Supplementary Tables

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Supplementary Table 1. Data of collection (taxa, GPS reading, Locality/ source)

No.		Taxa	Date of collection	GPS reading	Locality/ source
1	**Aizoaceae** Martynov	***Lampranthus spectabilis**** (Haw.) N. E. Br.	19/3/2021	N: 30.029384 E: 31.213015	I
2		***Malephora crocea**** (Jacq.) Schwantes =*Mesembryanthemum croceum* Jacq.	//	//	//
3		***Mesembryanthemum cordifolium**** L. f. =*Aptenia cordifolia* (L. f.) Schwantes	//	//	//
4		***M. crystallinum**** L. =*Cryophytum crystallinum* (L.) N. E. Br.	7/4/2021	N: 31.00611111 E: 29.73191667	III
5		***M. nodiflorum**** L. = *Cryophytum nodiflorum* (L.) L. Boulos	//	//	//
6		***Trianthema portulacastrum**** L. =*Trianthema monogynum* L.	30/11/2022	N: 30.077846 E: 31.283915	II
7	**Amaranthaceae** Juss.	***Aerva javanica**** (Burm. f.) Juss. ex Schult. = *Iresine javanica* Burm. f.	17/12/2022	N: 29.230756 E: 34.739191	VII
8		***Alternanthera brasiliana**** (L.) Kuntze =*Alternanthera dentata* Scheygrond	29/3/2021	N: 30.077848 E: 31.283917	II
9		***Amaranthus blitum*** subsp. ***oleraceus**** (L.) Costea = *Amaranthus lividus* L.	//	//	//
10		***A. caudatus**** L.	//	//	//
11		***Celosia argentea**** L. = *Celosia argentea* var. *cristata* (L.) Kuntze	19/3/2021	N: 30.029390 E: 31.213021	I
12	**Caryophyllaceae** Juss.	***Dianthus caryophyllus**** L.	17/3/2021	N: 30.077849 E: 31.283918	II
13		***Gymnocarpos decandrus**** Forssk. = *Gymnocarpos deserti* Forssk.	8/4/2021	N: 31.41241667 E:27.00552778	V
14		***Gypsophila capillaris**** (Forssk.) C. Chr.	17/12/2021	N: 29.230757 E: 34.739192	VII
15		***G. elegans**** M. Bieb.	19/3/2021	N: 30.029380 E: 31.213011	I
16		***Herniaria hirsuta**** L. = *Herniaria glabra* var. *hirsuta* (L.) Kuntze	7/4/2021	N: 31.00611114 E: 29.73191671	III
17		***Paronychia argentea**** Lam.	//	//	//

Supplementary Table 1. Cont.

No.		Taxa	Date of collection	GPS reading	Locality/ source
18		***Polycarpon tetraphyllum**** (L.) L. = *Alsine polycarpa* Crantz	2/3/2023	N: 31.41241667 E:27.00552778	V
19		***Silene coniflora**** Nees ex Otth	//	//	//
20		***S. rubella**** L.	//	//	//
21	//	***S. succulenta**** Forssk. = *Silene cryptantha* Viv.	3/3/2023	N: 31.37333336 E: 27.19147225	VI
22		***Spergula fallax**** (Lowe) E. H. L. Krause	7/4/2021	N:31.463377 E:26.781876	IV
23		***Spergularia diandra**** (Guss.) Heldr.	2/3/2023	N: 31.41241672 E:27.00552783	V
24		***S. marina**** (L.) Besser	3/3/2023	N: 31.37333337 E: 27.19147226	VI
25	**Chenopodiaceae** Burnett	***Atriplex halimus**** L.	7/4/2021	N: 31.00611115 E: 29.73191671	III
26		***A. leucoclada**** Boiss.	//	N: 31.37333332 E: 27.19147221	VI
27		***A. lindleyi*** subsp**. *inflata**** (F. Muell) P. G. Wilson =*Blakiella inflata* (F. Muell.) Aellen	//	N: 31.00611110 E: 29.73191666	III
28		***Bassia arabica**** (Boiss.) Maire & Weiller =*Chenolea arabica* Boiss.	//	N:31.463374 E:26.781873	IV
29		***B. indica**** (Wight) A. J. Scott =*Kochia indica* Wight, =*Bassia joppensis* Bornm. & Dinsm.,	//	N: 31.37333331 E: 27.19147220	VI
30		***Beta vulgaris*** subsp. ***cicla**** (L.) W. D. J. Koch	17/3/2021	N: 30.077847 E: 31.283916	II
31		***B. vulgaris*** subsp. ***maritima**** (L.) Thell. =*Beta maritima* L. = *Beta perennis* (L.) Halacsy	2/3/2023	N: 31.41241664 E:27.00552775	V
32		***Chenopodium album**** L.	17/3/2021	N: 30.077842 E: 31.283913	II

Supplementary Table 1. Cont.

No.		Taxa	Date of collection	GPS reading	Locality/ source
33	//	***C. murale***** L.	//	//	//
34		***Halopeplis amplexicaulis***** (Vahl) Ung. -Sternb. ex Ces., Pass. & Gibelli = *Salicornia amplexicaulis* Vahl	2/3/2023	N:31.463377 E:26.781876	IV
35		***Salsola kali***** L.	//	N: 31.37333334 E: 27.19147223	VI
36		***Suaeda pruinosa***** Lange	1/3/2023	N: 31.00611112 E: 29.73191668	III
37		***S. vera***** Forssk. ex J. F. Gmel. = *Salsola fruticosa* (L.) L.	//	//	//
38	**Nyctaginaceae** Juss.	***Boerhavia diffusa**** L. = *Boerhavia repens* var. *diffusa* (L.) Hook. f.	19/3/2021	N: 30.029390 E: 31.213021	I
39		***Bougainvillea glabra**** Choisy =*Bougainvillea arborea* Glaz.	17/3/2022	N: 30.077840 E: 31.283909	II
40		***Mirabilis jalapa**** L. = *Jalapa dichotoma* (L.) Crantz	//	//	//
41	**Phytolaccaceae** R.Br.	***Phytolacca dioica**** L. = *Phytolacca arborea* hort.	//	//	//
42	**Portulacaceae** Juss.	***Portulaca grandiflora**** Hook. = *Portulaca gilliesii* Engelm.	19/3/2021	N: 30.029387 E: 31.213018	I
43		***P. oleracea**** L. = *Portulaca aurea* hort.	17/3/2022	N: 30.077847 E: 31.283916	II

Legends. I. El Orman Garden**,** Cairo, **II.** Botanical Garden, Botany Department Faculty of Science Ain Shams University**, III.** Borg El Arab**,** Alexandria, Mediterranean Coastal Region **IV.** Wadi Habis, Mediterranean Coastal Region**, V.** Ageeba Beach, Marsa Matruh, Mediterranean Coastal Region**, VI.** Cleopatra Beach, Marsa Matruh, Mediterranean Coastal Region, **VII.** Nuweibaa, Taba Road**,** South Sinai, (*): Wild, (*): Cultivated, (*): Taxa cited from Bayoumy et al. (2020) and Tantawy et al. (2023), (//): as previous.

