

Table S1. Taxon sampling: voucher specimens/cultures and GenBank accession numbers. New sequences generated in this study are in bold. (T) = type specimen.

Species	GenBank accession N°			
	ITS	LSU	RPB2	TEF1
<i>Chlorophyllum africanum</i> Z. W. Ge & A. Jacobs				
PREM 62140, South Africa	MG741961	MG742041	MG742070	MG742098
PREM 62141, South Africa	MG741963	MG742042	MG742071	MG742099
<i>Chlorophyllum agaricoides</i> (Czern.) Vellinga				
HKAS 101312, Russia	MG742003	MG742020	MG742050	MG742078
HMAS 71678, Neimenggu, China	MG742004	MG742021	MG742051	MG742079
AFTOL-ID 440, Greece	DQ200928	AY700187	–	DQ457631
<i>Chlorophyllum arizonicum</i> (Shear & Griffiths) G. Moreno & Altés				
AH31724, Mexico	KR233490	KR233499	–	–
Trappe11481 (AZ80), USA	HQ020416	HQ020419	–	–
<i>Chlorophyllum brunneum</i> (Farl. & Burt) Vellinga				
HKAS 101315, Italy	MG742013	MG742022	MG742052	MG742080
AH 49177, Madrid, Spain	MW020203	–	–	–
<i>Chlorophyllum demangei</i> (Pat.) Z. W. Ge & Zhu L. Yang				
Z. W. Ge 3112, Yunnan, China	MG741965	MG742027	MG742056	MG742084
Z. W. Ge 3574, Yunnan, China	MG741964	MG742025	MG742055	MG742083
MFLU 12-1769, Thailand	KJ524556	MN097907	–	–
MFLU 09-0005, Thailand	KJ524555	MN097908	–	–
<i>Chlorophyllum globosum</i> (Mossebo) Vellinga				
Z. W. Ge 2006-1, Yunnan, China	MG741995	MG742023	–	–
PREM 62147, South Africa	MG742002	MG742024	MG742053	MG742081
MFLU 12-1815, Thailand	KJ524553	MN097909	–	–
<i>Chlorophyllum hortense</i> (Murrill) Vellinga				
HKAS 101317, Hainan, China	MG741967	MG742026	MG742054	MG742082
HKAS 90470, Yunnan, China	MG741971	MG742029	MG742058	MG742086
CUHAM151, India	KM244733	–	–	–
MFLU 12-1783, Thailand	KJ524554	MN097910	–	–
MFLU 19-2352, Thailand	MN099355	MN097916	MN816433	–
CBS:531.92, Florida, USA	MH862374	MH874037	–	–
EFM 575, Colombia	U85318	–	–	–
MC 836 (FACEN 4971), Paraguay	OQ060563	OQ060569	–	–
<i>Chlorophyllum levantinum</i> Loizides, P. Alvarado & Konstantinou				
ACAM 2012-320, Cyprus (T)	MN161878	MN161885	–	MN168299
ALV 5876, Cyprus	MN161879	MN161886	MN168297	MN168300
<i>Chlorophyllum lusitanicum</i> G. Moreno, Moledano, Manjón, Carlavilla & Altés				
AH45540, Spain	KR233482	KR233491	–	–
AH43927, Spain	KR233483	KR233492	–	–
DD 2994, Greece	MN161880	MN161887	MN168298	–
<i>Chlorophyllum molybdites</i> (G. Mey.) Masee				
HKAS 45051, Hunan, China	MG741985	MG742030	MG742059	MG742087
Z. W. Ge 3146, Yunnan, China	MG741987	MG742031	MG742060	MG742088
MFLU 12-1772, Thailand	KJ524557	MN097911	–	–
MFLU 12-1765, Thailand	KJ524559	MN097912	–	–
Z. W. Ge 3381, Florida, USA	MG741993	MG742034	MG742063	MG742091
Z. W. Ge 3377, Florida, USA	MG741992	MG742033	MG742062	MG742090
HKAS 101322, Dominican Republic	MG741988	MG742032	MG742061	MG742089
FBT908, Australia	OL653075	OL652950	–	–
CUH AM704, India	MT181061	MT184383	–	–
HAW:JKS96, Hawaii, USA	MK412591	–	–	–
OSA:MY-7658, Japan	LC439508	–	–	–
CUH AM150, India	KM190077	–	–	–
CM021 (FACEN 4302), Central, Paraguay	OQ060564	OQ060570	–	–
YM454 (FACEN 4891), Central, Paraguay (YM454)	OQ060567	OQ060573	–	–
GM1839 (FACEN 4889), Central, Paraguay (GM1839)	OQ060565	OQ060571	–	–
YM447 (FACEN 4890), Guaira, Paraguay	OQ060566	OQ060572	OQ117048	–
S31, Sudán	MK560059	–	–	–
S39, Sudán	MK541933	–	–	–
KUBOT-KRMK-2020-92, India	MW547073	MW547074	–	–

