very low fruit and seed set, probably due to limited numbers of simultaneously open flowers and low pollinator visitation. Long maturation period.
Lifeform	Lithophytic perennial herb.
Plant Parts	The stems are used.
Use	The species is used in TCM.
Use Fields	
Trade Trend	Increasing demand and diminishing natural resources have led to establishments of modern large scale industrial propagation and cultivation facilities (4000 ha cultivated area in China with at least US\$39 billion market value).
Systematics	

**Taxonomie and Identification**

**Synonyms**

Synonym	Eval	Ref
<i>Dendrobium huoshanense</i> Z.Z.Tang & S.J.Cheng	1208	RBG Kew (2021): World Checklist of Vascular Plants (WCVP). - Download
<i>Dendrobium tosaense</i> Makino	1208	

**Name Used in Pharmacopoeias and other References**

Name as used in Source	Status	Reference
<i>Dendrobium huoshanense</i> C.Z.Tang & S.J.Cheng	5888	Traffic East Asia (1999): Medicinal plant significant trade study (phase 2). Final report submitted to the Bundesamt für Naturschutz, Germany. TRAFFIC East Asia. Unpublished report, sine loco.
<i>Dendrobium officinale</i>	5888	
<i>Dendrobium officinale</i> K. Kimura & Migo	1180	GRIN (17.3.2015): Download World Economic Plants report from GRIN Taxonomy for the query. Medizin = 'Alle Nutzungen'. Retrieved from <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/taxecon.pl?language=de">http://www.ars-grin.gov/cgi-bin/npgs/html/taxecon.pl?language=de</a>
<i>Dendrobium officinale</i> Kimura & Migo	6369	McGuffin, M., Kartesz, J.T., Leung, A.Y. & Tucker, A.O. (2000): Herbs of commerce. 2nd edition. AHPA, Silver Spring, USA.
<i>Dendrobium officinale</i> Kimura et Mig	5525	Penso, G. & Proserpio, G. (1997): Index plantarum medicinalium totius mundi eorumque synonymorum. 2nd edition. OEMF, Milano.
<i>Dendrobium officinale</i> Kimura et Migo	1199	Brinckmann, J., Kathe, W., Berhoudt, K. & Schippmann, U. (2020): Detailed analysis of global commercial cultivation of medicinal and aromatic plants (MAP). Unpublished project report for BfN. 36 pp. Bonn.
<i>Dendrobium officinale</i> Kimura et Migo	8871	China Pharmacopoeia Commission (ed.) (2010): Pharmacopoeia of the People's Republic of China. English edition. Ed. 9. Stationery Office Books, .

## Common Names

Common Name	Typ	Language	Country	Ref	
Chinese orchid	ver	English		6369	McGuffin, M., Kartesz, J.T., Leung, A.Y. &
dendrobium	scn			6369	
dendrobium	scn	English		6369	
hei jie cao	ver	Chinese		2413	Anon. (1976): Iconographia Cormophytoru
hek dzik tsou	ver	Chinese		2413	
Herba Dendrobii	pha	Latin		5935	Hu Shiu-Ying (1999): An enumeration of C
Officinal Dendrobium	ver	English		5935	
shi hu	ver	Chinese		6369	McGuffin, M., Kartesz, J.T., Leung, A.Y. &
tie pi shi hu	ver	Chinese		1180	GRIN (17.3.2015): Download World Econo
tie pi shi hu	ver	Chinese		2414	Tsi, Z.H., Chen, S.C., Luo, Y.B. & Zhu, G.
tie pi shi hu	ver	Chinese		6369	McGuffin, M., Kartesz, J.T., Leung, A.Y. &
T'ieh-p'i-shih-hu	ver	Chinese		5935	Hu Shiu-Ying (1999): An enumeration of C
tit pei sek huk	ver	Chinese		2414	Tsi, Z.H., Chen, S.C., Luo, Y.B. & Zhu, G.
wan nam tit pei	ver	Chinese		2414	
yun nam tie pi	ver	Chinese		2414	

## Distribution Range

Distribution Range	Ref	
"ASIA-TEMPERATE: China: China - Anhui, Fujian, Guangxi, Sichuan, Yunnan, Zhejiang"	1100	GRIN Database (Germplasm Resources Info
China	1180	GRIN (17.3.2015): Download World Econom
China (Anhui, Zhejiang, Fujian, Guangxi, Yunnan, Sichuan), Myanmar, Sikkim/India and Nepal and southern Japan	3575	Eng Soon Teoh (2016): Medicinal orchids of
S. China, S. Japan to EC. Taiwan; 36 CHC CHS 38 JAP NNS TAI	1126	World Checklist of Selected Plant Families,

## Distribution

Continent	Region	ICC	Status	Free Text	Ref				
3	Asia-Temperate	36	China	CN	Anhui, Fujian, Guangxi, Sichuan, Yunnan, Zhejiang	1100			
				CN		1109			
				CN	"CHT-XI"	1109			
				CN	"CHC-GU"	1109			
				CN	Guangxi	1109			
				CN	"CHC-YU"	1109			
				CN		1109			
				CN	Hunan	1109			
				CN	"CHS-AN"	1109			
				CN		1109			
					38	Eastern Asia	JP		1109
							TW		1109