Supplementary Table 2. Macromorphological characters of the studied taxa

No.	Gross morphology			Stem			Leaf					Flower				
	Duration	Habit	Texture	Strength	Internal structure	Composition	Attachment*	Arrangement*	Lamina shape	Lamina apex	Lamina margin	Inflorescence*	Perianth*	Sexuality*	Stamens	Placentation*
1	Perennial	Herb	Glabrous	Erect	Solid	Simple	Sessile-subsessile	Opposite	Angled	Acute	Entire	Solitary	Monochlamydeous	Bisexual	Numerous	Parietal
2	//	//	//	Procumbent	//	//	//	//	Cylindrical	Obtuse	//	//	//	//	//	//
3	//	//	//	//	//	//	//	//	Ovate	Acute	//	//	//	//	//	Axile
4	Annual/ short-lived perennial	//	Crystalline	//	//	//	//	Opposite-alternate	Obovate	//	Wavy-entire	//	//	//	//	//
5	//	//	Glabrous	Decumbent	//	//	//	//	Cylindrical	Obtuse	Entire	//	//	//	//	//
6	//	//	//	Procumbent	//	//	//	Opposite	Obovate	Obtuse	//	//	//	//	10-20	Parietal
7	Perennial	Subshrub	//	Erect	//	//	Petiolate	Alternate	Lanceolate	Acute	//	Spike	//	Unisexual	Five	Basal
8	Annual	//	Hairy	//	//	//	//	Opposite	Ovate	//	//	Head	//	Bisexual	//	//
9	//	Herb	Glabrous	//	//	//	//	Alternate	Ovate	Truncate	//	Cymes	//	Unisexual	//	//
10	//	//	//	//	//	//	//	//	Oblong ovate	Acute	//	Racemes	//	//	//	//
11	//	//	//	//	//	//	//	//	//	//	//	Spike	//	Bisexual	//	//
12	Annual/short-lived perennial	//	//	//	Hollow	//	Sessile-subsessile	Opposite	Linear	Acuminate	//	Cymes	Diplochlamydeous	//	Five-10	Free central
13	Perennial	Shrub	//	//	Solid	//	//	//	Cylindrical	Mucronate	//	//	//	//	Five	//
14	Annual/ short-lived perennial	Herb	//	//	//	//	//	//	Linear	Acute	//	//	//	//	10	//
15	Annual	//	//	//	//	//	//	//	Lanceolate	//	//	//	//	//	//	//
16	//	//	Pubescent	Procumbent	Hollow	//	//	Opposite-alternate	Obovate	//	//	Solitary/ clustered	Monochlamydeous	//	Two-five	//
17	Perennial	//	//	//	Solid	//	//	Opposite	Elliptic	//	//	Cymes	//	//	Five	//
18	Annual	//	Glabrous	//	//	//	//	//	//	Mucronate	//	//	Diplochlamydeous	//	//	//
19	//	//	Pubescent	Erect	//	//	//	//	Linear	Obtuse	//	//	//	//	10	//
20	//	//	Glabrous	//	Hollow	//	//	//	//	//	//	//	//	//	//	//
21	Perennial	//	Crystalline	//	Solid	//	//	//	Spathulate	//	//	Solitary/ racemes	//	//	//	//
22	Annual/ short-lived perennial	//	Glabrous	Decumbent	//	//	//	//	Linear	Acute	//	Cymes	//	//	//	//
23	//	//	Pubescent	//	//	//	//	//	//	Mucronate	//	//	//	//	Two-three	//

Supplementary Table 2. Cont.

No.	Gross morphology			Stem			Leaf					Flower				
	Duration	**Habit**	**Texture**	**Strength**	**Internal structure**	**Composition**	**Attachment***	**Arrangement***	**Lamina shape**	**Lamina apex**	**Lamina margin**	**Inflorescence***	**Perianth***	**Sexuality***	**Stamens**	**Placentation***
24	//	//	Glabrous	Procumbent	//	//	//	//	//	Acute	//	//	//	//	Two-five	//
25	Perennial	Shrub	//	Erect	//	//	Petiolate	Alternate	Ovate	Obtuse	//	Spike	Monochlamydeous	Unisexual	Five	Basal
26	//	//	//	//	//	//	//	//	Triangular	//	Dentate-entire	//	//	Unisexual-bisexual	//	//
27	//	//	//	//	//	//	//	//	Elliptic	Acute	Dentate-sinuate	//	//	Unisexual	//	//
28	//	Subshrub	Hairy	//	//	//	//	//	Oblong ovate	Obtuse	Entire	//	//	Bisexual	//	//
29	//	Shrub	//	//	//	//	//	//	Lanceolate	Acute	//	//	//	//	//	//
30	Annual	Herb	Glabrous	//	//	//	//	//	Oblong ovate	Obtuse	Sinuate	//	//	//	//	//
31	//	//	//	//	//	//	//	//	Ovate	Acute	//	//	//	//	//	//
32	//	//	//	//	//	//	//	//	//	//	Dentate	Cymes	//	//	//	//
33	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
34	//	//	//	//	//	//	Sessile-subsessile	//	Subglobose	Obtuse	Entire	Spike	//	//	One	//
35	//	//	Hairy	//	//	//	//	//	Cylindrical	Mucronate	//	Solitary	//	//	Five	//
36	Perennial	Subshrub	Glabrous	//	//	//	//	//	//	Obtuse	//	Spike	//	//	//	//
37	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
38	Annual/ short-lived perennial	Herb	Pubescent	Decumbent	//	//	Petiolate	Opposite	Ovate	Acute	Wavy-entire	Cymes/ panicle	//	//	Three	//
39	Perennial	Shrub	//	Climbing	//	//	//	Alternate	//	Acuminate	Entire	Cymes	//	//	Five	//
40	//	Herb	//	Erect	//	//	//	Opposite	//	Acute	//	//	//	//	Eight	//
41	//	Tree	Glabrous	//	//	//	//	Alternate	Elliptic	//	//	Racemes	//	Unisexual	Numerous	//
42	Annual	Herb	//	Decumbent	//	//	Sessile-subsessile	//	Cylindrical	//	//	Solitary	Diplochlamydeous	Bisexual	10-numerous	Free central
43	//	//	//	Procumbent	//	//	//	//	Obovate	Obtuse	//	//	//	//	10	//

(//): as previous

Supplementary Table 3. Stem anatomical characters of the studied taxa

No.	Outline	Dermal system			Cortical tissues*	Endodermis	Secondary growth aspects*	Pith		Idioblasts	
		Trichomes*	Cuticle	Epidermis				Width	Components	Crystals*	Tanniniferous idioblasts
1	Ridged and furrowed	Wanting	Thick	Radially-tangentially	One type	Present	Abnormal (Included phloem & successive cambia)	Wide	Non-lignified	Raphides	Detected
2	Terete-quadrangular	//	Thin	Tangentially	//	//	//	//	//	//	//
3	//	//	//	//	//	//	//	//	//	Raphides & styloids	//
4	Ridged and furrowed	//	//	//	//	//	//	//	//	Raphides, styloids & druses	//
5	//	//	//	//	//	//	//	//	//	Raphides & styloids	//
6	Terete	E-glandular/ unicellular	Thick	//	//	//	//	//	//	Druses	//
7	//	E-glandular/ candelabra	Thin	//	Four types	Absent	Abnormal (Included phloem)	//	lignified & non-lignified	//	Undetected
8	//	E-glandular/ multicellular	//	//	//	//	Abnormal (Included phloem with bipolar vascular bundles)	//	Non- lignified	//	//
9	//	Wanting	//	Tangentially	Three types	Present	Abnormal (Included phloem & medullary bundles)	//	//	Sandy	//
10	//	E-glandular & glandular/ unicellular	//	Radially	//	//	Abnormal (Medullary bundles)	Narrow	//	Druses & sandy	//
11	Ovate/ ridged and furrowed	Wanting	//	//	Two types	Absent	Abnormal (Successive cambia)	Wide	//	Druses	//
12	Terete	E-glandular/ uni- & multicellular	Thick	Tangentially-radially	//	Present	Normal	//	//	Undetected	//
13	Ridged and furrowed	Wanting	//	Tangentially	One type	Absent	//	Narrow	lignified	//	Detected
14	Terete	//	Thin	Radially	Two types	//	//	Wide	Non-lignified	//	Undetected
15	//	//	//	Tangentially-radially	//	//	//	Narrow	//	//	//
16	//	E-glandular/ unicellular	Thick	//	Three types	//	//	Wide	//	Druses	Detected
17	//	//	//	//	Two types	//	//	//	//	//	Undetected
18	//	Glandular/ non-stalked	//	Radially	//	//	//	//	//	//	//
19	//	E-glandular/ uni- & multicellular	Thin	Radially-tangentially	//	//	//	//	//	Undetected	//
20	//	Wanting	Thick	//	//	//	//	//	//	//	//
21	//	E-glandular & glandular/ uni- & multicellular	//	Radially	//	//	//	//	//	Druses	//

Supplementary Table 3. Cont.

No.	Outline	Dermal system			Cortical tissues*	Endodermis	Secondary growth aspects*	Pith		Idioblasts	
		Trichomes*	Cuticle	Epidermis				Width	Components	Crystals*	Tanniniferous idioblasts
22	//	Wanting	//	Tangentially-radially	//	Present	//	//	//	Undetected	//
23	//	E-glandular uni- & multicellular	//	//	//	//	//	Narrow	//	Druses	//
24	//	Wanting	//	Radially-tangentially	//	Absent	//	Wide	//	Undetected	Detected
25	Ridged and furrowed	Glandular vesicular	Thin	Tangentially-radially	Three types	Present	Abnormal (Successive cambia)	//	//	Druses	Undetected
26	Terete	//	//	Tangentially	//	Absent	//	Narrow	lignified	//	//
27	Ridged and furrowed	//	//	Tangentially-radially	//	Present	//	Wide	Non-lignified	//	//
28	//	E-glandular & glandular/ uni- & multicellular	//	Radially-papillose	//	Absent	Normal	Narrow	//	Undetected	//
29	Terete	E-glandular/ uni- & multicellular	Thick	Radially	//	//	//	Wide	//	//	//
30	Triangular	Wanting	//	Tangentially	Four types	//	Abnormal (Medullary bundles)	//	//	Sandy	//
31	//	//	//	//	//	//	Normal	//	//	//	//
32	Terete	//	//	//	//	//	Abnormal (Medullary bundles)	//	//	Druses	//
33	Ridged and furrowed	//	//	Radially	//	//	Abnormal (Included phloem)	Narrow	//	//	//

Supplementary Table 3. Contt.