Table S1. Continued.

Species	GenBank accession N°			
	ITS	LSU	RPB2	TEF1
<i>Chlorophyllum neomastoideum</i> (Hongo) Vellinga HKAS 83208, Zhejiang, China	MG741976	MG742035	MG742064	MG742092
<i>Chlorophyllum nothorhachodes</i> Vellinga & Lepp H. Lepp 1142, Australia	AF482855	–	–	–
<i>Chlorophyllum olivieri</i> (Barla) Vellinga HKAS 31587, Marburg, Germany HKAS 53466, Marburg, Germany 337911, Washington, USA	MG742016 MG742017 OK649904	MG742036 MG742037 –	MG742065 MG742066 –	MG742093 MG742094 –
<i>Chlorophyllum palaeotropicum</i> Z. W. Ge & A. Jacobs PREM 62142, South Africa (T) PREM 62145, South Africa HKAS 93747, Okpara, Benin	MG741978 MG741982 MG741983	MG742038 MG742039 MG742040	MG742067 MG742068 MG742069	MG742095 MG742096 MG742097
<i>Chlorophyllum pseudoglobosum</i> J. Sarkar, A. K. Dutta & K. Acharya CUH AM155, India (T)	KP642506	KR080484	–	–
<i>Chlorophyllum rhacodes</i> (Vittad.) Vellinga VPI-OKM19588, USA ECV2781, California, USA JFA5532, Michigan, USA	U85312 AY081237 AY081233	U85277 – –	– – –	– – –
<i>Chlorophyllum sapukai</i> Maubet, Campi & Robledo Y. Maubet 365 (FACEN 4388), Canindeyú, Paraguay (T)	OQ060562	OQ060568	–	–
<i>Chlorophyllum sphaerosporum</i> Z. W. Ge & Zhu L. Yang HMAS 66153, Neimenggu, China (T) HMAS 71683, Neimenggu, China	MG742011 MG742012	MG742043 MG742044	MG742072 MG742073	MG742100 MG742101
<i>Chlorophyllum subrhacodes</i> (Murrill) Vellinga Z. W. Ge 3411, Florida, USA Z. W. Ge 3232, Florida, USA Z. W. Ge 3385, Florida, USA Z. W. Ge 3242, Florida, USA	MG741975 MG741973 MG741972 MG741974	MG742045 MG742046 MG742048 MG742047	MG742074 MG742075 MG742077 MG742076	MG742102 MG742103 MG742105 MG742104
<i>Chlorophyllum squamulosum</i> A. K. Dutta, Soumili Bera & K. Acharya CUH AM702, India CUH AM705, India	MT188670 MT233318	MT188727 MT233322	– –	– –
Outgroup <i>Leucoagaricus nympharum</i> (Kalchbr.) Bon HMAS 99343, China <i>Leucoagaricus barssii</i> (Zeller) Vellinga ECV3126, USA	EU416310 DQ911600	EU416311 DQ911601	– DQ911602	– HM488924