## Abundance / Local Population Size

ICC	Abundance	Reference
CN	"Known remaining populations of D. catenatum are small and sparsely distributed."	9450 Hong Liu, Yi-Bo Luo, Heinen, J
CN	"Patchy distribution in Anhui province and harsh conditions; rapidly diminishing occurrences of D. catenatum; requires protection and simultaneous development of alternative supply through cultivation [...]"	3575 Eng Soon Teoh (2016): Medici

## Ecology

TypeEc	ICC	Ecology	Ref
alti	CN	up to 1600 m	3575 Eng Soon Teoh (2016): Medicin
habit	CN	"occurs on tree trunks and on rocks in sparse woods in limestone areas up to 1600 m."	3575
habit	CN	Lithophytic in moderately damp mountains; ca. 1600 m.	1117 eFloras. Flora of China. <a href="http://w">http://w</a>
morph		deciduous	3575 Eng Soon Teoh (2016): Medicin
repro	CN	"Several pockets of orchids that were under investigation suffer from extremely low pollinator visitation and fruit set, likely the result of too small a flowering display, with only a small number of open flowers in a given area in any given day during the flowering season [...]"	9450 Hong Liu, Yi-Bo Luo, Heinen, J,

repro CN "... ; its two- or three-years-old stems could be bloomed; higher seed-setting rate would be obtained when pollinated in time; the ovary began swelling after pollinated four or five days, until about 185 days later, the fruit matured; the seed-setting rate was very low (0.31%) in natural environment; only one clone was generated from one stem in a clump in annual. CONCLUSION: *D. officinale* mainly reproduces by clonal propagation;" 3600 He. P., Song, X., Luo, Y. & He,

## Life Form

Duration	Lifeform	Woodiness	Height	LF_free_txt	Ref
			9-35cm	"stems erect, 9-35cm, deciduous	3575 Eng Soon Teoh (2016): Medici
				Pseudobulb lithophyte	1126 World Checklist of Selected PI

## Population Status / Threat Causes

ICC	PopulationStatus	Remark	Ref
CN	"In Hainan regarded as endangered due to its overcollection in the past."		3601 Paul, A., Bharali, S., Latif Khar
CN	"Wild populations of <i>D. catenatum</i> have declined rapidly due to overexploitation, as China's human population and purchasing power increased [...]"		3603 Osewa, S.O., Alamu, O., Inegb

## Red List Status: Global and Supranational

Glo	Threat Category	Criteria	Ass.	Publ.	Ref
glo	CR	Critically Endangered	A4c	2004-04-30	2004 1206 2020 IUCN Red List of Threatened Species. Version
Name used in redlist: <i>Dendrobium officinale</i> Kimura & Migo					
glo	CR	Critically Endangered	A4c	2004	3626 China Plant Specialist Group (2004): <i>Dendrobium off</i>
Name used in redlist:					

## Red List Status: Countries

### Purpose: Free text

Purpose	Ref
medicine "The stems of <i>D. officinale</i> are used as a traditional Chinese hygienic food named "Tiepi Fengdou". It is beneficial to human health in many ways, such as nourishing yin and clearing away unhealthy heat, benefiting the stomach, resisting cancer and prolonging life"	3176 Ding, G., Xu, G., Zhang, W., L
Used in traditional Chinese medicine	5888 Traffic East Asia (1999): Medic
Medicines: folklore (fide Herbs Commerce ed2)	1100 GRIN Database (Germplasm R
Medic. (folklore)	1180 GRIN (17.3.2015): Download

### Purpose: Standardized Fields of Use

Purpose: Fields of Use	Frequency
medicine - traditional Chinese medicine	2
medicine - used traditionally as herbal remedy	2

### Purpose: Number of use fields

Purpose: Number of level-1 use fields
2

## Plant Parts Used

Plant Part (standardized)	Plant Part (free text)	Remark	Ref
stem			3176 Ding, G., Xu, G., Zhang, W., Lu, S., Li, X., Gu

## Scale and Trend of Trade

### Utilization: commodity, cultivation, harvest, socio-cultural significance, sustainability, trade

Type	ICC	Utilization	Ref
cul		"..., motivated by market demands in the face of depleted natural resources, mass artificial cultivation of <i>Dendrobium</i> orchids, including that of <i>D. catenatum</i> , using modern in vitro seed germination and tissue culture techniques, was developed recently. This mass production, mostly done in industrial shade houses and currently estimated to be around 500 ha in area with a total market value of ¥250 billion RMB (US \$39 billion), seems to have satisfied most of the market demand [...]."	9450 Hong Liu, Yi-Bo Luo, Heinen, J
cul	CN	"A large scale tissue-culture factory and plant production facility for <i>D. officinale</i> has been built in China. The cultivated area was over 60,000 mu (4000 ha) in 2014. Key technologies employed for cultivation of improved varieties of <i>D. officinale</i> have been developed by studying the relationship between factors such as growth medium, light, water, air and temperature on plant growth and development."	3602 Yi-bo Luo (2015): Major breakt
tra		"At present, the natural resources of <i>D. officinale</i> are so limited that the great demand has led to a severe shortage and high price,"	3176 Ding, G., Xu, G., Zhang, W., L