No.	Outline	Dermal system			Cortical tissues*	Endodermis	Secondary growth aspects*	Pith		Idioblasts	
		Trichomes*	Cuticle	Epidermis				Width	Components	Crystals*	Tanniniferous idioblasts
34	Terete	E-glandular & glandular/ uni- & multicellular	Thin	Radially-papillose	Three types	//	//	//	//	//	//
35	//	E-glandular uni- & multicellular	//	Radially	Four types	//	//	Wide	//	Druses & sandy	//
36	Ridged and furrowed	Wanting	//	//	//	//	//	//	//	Undetected	//
37	//	//	//	//	//	//	//	Narrow	//	//	//
38	Terete	Glandular/ uni- & multicellular	Thick	Radially-tangentially	Two types	//	Abnormal (Successive cambia & medullary bundles)	Wide	//	Raphides & styloids	Detected
39	//	E-glandular & glandular/ uni- & multicellular	Thin	Tangentially	Three types	//	Abnormal (Included phloem, successive cambia & medullary bundles)	//	//	//	//
40	//	//	Thick	//	Two types	//	//	//	//	//	//
41	//	Wanting	//	Tangentially-radially	Three types	Present	Abnormal (Medullary bundles)	//	//	//	//
42	//	//	Thin	Tangentially	Two types	//	Normal	Narrow	//	Druses	//
43	//	//	//	//	//	//	//	//	//	//	//

(//): as previous

Supplementary Table 4. Lamina anatomical characters of the studied taxa

No.	Outline	Dermal tissue			Mesophyll type	Ground tissue	Mechanical tissue	Kranz anatomy*	Idioblasts	
		Trichomes*	Cuticle	Epidermis					Crystals*	Tanninferous idioblasts
1	Ribbon like	Wanting	Thick	Radially-tangentially	Centric	Polyhedral parenchyma	Wanting	Undetected	Raphides	Detected
2	Trigonous	//	Thin	Tangentially	//	Water-bearing cells	//	//	//	//
3	Rounded abaxially/ convex adaxially	//	//	//	Dorsiventral	//	//	//	Raphides, styloids & druses	//
4	//	//	//	//	Isolateral	//	//	//	//	//
5	Ovate	//	//	//	Centric	//	//	//	Raphides & styloids	//
6	Rounded	//	//	Radially-tangentially	Dorsiventral	Polyhedral parenchyma	//	Complete sheath	Druses	//
7	Arc-shaped	E-glandular/ candelabra	//	Tangentially	Ill-differentited	Folded parenchyma	//	Undetected	//	Undetected
8	Rounded	E-glandular/ multicellular	//	//	Dorsiventral	Polyhedral parenchyma	//	//	//	//
9	Arc-shaped	//	//	//	//	//	//	Complete sheath	Druses & sandy	//
10	Basin like	E-glandular/ multicellular	//	Radially	//	Folded parenchyma	Present	//	Sandy	//
11	Flattened	Wanting	//	Tangentially	//	//	Wanting	Undetected	Undetected	//
12	Concave abaxially/ curved adaxially	//	Thick	Radially-tangentially	//	Polyhedral parenchyma	//	Incomplete & complete sheath	Druses	Detected
13	Ovate	//	//	Radially	Centric	Palisade cells	//	Undetected	//	Undetected
14	Boat shaped	//	//	//	Isobilateral	Palisade cells & water-bearing cells	//	//	Undetected	//
15	Concave abaxially/ curved adaxially	//	Thin	Tangentially-radially	//	Polyhedral parenchyma	//	//	//	//

Supplementary Table 4. Cont.

No.	Outline	Dermal tissue			Mesophyll type	Ground tissue	Mechanical tissue	Kranz anatomy*	Idioblasts	
		Trichomes*	Cuticle	Epidermis					Crystals*	Tanninferous idioblasts
16	Ribbon like	E-glandular/ unicellular	Thick	Radially-tangentially	Centric	Palisade cells	//	//	Druses	//
17	//	//	//	Radially	//	//	//	//	//	//
18	Flattened	Wanting	//	Tangentially-radially	Dorsiventral	Polyhedral parenchyma	//	//	//	//
19	Ribbon like	E-glandular/ uni- & multicellular	Thin	//	Isobilateral	//	//	Incomplete sheath	Undetected	//
20	//	Wanting	//	Radially	//	//	//	Undetected	//	//
21	//	E-glandular/ uni- & multicellular	Thick	//	Dorsiventral	//	//	//	Druses	//
22	Ovate	Wanting	Thick	Radially-tangentially	Isobilateral	Palisade cells	//	//	//	//
23	Ribbon like	E-glandular & glandular/ uni- & multicellular	//	Radially	Centric	//	//	Undetected	//	//
24	Ovate	Wanting	//	Radially-tangentially	Isobilateral	Palisade cells & polyhedral parenchyma	//	//	Undetected	//
25	Rounded	Glandular/ vesicular	Thin	Tangentially	Isolateral	Polyhedral parenchyma & water-bearing cells	Present	Incomplete & complete sheath	Druses	Undetected
26	Convex abaxially/ rounded abaxially	//	//	//	//	//	//	//	//	//
27	Flattened	//	//	//	//	//	Wanting	//	//	//
28	Ovate	Wanting	//	//	Centric	Palisade cells, folded parenchyma & water-bearing cells	//	Incomplete sheath	Undetected	//
29	Ribbon like	//	//	//	//	Palisade cells & water-bearing cells	//	//	Druses	//

Supplementary Table 4. Cont.

No.	Outline	Dermal tissue			Mesophyll type	Ground tissue	Mechanical tissue	Kranz anatomy*	Idioblasts	
		Trichomes*	Cuticle	Epidermis					Crystals*	Tanninferous idioblasts
30	Wavy abaxially/ convex adaxially	//	//	//	Dorsiventral	Polyhedral parenchyma	Present	Undetected	Druses & sandy	//
31	Straight abaxially/ convex adaxially	//	//	//	Isolateral	//	//	//	//	//
32	Rounded abaxially/ straight adaxially	//	//	//	Dorsiventral	//	Wanting	//	Druses	//
33	Flattened	//	//	//	Isolateral	//	//	//	Undetected	//
34	Trigonous	//	//	Radially	Centric	//	//	Complete sheath	Druses	//
35	Terete	E-glandular uni- & multicellular	//	//	//	Palisade cells & water-bearing cells	//	//	//	//
36	Ovate	Wanting	//	Tangentially	//	//	//	Undetected	Undetected	//
37	//	//	//	//	//	//	//	Incomplete sheath	//	//
38	Rounded	E-glandular & glandular/ uni- & multicellular	//	Radially	Dorsiventral	Polyhedral parenchyma	Present	//	Raphides & styloids	Detected
39	//	//	//	//	//	//	//	//	//	//
40	//	//	//	//	//	//	//	Undetected	//	//
41	Rounded abaxially/ concave adaxially	Wanting	Thick	Radially-tangentially	//	//	//	//	//	//
42	Ovate	//	Thin	Tangentially	Centric	Water-bearing cells	Wanting	Complete sheath	Druses	Undetected
43	Rounded abaxially/ convex adaxially	//	//	//	Dorsiventral	//	//	//	//	//

(//): as previous

Supplementary Table 5. Lamina epidermal characters of the studied taxa (Ab- and Adaxial Surface, LM)

No.	Leaf type*	Abaxial surface			Adaxial surface		
		Cells shape	Anticlinal wall	Stomata type*	Cells shape	Anticlinal wall	Stomata type*
1	Amphistomtatic	Polygonal	Straight	Anisocytic/ paracytic/ brachyparacytic	Polygonal	Straight	Anisocytic/ paracytic/ brachyparacytic
2	//	//	//	Anisocytic/ paracytic	//	//	Anisocytic/ paracytic
3	//	//	//	Anisocytic	//	//	Anisocytic
4	//	//	//	//	//	//	//
5	//	//	//	//	//	//	//
6	//	//	//	Anisocytic/ paracytic/ brachyparatetracytic	//	//	Anisocytic/ paracytic/ brachyparatetracytic
7	//	Irregular	Sinuate	Anomocytic	//	//	Brachyparacytic
8	//	//	//	//	//	//	Anomocytic
9	//	//	//	//	Irregular	Sinuate	//
10	//	//	//	//	Polygonal	Straight	//
11	//	//	//	//	//	//	//
12	//	//	Sinuate with knobs	Diacytic/ anomocytic/ anisocytic/ anomotetracytic	Irregular	Sinuate with Knobs	Diacytic/ anomocytic/ anisocytic/ anomotetracytic
13	//	Polygonal	Straight	Anomotetracytic	Polygonal	Straight	Anomotetracytic
14	//	//	//	Diacytic/ anisocytic	//	//	Diacytic/ anisocytic
15	//	Irregular	Sinuate	Diacytic/ anomocytic/ anisocytic/ anomotetracytic	Irregular	Sinuate	Diacytic/ anomocytic/ anisocytic/ anomotetracytic
16	//	Polygonal	Straight	Anomocytic/ brachyparatetracytic	Polygonal	Straight	Anomocytic/ brachyparatetracytic
17	//	//	//	Anomocytic/ anomotetracytic/ anisocytic/ brachyparatetracytic	//	//	Anomocytic/ anomotetracytic/ anisocytic/ brachyparatetracytic
18	//	//	//	Paracytic/ anisocytic/ brachyparacytic	//	//	Paracytic/ anisocytic/ brachyparacytic
19	//	//	//	Diacytic/ anisocytic	//	//	Diacytic/ anisocytic
20	//	//	//	//	Irregular	Sinuate with Knobs	Diacytic/ anisocytic/ brachyparatetracytic
21	//	//	//	Diacytic/ anomotetracytic/ anisocytic	Polygonal	Straight	Diacytic/ anomotetracytic/ anisocytic

Supplementary Table 5. Cont.

No.	Leaf type*	Abaxial surface			Adaxial surface		
		Cells shape	Anticlinal wall	Stomata type*	Cells shape	Anticlinal wall	Stomata type*
22	//	//	//	Diacytic/ anomocytic/ anisocytic/ anomotetracytic	Irregular	Sinuate	Diacytic/ anomocytic/ anisocytic/ anomotetracytic
23	//	//	//	Diacytic/ anisocytic	Polygonal	Straight	Diacytic/ anisocytic/ anomocytic
24	//	//	//	Diacytic/ anisocytic/ brachyparatetracytic	Irregular	Sinuate with Knobs	Diacytic/ anisocytic/ brachyparatetracytic
25	//	//	//	Anomocytic/ brachyparacytic	Polygonal	Straight	Anomocytic/ brachyparacytic
26	//	//	//	//	//	//	//
27	//	//	//	Anomocytic	//	//	Anomocytic
28	//	//	//	Anomocytic/ brachyparacytic	//	//	Anomocytic/ brachyparacytic
29	//	//	//	Brachyparacytic	//	//	Brachyparacytic
30	//	Irregular	Sinuate	Anomocytic	Irregular	Sinuate	Anomocytic
31	//	//	//	//	//	Sinuate	//
32	//	//	Curved	//	//	Curved	//
33	//	//	Sinuate	//	Polygonal	Straight	//
34	//	Polygonal	Straight	Brachyparacytic	//	//	Brachyparacytic
35	//	//	//	//	//	//	Anomocytic/ brachyparacytic
36	//	//	//	//	//	//	Brachyparacytic
37	//	//	//	//	//	//	//
38	//	//	//	Anomocytic/ brachyparacytic	//	//	Anomocytic/ brachyparacytic
39	//	//	//	Anomocytic/ brachyparatetracytic	//	//	Anomocytic/ brachyparatetracytic
40	//	Irregular	Sinuate	Anonmotetracytic/ brachyparatetracytic/ anisocytic/ paracytic	//	//	Anisocytic/ anomocytic/ anomotetracytic/ brachyparatetracytic
41	Hypostomatic	Polygonal	Straight	Anomocytic/ brachyparatetracytic	//	//	-
42	Amphistomtatic	Irregular	Sinuate with knobs	Paracytic	Irregular	Sinuate with Knobs	Paracytic
43	//	//	Sinuate	//	//	Sinuate	//

(//): as previous

Supplementary Table 6. Lamina epidermal characters of the studied taxa (Ab- and Adaxial Surface, SEM)

No.	Abaxial surface				Adaxial surface			
	Sculpture	Stomatal aperture shape	Stomata elevation	Epicuticular wax*	Sculpture	Stomatal aperture shape	Stomata elevation	Epicuticular wax*
1	Rugose-ruminate	Semicircular	Sunken	Granules/ platelets	Rugose-ruminate	Semicircular	Sunken	Granules/ platelets
2	Ruminate	Elliptic	//	Granules/ platelets/ polyangular rodlets	Ruminate-rugose	Elliptic	//	Granules/ polyangular rodlets
3	//	Semicircular-elliptic	Leveled	Granules/ platelets	Ruminate	Semicircular	Leveled	Granules/ platelets
4	//	Elliptic	//	Granules/ platelets/ polyangular rodlets	//	Elliptic	//	Granules/ polyangular rodlets
5	Rugose	//	//	//	//	//	//	Granules
6	Rugose-ruminate	//	Sunken	Granules/ platelets	//	//	Sunken	Granules/ platelets
7	Colliculate	//	Leveled	Granules	Reticulate	//	Leveled	Granules
8	Rugose	//	//	//	Rugose	//	//	//
9	Ruminate	//	Elevated	//	Ruminate	//	Elevated	//
10	Rugose	//	//	//	//	//	//	//
11	Ruminate	//	Leveled	//	//	//	Sunken	//
12	//	Semicircular	//	Granules/ platelets	//	//	Leveled	Granules/ platelets
13	Favulariate	Elliptic	Sunken	//	Favulariate	//	Sunken	Granules
14	Rugose-scalariform	//	//	//	Rugose-scalariform	//	//	//
15	Ruminate	//	//	//	Ruminate	//	//	//
16	//	Semicircular-elliptic	Leveled	Granules	//	Semicircular-elliptic	Leveled	Granules
17	//	Elliptic	Sunken	Granules/ platelets	Rugose	Elliptic	//	Granules/ platelets
18	Favulariate	//	//	//	Favulariate	//	Sunken	//
19	Ruminate	//	Leveled	Granules	Ruminate	//	Elevated	Granules
20	Reticulate-rugose	//	//	//	Reticulate-rugose	//	Leveled	Granules/ platelets
21	Ruminate	//	Sunken	Granules/ platelets	Ruminate	//	Sunken	Granules
22	//	//	Leveled	//	Ruminate-rugose	//	Leveled	Granules/ platelets

Supplementary Table 6. Cont.

No.	Abaxial surface				Adaxial surface			
	Sculpture	**Stomatal aperture shape**	**Stomata elevation**	**Epicuticular wax***	**Sculpture**	**Stomatal aperture shape**	**Stomata elevation**	**Epicuticular wax***
23	Rugose	Circular-elliptic	//	//	Favulariate	Elliptic-lens shaped	Elevated	Granules
24	Ruminate-rugose	Elliptic	//	//	Ruminate-rugose	Elliptic	Leveled	Granules/ platelets
25	Ruminate	//	//	//	Ruminate	//	//	//
26	//	//	//	Granules	//	//	//	Granules
27	//	//	Sunken	Granules/ platelets	//	//	Sunken	Granules/ platelets
28	Reticulate	//	//	Platelets/ rhomboid crystals	Reticulate	//	//	Platelets/ rhomboid crystals
29	Rugose	Slit like	Leveled	Granules/ platelets	Rugose	//	Leveled	Granules/ platelets
30	Ruminate	Elliptic	Elevated	Granules	Ruminate	//	//	Granules
31	Reticulate	//	Leveled	Granules/ platelets	Reticulate	//	//	Granules/ platelets
32	Ruminate	//	Elevated	Platelets	Ruminate	//	Sunken	Platelets
33	//	//	Leveled	Granules	Ill-defined	//	//	Granules/ platelets/ fissured crust
34	Rugose	Slit like	Sunken	//	Ruminate	//	Leveled	Granules
35	Colliculate	Elliptic	Leveled	Granules/ platelets	Colliculate	Slit like	//	Granules/ platelets
36	Ill-defined	Slit like	//	Platelets	Ill-defined	//	//	Platelets
37	Rugose	-	-	Absent	Rugose	Elliptic	//	Absent
38	Ruminate	Elliptic	Sunken	Granules/ platelets	Ruminate	//	Sunken	Granules/ platelets
39	Ruminate-rugose	Lens shaped	//	//	Reticulate	Lens shaped	//	//
40	Ruminate-reticulate	Elliptic	Leveled	//	Ruminate	Elliptic	Elevated	//
41	Reticulate	//	Elevated	//	//	-	-	//
42	Ruminate	//	Sunken	//	//	Elliptic	Leveled	//
43	//	//	Elevated	//	//	//	Elevated	Granules