## Legislation

Regulation

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)

1117 eFloras. Flora of China. [http://www.efloras.org/flora\\_page.aspx?flora\\_id=2](http://www.efloras.org/flora_page.aspx?flora_id=2)

1126 World Checklist of Selected Plant Families, RBG Kew. <apps.kew.org/wcsp/home.do>

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>

1199 Brinckmann, J., Kathe, W., Berhoudt, K. & Schippmann, U. (2020): Detailed analysis of global commercial cultivation of medicinal and aromatic plants (MAP). Unpublished project report for BfN. 36 pp. Bonn.

1206 2020 IUCN Red List of Threatened Species. Version 2020-3. [www.iucnredlist.org](http://www.iucnredlist.org). Download of plant data received from IUCN 14.1.2021.

1208 RBG Kew (2021): World Checklist of Vascular Plants (WCVP). - Download [wcvp\\_v6\\_sep\\_2021](http://sftp.kew.org/pub/data-repositories/WCVP/), last modified 2021-09-15. Retrieved from <http://sftp.kew.org/pub/data-repositories/WCVP/>, viewed 15.10.2021.

2413 Anon. (1976): Iconographia Cormophytorum Sinicorum [in Chinese]. Science Press, Beijing.

2414 Tsi, Z.H., Chen, S.C., Luo, Y.B. & Zhu, G.H. (1999): Flora Reipublicae Popularis Sinica [in Chinese]. Science Press, Beijing.

3176 Ding, G., Xu, G., Zhang, W., Lu, S., Li, X., Gu, S. & Ding, X-Y. (2008): Preliminary geoherbism study of *Dendrobium officinale* food by DNA molecular markers. *European Food Research and Technology* 227: 1283-1286.

3575 Eng Soon Teoh (2016): *Medicinal orchids of Asia*. Springer, sine loco.

3600 He, P., Song, X., Luo, Y. & He, M. (2009): Reproductive biology of *Dendrobium officinale* (Orchidaceae) in Danxia landform [Article in Chinese]. *China Journal of Chinese Materia Medica (Zhongguo Zhong Yao Za Zhi)* 34 (2): 124-127. Retrieved from <https://www.cnki.net>

3601 Paul, A., Bharali, S., Latif Khan, M. & Prakash Tripathi, O. (2013): Anthropogenic disturbances led to risk of extinction of *Taxus wallichiana* Zuccarini, an endangered medicinal tree in Arunachal Himalaya. *Natural Areas Journal* 33: 447-454.

3602 Yi-bo Luo (2015): Major breakthroughs with *Dendrobium officinale* conservation made by a team in China. *Orchid Conservation News* 1: 3.

3603 Osewa, S.O., Alamu, O., Inegbedion, G.O., Abegunrin, O.D. & Jolaiya, O.B. (2020): Assessment of constraints facing Shea butter processors among rural dwellers in Oyo State, Nigeria. *Greener Journal of Agricultural Sciences* 10(1): 25-29. Retrieved from <http://www.greenerjournal.com>

3626 China Plant Specialist Group (2004): *Dendrobium officinale*. The IUCN red list of threatened species 2004. e.T46665A11074270. Retrieved from <http://dx.doi.org/10.2305/IUCN.UK.2004.RLTS.T46665A11074270.en>, viewed: 07.10.2016.

5525 Penso, G. & Proserpio, G. (1997): *Index plantarum medicinalium totius mundi eorumque synonymorum*. 2nd edition. OEMF, Milano.

5888 Traffic East Asia (1999): Medicinal plant significant trade study (phase 2). Final report submitted to the Bundesamt für Naturschutz, Germany. TRAFFIC East Asia. Unpublished report, sine loco.

5935 Hu Shiu-Ying (1999): *An enumeration of Chinese materia medica*. 2nd edition. Chinese University Press, Hong Kong.

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

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

9450 Hong Liu, Yi-Bo Luo, Heinen, J, Bhat, M. & Zhong-Jian Liu (2014): Eat your orchid and have it too. A potentially new conservation formula for Chinese epiphytic medicinal orchids. *Biodiversity and Conservation* 23: 1215-1228.

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
price	price
pur	purpose
rem	remark
socu	socio-cultural significance
sus	sustainability
tra	trade
trend	trend and scale of trade
use	uses

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**

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

**Ecology: TypeEcol**

<i>TypeEcol</i>	<i>Explanation</i>
alti	altitude
grow	growth rate
habit	habitat
morph	morphology
regen	regeneration
repro	reproduction
soil	soil