(//): as previous

Supplementary Table 7. Palynological characters of the studied taxa

No.	P/E ratio	Size	Pollen size*	Pollen shape	Polarity *	Pollen class*	Pore number*	Pore diameter (µm) *	Pore depth	Interporal distance (µm) *	Colpi shape	Colpi length (µm)	Colpi width (µm)	Sculpture*	Echini density/ arrangement*	Ektexinous bodies*	Foreign particles
1	127.9	19.1	Medium	Prolate	Isopolar	Tricolpate	-	-	-	-	Oblong	15.2	0.5	Echinate-punctate	Few/ regular	Undetected	Undetected
2	150.3	18.4	//	//	//	//	-	-	-	-	//	16	0.6	//	Dense/ regular	//	//
3	159.2	13.3	//	//	//	//	-	-	-	-	Slit like	8.2	0.2	Favulariate		//	//
4	105.3	17.1	//	Prolate-spheroidal	//	//	-	-	-	-	Fusiform	13.5	1.5	Microechinate- punctate	Medium/ rather regular	//	//
5	97	18.2	//	Oblate-spheroidal	//	Tricolpate/ tetracolpate	-	-	-	-	//	8.9	0.4	Microechinate-scabrate	Very dense/ irregular	//	//
6	143.1	40.6	Large	Prolate	//	Tricolpate	-	-	-	-	//	27.1	1.6	Microechinate-punctate	Dense/ irregular	Detected	Undetected
7	90.6	12.2	Small	Oblate-spheroidal	Apolar	Pantoporate	22-25	3.3	-	2.2	-	-	-	Scabrate-echinate	Medium/ rather regular	//	Detected
8	112	11.9	//	Prolate-spheroidal	//	//	14-20	3	-	1	-	-	-	Microechinate	Few/ regular	//	//
9	100	15.1	//	Oblate-spheroidal	//	//	25-30	1.2	-	2.2	-	-	-	Scabrate	-	//	//
10	89.3	15.6	//	//	//	//	28-30	//	Deeply excavated	2.6	-	-	-	Granulate-echinate	Very dense/ irregular	//	//
11	102	20.8	Medium	Prolate-spheroidal	//	//	25-30	//	//	3.6	-	-	-	Granulate	-	//	//
12	101.5	40.1	Large	//	//	//	13-15	5.2	-	12	-	-	-	Microechinate-punctate	Dense/ regular	//	Undetected
13	98.6	21.5	Medium	Oblate-spheroidal	//	//	6-10	5.5	Deeply excavated	3.5	-	-	-	Microechinate	//	Undetected	//
14	102.9	20.9	//	Prolate-spheroidal	//	//	7-10	2	//	5.2	-	-	-	Granulate	-	Detected	//
15	100	46.2	Large	Oblate-spheroidal	//	//	//	3.8	//	11.5	-	-	-	//	-	//	Detected
16	96	14.8	Medium	//	//	//	6-8	2.3	//	4.2	-	-	-	Verrucate	-	//	//

SupplementaryTable 7. Cont.

No.	P/E ratio	Size	Pollen size*	Pollen shape	Polarity *	Pollen class*	Pore number*	Pore diameter (µm) *	Pore depth	Interporal distance (µm) *	Colpi shape	Colpi length (µm)	Colpi width (µm)	Sculpture*	Echini density/ arrangement*	Ektexinous bodies*	Foreign particles
17	102.2	13.5	//	Prolate-spheroidal	//	//	//	2	-	//	-	-	-	//	-	//	//
18	137.5	17.1	//	Prolate	Isopolar	Tricolpate	-	-	-	-	Oblong	10	1	Microechinate	Medium/ regular	//	//
19	97.1	27.9	Large	Oblate-spheroidal	Apolar	Pantoporate	18-35	2.5	Protuberant	4.3	-	-	-	Echinate-punctate	Medium/ irregular	//	//
20	102.6	38.5	//	Prolate-spheroidal	//	//	19-40	4.5	-	4.4	-	-	-	//	Dense/ regular	//	//
21	101	29.2	//	//	//	//	//	2.6	Protuberant	3.7	-	-	-	Microechinate	//	//	//
22	96	12.6	Medium	Oblate-spheroidal	Isopolar	Tricolpate	-	-	-	-	Oblong	7.5	1.9	Microechinate-punctate	Very dense/ rather regular	//	Undetected
23	163.1	22.5	//	Prolate	//	//	-	-	-	-	Fusiform	23.6	0.8	Microechinate-punctate	Dense/ rather regular	Undetected	//
24	163.5	18.0	//	//	//	//	-	-	-	-	//	15.2	//	Microechinate	Very dense/ rather regular	//	//
25	88.6	16.6	//	Suboblate	Apolar	Pantoporate	50-60	0.7	Deeply excavated	1.9	-	-	-	Granulate-echinate	Dense/ irregular	Detected	Detected
26	93.8	12.7	Small	Oblate-spheroidal	//	//	//	1.3	-	2	-	-	-	Scabrate-granulate	-	//	//
27	95.6	13.4	//	//	//	//	//	1.2	Deeply excavated	2.5	-	-	-	Granulate	-	//	//
28	101.7	17.3	Medium	Prolate-spheroidal	//	//	60-65	0.7	//	2.3	-	-	-	Scabrate-echinate	Medium/ rather regular	//	//
29	100.5	20.0	//	Oblate-spheroidal	//	//	//	1.4	//	2.4	-	-	-	Granulate-echinate	//	//	//
30	93.7	14.7	Small	//	//	//	24-30	//	-	2.5	-	-	-	//	//	//	//
31	94.4	12.1	//	//	//	//	26-30	1.2	-	2.1	-	-	-	Scabrate-granulate	-	//	//

SupplementaryTable 7. Cont.

No.	P/E ratio	Size	Pollen size*	Pollen shape	Polarity *	Pollen class*	Pore number*	Pore diameter (µm) *	Pore depth	Interporal distance (µm) *	Colpi shape	Colpi length (µm)	Colpi width (µm)	Sculpture*	Echini density/ arrangement*	Ektexinous bodies*	Foreign particles
32	103.7	13.5	//	Prolate-spheroidal	//	//	60-65	0.6	//	2	-	-	-	Scabrate-echinate	Dense/ rather regular	Undetected	//
33	101.5	12.9	//	//	//	//	24-30	0.9	//	1.7	-	-	-	//	//	Detected	//
34	95.4	14.9	//	Oblate-spheroidal	//	//	25-30	1.5	//	2.7	-	-	-	//	Few/ regular	//	//
35	98.2	11.4	//	//	//	//	23-28	1.2	//	1.8	-	-	-	Granulate-echinate	Medium/ rather regular	//	//
36	104.1	15.4	//	Prolate-spheroidal	//	//	45-50	1	//	2	-	-	-	//	Few/ regular	//	//
37	98.5	16.8	Medium	Oblate-spheroidal	//	//	75-80	0.8	//	2.3	-	-	-	//	//	//	Undetected
38	100.2	58.6	Large	//	//	//	20-25	4	//	18	-	-	-	Echinate-punctate	Very dense/ irregular	Undetected	//
39	101	27.3	//	Prolate-spheroidal	Isopolar	Tricolpate	-	-	-	-	Oblong	16.3	1	Coarsely reticulate-granulate	-	//	//
40	100.2	134.4	//	//	Apolar	Pantoporate	75-85	4.2	Deeply excavated	12	-	-	-	Echinate-microechinate	Very dense/ irregular	//	//
41	191.3	19.8	Medium	Prolate	Isopolar	Tricolpate	-	-	-	-	Fusiform	11.2	1.9	Microechinate-punctate	Medium/ rather regular	//	//
42	112.6	49	Large	Prolate-spheroidal	//	Tetracolpate	-	-	-	-	//	11.9	2	Echinate-microechinate	Very dense/ irregular	//	//
43	93.1	48	//	Oblate-spheroidal	//	Pantocolpate	-	-	-	-	//	8.5	//	//	//	Detected	Detected

(//): as previous

Supplementary Table 8. Data Matrix of Morpho-palynological Criteria of The Studied Taxa

I. Macromorphological features			Taxa																						
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
1. Whole plant	Annual	1	3	3	3	2	2	2	3	1	1	1	1	2	3	2	1	1	3	1	1	1	3	2	2
1.1. Duration	Annual - short lived perennial	2																							
	Perennial	3																							
1.2. Habit	Herb	1	1	1	1	1	1	1	2	2	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1
	Sub shrub	2																							
	Shrub	3																							
	Tree	4																							
1.3. Succulency	Succulent	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Non-succulent	2																							
1.4. General texture	Glabrous	1	1	1	1	4	1	1	1	3	1	1	1	1	1	1	1	2	2	1	2	1	4	1	2
	Pubescent	2																							
	Hairy	3																							
	Crystalline	4																							
2. Stem	Erect	1	1	2	2	2	3	2	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	3	3
2.1. Strength	Procumbent	2																							
	Decumbent	3																							
	Climbing	4																							
2.2. Internal structure	Solid	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1	1	1	2	1	1	1
	Hollow	2																							
3. Leaf	Alternate	1	2	2	2	3	3	2	1	2	1	1	1	2	2	2	2	3	2	2	2	2	2	2	2
3.1. Leaf arrangement	Opposite	2																							
	Opposite - alternate	3																							

Supplementary Table 8. Cont.

I. Macromorphological features Cont.			Taxa																						
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
3.2. Attachment	Sessile - subsessile	1	1	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
	Petiolate	2																							
3.3. Lamina	Angled	1	1	2	3	4	2	4	5	3	6	3	6	7	2	7	5	4	8	8	7	7	9	7	7
3.3.1. Shape	Cylindrical	2																							
	Ovate	3																							
	Obovate	4																							
	Lanceolate	5																							
	Oblong ovate	6																							
	Linear	7																							
	Elliptic	8																							
	Spathulate	9																							
	Triangular	10																							
	Sub globose	11																							
3.3.2. Margin	Entire	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Wavy - entire	2																							
	Dentate - entire	3																							
	Dentate - sinuate	4																							
	Sinuate	5																							
	Dentate	6																							
3.3.3. Apex	Acute	1	1	2	1	1	2	2	1	1	1	5	1	3	4	1	1	1	1	4	2	2	2	1	4
	Obtuse	2																							
	Acuminate	3																							
	Mucronate	4																							
	Truncate	5																							

Supplementary Table 8. Cont.

I. Macromorphological features Cont.			Taxa																						
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
4. Flower	Bracteate	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1
4.1. Bract	E-bracteate	2																							
4.2. Inflorescence	Solitary	1	1	1	1	1	1	1	4	5	6	2	4	2	2	2	2	7	2	2	2	2	9	2	2
	Cyme	2																							
	Solitary/ cyme	3																							
	Spike	4																							
	Head	5																							
	Raceme	6																							
	Solitary/ clustered	7																							
	Cyme/ panicle	8																							
	Solitary/ raceme	9																							
4.3. Perianth	Monochlamydeous	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	2	2	2	2	2	2
	Diplochlamydeous	2																							
4.4. Tepals number	Five	1	3	3	3	3	3	1	1	1	1	1	1	0	0	0	0	2	1	0	0	0	0	0	0
	Three	2																							
	Four - five	3																							
4.5. Sepals number	Two	1	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	0	0	2	2	2	2	2	2
	Five	2																							
4.6. Petals number	Five	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	1	1	1	1	1	1
4.8. Tepals color	Sepaloid	1	1	1	1	1	1	2	2	2	2	1	2	0	0	0	0	1	2	0	0	0	0	0	0
	Petaloid	2																							
4.9. Sepals color	Green	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	1	1	1	2	1	1
	Greenish white	2																							

Supplementary Table 8. Cont.

I. Macromorphological features Cont.			Taxa																						
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
4.10. Petals color	One color	1	0	0	0	0	0	0	0	0	0	0	0	2	1	2	2	0	0	1	2	2	2	1	1
	Many colors	2																							
4.11. Androecium	One	1	4	4	4	4	4	5	7	7	7	6	7	9	7	3	3	2	7	7	3	3	3	3	10
4.11.1. Stamens number	Two - five	2																							
	Ten	3																							
	Numerous	4																							
	Ten - twenty	5																							
	Three	6																							
	Five	7																							
	Eight	8																							
	Five - ten	9																							
	Two - three	10																							
	Present	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Absent	2																							
4.12. Gynoecium	Superior	1	3	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4.12.1. Ovary position	Semi-inferior	2																							
	Inferior	3																							
4.12.2. Placentation	Basal	1	3	3	4	4	4	3	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
	Free central	2																							
	Parietal	3																							
	Axile	4																							

Supplementary Table 8. Cont.

I. Macromorphological features Cont.			Taxa																						
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
4.12.3. Locules number	One	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Many	2																							
4.12.4. Carpels number	One	1	7	8	10	7	7	1	3	3	3	3	3	2	4	3	3	2	2	4	6	6	6	4	6
	Two	2																							
	Two - three	3																							
	Three	4																							
	Two - five	5																							
	Three - five	6																							
	Five	7																							
	Eight - ten	8																							
	Ten - twelve	9																							
	Four	10																							
4.12.5. Ovules number	One	1	2	2	2	2	2	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
	Many	2																							
4.13. Sexuality	Unisexual	1	2	2	2	2	2	2	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
	Bisexual	2																							
	Uni- and Bisexual	3																							

Supplementary Table 8. Cont.

I. Macromorphological features Cont.			Taxa																			
			24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1. Whole plant	Annual	1	2	3	3	3	3	3	1	1	1	1	1	1	3	3	2	3	3	3	1	1
1.1. Duration	Annual - short lived perennial	2																				
	Perennial	3																				
1.2. Habit	Herb	1	1	3	3	3	2	3	1	1	1	1	1	1	2	2	1	3	1	4	1	1
	Sub shrub	2																				
	Shrub	3																				
	Tree	4																				
1.3. Succulency	Succulent	1	2	2	2	2	2	2	2	2	2	2	1	1	1	1	2	2	2	2	1	1
	Non-succulent	2																				
1.4. General texture	Glabrous	1	1	1	1	1	3	3	1	1	1	1	1	3	1	1	2	2	2	1	1	1
	Pubescent	2																				
	Hairy	3																				
	Crystalline	4																				
2. Stem	Erect	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	3	4	1	1	3	2
2.1. Strength	Procumbent	2																				
	Decumbent	3																				
	Climbing	4																				
2.2. Internal structure	Solid	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Hollow	2																				
3. Leaf	Alternate	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	1	1
3.1. Leaf arrangement	Opposite	2																				
	Opposite - alternate	3																				

Supplementary Table 8. Cont.

I. Macromorphological features Cont.			Taxa																		
			24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**
3.2. Attachment	Sessile - subsessile	1	1	2	2	2	1	2	2	2	2	2	1	1	1	1	2	2	2	2	1	1
	Petiolate	2																				
3.3. Lamina	Angled	1	7	3	10	8	6	5	6	3	3	3	11	2	2	2	3	3	3	8	2	4
3.3.1. Shape	Cylindrical	2																				
	Ovate	3																				
	Obovate	4																				
	Lanceolate	5																				
	Oblong ovate	6																				
	Linear	7																				
	Elliptic	8																				
	Spathulate	9																				
	Triangular	10																				
	Sub globose	11																				
3.3.2. Margin	Entire	1	1	1	3	4	1	1	5	5	6	6	1	1	1	1	2	1	1	1	1	1
	Wavy - entire	2																				
	Dentate - entire	3																				
	Dentate - sinuate	4																				
	Sinuate	5																				
	Dentate	6																				
3.3.3. Apex	Acute	1	1	2	2	1	2	1	2	1	1	1	2	4	2	2	1	3	1	1	1	2
	Obtuse	2																				
	Acuminate	3																				
	Mucronate	4																				
	Truncate	5																				

Supplementary Table 8. Cont.

I. Macromorphological features Cont.			Taxa																			
			24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**
4. Flower	Bracteate	1	2	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4.1. Bract	E-bracteate	2																				
4.2. Inflorescence	Solitary	1	2	4	4	4	4	4	4	4	2	2	4	1	4	4	8	2	2	6	1	1
	Cyme	2																				
	Solitary/ cyme	3																				
	Spike	4																				
	Head	5																				
	Raceme	6																				
	Solitary/ clustered	7																				
	Cyme/ panicle	8																				
	Solitary/ raceme	9																				
4.3. Perianth	Monochlamydeous	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	Diplochlamydeous	2																				
4.4. Tepals number	Five	1	0	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	0	0
	Three	2																				
	Four - five	3																				
4.5. Sepals number	Two	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
	Five	2																				
4.6. Petals number	Five	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
4.8. Tepals color	Sepaloid	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	0	0
	Petaloid	2																				
4.9. Sepals color	Green	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
	Greenish white	2																				

Supplementary Table 8. Cont.

I. Macromorphological features Cont.			Taxa																			
			24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**
4.10. Petals color	One color	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1
	Many colors	2																				
4.11. Androecium	One	1	2	7	7	7	7	7	7	7	7	7	1	7	7	7	6	7	8	4	11	3
4.11.1. Stamens number	Two - five	2																				
	Ten	3																				
	Numerous	4																				
	Ten - twenty	5																				
	Three	6																				
	Five	7																				
	Eight	8																				
	Five - ten	9																				
	Two - three	10																				
	Ten- numerous	11																				
	Present	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Absent	2																				
4.12. Gynoecium	Superior	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	2	2
4.12.1. Ovary position	Semi-inferior	2																				
	Inferior	3																				
4.12.2. Placentation	Basal	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	Free central	2																				
	Parietal	3																				
	Axile	4																				

Supplementary Table 8. Cont.

I. Macromorphological features Cont.			Taxa																			
			24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**
4.12.3. Locules number	One	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Many	2																				
4.12.4. Carpels number	One	1	6	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	9	5	5
	Two	2																				
	Two - three	3																				
	Three	4																				
	Two - five	5																				
	Three - five	6																				
	Five	7																				
	Eight - ten	8																				
	Ten - twelve	9																				
	Four	10																				
4.12.5. Ovules number	One	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	Many	2																				
4.13. Sexuality	Unisexual	1	2	1	3	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2
	Bisexual	2																				
	Uni- and Bisexual	3																				

Supplementary Table 8. Cont.

II. Stem anatomical features			Taxa																			
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1. Stem shape in T.S.	Ridged & furrowed	1	1	2	2	1	1	3	3	3	3	3	4	3	1	3	3	3	3	3	3	3
	Terete - quadrangular	2																				
	Terete	3																				
	Ovate	4																				
	Triangular	5																				
2. Aqueous cells	Present	1	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Wanting	2																				
3. Trichomes	Present	1	2	2	2	2	2	1	1	1	1	2	2	1	2	2	2	1	1	1	1	2
3.1. Presence	Wanting	2																				
3.2. Glands	E-glandular	1	0	0	0	0	0	1	1	1	3	0	0	1	0	0	0	1	1	2	1	0
	Glandular	2																				
	Glandular and e-glandular	3																				
3.3. Vesicular trichomes	Present	1	0	0	0	0	0	2	2	2	2	0	0	2	0	0	0	2	2	2	2	0
	Wanting	2																				
3.4. Branching	Unbranched	1	0	0	0	0	0	1	2	1	1	0	0	1	0	0	0	1	1	1	1	0
	Branched (Candelabra)	2																				
3.5. Composition	Unicellular	1	0	0	0	0	0	1	1	2	1	0	0	3	0	0	0	1	1	1	3	0
	Multicellular	2																				
	Uni - & Multicellular	3																				
4. Cuticle	Thick	1	1	2	2	2	2	1	2	2	2	2	2	1	1	2	2	1	1	1	2	1
	Thin	2																				

Supplementary Table 8. Cont.

II. Stem anatomical features Cont.			Taxa																			
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
5. Epidermis	Tangentially elongated	1	4	1	1	1	1	1	1	1	2	1	2	3	1	2	3	3	3	2	4	4
	Radially elongated	2																				
	Tangentially - radially elongated	3																				
	Radially - tangentially elongated	4																				
	Radially elongated - papillose	5																				
6. Periderm	Present	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
	Wanting	2																				
7. Cortex	One type	1	1	1	1	1	1	1	4	4	3	3	2	2	1	2	2	3	2	2	2	2
7.1. Cortical tissues	Two types	2																				
	Three types	3																				
	Four types	4																				
7.2. Cortical vascular traces	Present	1	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Wanting	2																				
8. Endodermis	Present	1	1	1	1	1	1	1	2	2	1	1	2	1	2	2	2	2	2	2	2	2
	Wanting	2																				
9. Vascular System	Normal	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1
9.1. Types of secondary growth	Anomalous	2																				
9.2. Types of abnormalities	S. Ca. + I. Ph.	1	1	1	1	1	1	1	2	2	3	4	5	0	0	0	0	0	0	0	0	0
	I. Ph.	2																				
	M. B.	3																				
	I. Ph. + M. B.	4																				
	S. Ca.	5																				
	S. Ca. + M. B.	6																				
	S. Ca. + M. B. + I. Ph.	7																				

S. Ca.: Successive Cambial Rings; I. Ph.: Included Phloem; M. B.: Medullary Bundles

Supplementary Table 8. Cont.

II. Stem anatomical features Cont.			Taxa																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
9.3. components of Xylary & extraxylary regions	Same	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1
	Different	2																				
9.4. Rays	Present	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2
	Wanting	2																				
10. Pith	Wide	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1	2	1	1	1	1	1
10.1. Width	Narrow	2																				
10.2. Cavity	Present	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2
	Wanting	2																				
10.3. Composition	Lignified cells	1	2	2	2	2	2	2	3	2	2	2	2	2	1	2	2	2	2	2	2	2
	Non-lignified cells	2																				
	Lignified & non-lignified	3																				
11. Idioblasts	Detected	1	2	2	2	1	2	1	1	1	1	2	1	2	2	2	2	1	1	1	2	2
11.1. Crystals	Undetected	2																				
11.1.1. Druses	Detected	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
11.1.2. Raphides	Undetected	2																				
11.1.3. Styloids	Detected	1	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Undetected	2																				
11.1.4. Sandy crystals	Detected	1	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2
	Undetected	2																				
11.2. Tanniniferous idioblasts	Detected	1	1	1	1	1	1	1	2	2	2	2	2	2	1	2	2	1	2	2	2	2
	Undetected	2																				

Supplementary Table 8. Cont.

II. Stem anatomical features			Taxa																			
			24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1. Stem shape in T.S.	Ridged & furrowed	1	3	1	3	1	1	3	5	5	3	1	3	3	1	1	3	3	3	3	3	3
	Terete - quadrangular	2																				
	Terete	3																				
	Ovate	4																				
	Triangular	5																				
2. Aqueous cells	Present	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Wanting	2																				
3. Trichomes	Present	1	2	1	1	1	1	1	2	2	2	2	1	1	2	2	1	1	1	2	2	2
3.1. Presence	Wanting	2																				
3.2. Glands	E-glandular	1	0	2	2	2	3	1	0	0	0	0	3	1	0	0	2	3	3	0	0	0
	Glandular	2																				
	Glandular and e-glandular	3																				
3.3. Vesicular trichomes	Present	1	0	1	1	1	2	2	0	0	0	0	2	2	0	0	2	2	2	0	0	0
	Wanting	2																				
3.4. Branching	Unbranched	1	0	1	1	1	1	1	0	0	0	0	1	1	0	0	1	1	1	0	0	0
	Branched (Candelabra)	2																				
3.5. Composition	Unicellular	1	0	0	0	0	3	3	0	0	0	0	3	3	0	0	3	3	3	0	0	0
	Multicellular	2																				
	Uni - & Multicellular	3																				
4. Cuticle	Thick	1	1	2	2	2	2	1	1	1	1	1	2	2	2	2	1	2	1	1	2	2
	Thin	2																				

Supplementary Table 8. Cont.

II. Stem anatomical features Cont.			Taxa																			
			24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
5. Epidermis	Tangentially elongated	1	4	3	1	3	5	2	1	1	1	2	5	2	2	2	4	1	1	3	1	1
	Radially elongated	2																				
	Tangentially - radially elongated	3																				
	Radially - tangentially elongated	4																				
	Radially elongated - papillose	5																				
6. Periderm	Present	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2
	Wanting	2																				
7. Cortex	One type	1	2	3	3	3	3	3	4	4	4	4	3	4	4	4	2	3	2	3	2	2
7.1. Cortical tissues	Two types	2																				
	Three types	3																				
	Four types	4																				
7.2. Cortical vascular traces	Present	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Wanting	2																				
8. Endodermis	Present	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2
	Wanting	2																				
9. Vascular System	Normal	1	1	2	2	2	1	1	2	1	2	2	2	2	2	2	2	2	2	2	1	1
9.1. Types of secondary growth	Anomalous	2																				
9.2. Types of abnormalities	S. Ca. + I. Ph.	1	0	5	5	5	0	0	3	0	3	2	2	2	2	2	6	7	7	3	0	0
	I. Ph.	2																				
	M. B.	3																				
	I. Ph. + M. B.	4																				
	S. Ca.	5																				
	S. Ca. + M. B.	6																				
	S. Ca. + M. B. + I. Ph.	7																				

S. Ca.: Successive Cambial Rings; I. Ph.: Included Phloem; M. B.: Medullary Bundles

Supplementary Table 8. Cont.

II. Stem anatomical features Cont.			Taxa																			
			24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
9.3. components of Xylary & extraxylary regions	Same	1	1	1	1	1	2	1	2	2	2	2	1	2	1	1	2	2	2	2	2	2
	Different	2																				
9.4. Rays	Present	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2
	Wanting	2																				
10. Pith	Wide	1	1	1	2	1	2	1	1	1	1	2	2	1	1	2	1	1	1	1	2	2
10.1. Width	Narrow	2																				
10.2. Cavity	Present	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Wanting	2																				
10.3. Composition	Lignified cells	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Non-lignified cells	2																				
	Lignified & non-lignified	3																				
11. Idioblasts	Detected	1	2	1	1	1	2	2	2	2	1	1	1	1	2	2	2	2	2	2	1	1
11.1. Crystals	Undetected	2																				
11.1.1. Druses	Detected	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	2	2
11.1.2. Raphides	Undetected	2																				
11.1.3. Styloids	Detected	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	2	2
	Undetected	2																				
11.1.4. Sandy crystals	Detected	1	2	2	2	2	2	2	1	1	2	2	2	1	2	2	2	2	2	2	2	2
	Undetected	2																				
11.2. Tanniniferous idioblasts	Detected	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1
	Undetected	2																				

Supplementary Table 8. Cont.

III. Lamina anatomical features			Taxa																						
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
1. Leaf shape in T.S.	Ribbon like	1	1	2	14	14	4	3	5	3	6	5	7	8	4	9	8	1	1	7	1	1	1	4	1
	Trigonous	2																							
	Rounded	3																							
	Ovate	4																							
	Arc shaped	5																							
	Bassin like	6																							
	Flattened	7																							
	Concave abaxially - curved adaxially	8																							
	Boat shaped	9																							
	Convex abaxially - rounded adaxially	10																							
	Wavy abaxially - convex adaxially	11																							
	Rounded abaxially - straight adaxially	12																							
	Terete	13																							
	Rounded abaxially - convex adaxially	14																							
	Rounded abaxially - concave adaxially	15																							
	Straight abaxially - convex adaxially	16																							
2. Hydathodes	Present	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Wanting	2																							
3. Trichomes	Present	1	2	2	2	2	2	2	1	1	1	2	2	2	2	2	2	1	1	2	1	2	1	2	1
3.1. Presence	Wanting	2																							
3.2. Glands	E-glandular	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	1	0	1	0	3	0	1
	Glandular	2																							
	Glandular and e-glandular	3																							

Supplementary Table 8. Cont.

III. Lamina anatomical features Cont.			Taxa																					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
3.3. Vesicular trichomes	Present	1	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	2	2	0	2	0	2	0	2
	Wanting	2																							
3.4. Composition	Unicellular	1	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	1	1	0	3	0	3	0	3
	Multicellular	2																							
	Uni - & Multicellular	3																							
4. Cuticle	Thick	1	1	2	2	2	2	2	2	2	2	2	2	1	1	1	2	1	1	1	2	2	1	1	1
	Thin	2																							
5. Epidermis	Tangentially elongated	1	4	1	1	1	1	4	1	1	2	1	1	4	2	2	3	4	2	3	3	2	2	4	2
	Radially elongated	2																							
	Tangentially - radially elongated	3																							
	Radially - tangentially elongated	4																							
6. Ground tissue	Polyhedral parenchyma	1	1	2	2	2	2	1	3	1	3	1	3	1	4	4	1	4	4	1	1	1	1	4	4
	Water-bearing cells	2																							
	Folded parenchyma	3																							
	Palisade cells	4																							
	Water-bearing cells + palisade cells	5																							
	Water-bearing cells + palisade cells + folded parenchyma	6																							
	Polyhedral parenchyma + water-bearing cells	7																							
	Polyhedral parenchyma + palisade cells	8																							
7. Mechanical tissue	Present	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Wanting	2																							

Supplementary Table 8. Cont.

III. Lamina anatomical features Cont.			Taxa																					
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
8. Mesophyll type	Centric	1	2	1	2	3	1	2	5	2	2	2	2	2	1	4	4	1	1	2	4	4	2	4	1
	Dorsiventral	2																							
	Isolateral	3																							
	Isobilateral	4																							
	Ill-differentiated	5																							
9. Number and shape of vascular units	One V.B.	1	1	1	1	1	1	1	1	3	7	2	1	5	1	5	8	1	4	1	5	5	1	1	5
	Three V.Bs.	2																							
	Four V.Bs.	3																							
	Five V.Bs.	4																							
	More than five V.Bs.	5																							
	One V.S.	6																							
	One V.S. + two V.Bs.	7																							
	One V.S. + numerous V.Bs.	8																							
10. Kranz tissue	Present	1	2	2	2	2	2	1	2	2	1	1	2	1	2	2	2	2	2	2	1	2	2	2	2
10.1. Presence	Wanting	2																							
10.2. Type	Atriplcoid type	1	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	0	0	1	0	0	0	0
	Kochioid type	2																							
	Kranz-ventrodorsal type	3																							
	Salsoloid type	4																							
	Pilosoid type	5																							
11. Idioblasts	Detected	1	2	2	1	1	2	1	1	1	2	1	2	1	1	2	2	1	1	1	2	2	1	1	1
11.1. Crystals	Undetected	2																							

V. B.: Vascular Bundle; V. S.: Vascular Strand

Supplementary Table 8. Cont.

III. Lamina anatomical features Cont.			Taxa																					
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
11.1.1. Druses	Detected	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2
11.1.2. Raphides	Undetected	2																							
11.1.3. Styloids	Detected	1	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Undetected	2																							
11.1.4. Sandy crystals	Detected	1	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
	Undetected	2																							
11.2. Tanniniferous idioblasts	Detected	1	1	1	1	1	1	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2
	Undetected	2																							

Supplementary Table 8. Cont.

III. Lamina anatomical features Cont.			Taxa																				
			24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**
1. Leaf shape in T.S.	Ribbon like	1	4	3	10	7	4	1	11	16	12	7	2	13	4	4	3	3	3	15	4	4
	Trigonous	2																				
	Rounded	3																				
	ovate	4																				
	Arc shaped	5																				
	Bassin like	6																				
	Flattened	7																				
	Concave abaxially - curved adaxially	8																				
	Boat shaped	9																				
	Convex abaxially - rounded adaxially	10																				
	Wavy abaxially - convex adaxially	11																				
	Rounded abaxially - straight adaxially	12																				
	Terete	13																				
	Rounded abaxially - convex adaxially	14																				
	Rounded abaxially - concave adaxially	15																				
	Straight abaxially - convex adaxially	16																				
2. Hydathodes	Present	1	2	2	2	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2
	Wanting	2																				
3. Trichomes	Present	1	2	1	1	1	2	2	2	2	2	2	2	1	2	2	1	1	1	2	2	2
3.1. Presence	Wanting	2																				
3.2. Glands	E-glandular	1	0	2	2	2	0	0	0	0	0	0	0	1	0	0	3	3	3	0	0	0
	Glandular	2																				
	Glandular and e-glandular	3																				

Supplementary Table 8. Cont.

III. Lamina anatomical features Cont.			Taxa																			
			24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
3.3. Vesicular trichomes	Present	1	0	1	1	1	0	0	0	0	0	0	0	2	0	0	2	2	2	0	0	0
	Wanting	2																				
3.4. Composition	Unicellular	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3	3	0	0	0
	Multicellular	2																				
	Uni - & Multicellular	3																				
4. Cuticle	Thick	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2
	Thin	2																				
5. Epidermis	Tangentially elongated	1	4	1	1	1	1	1	1	1	1	1	2	2	1	1	2	2	2	4	1	1
	Radially elongated	2																				
	Tangentially - radially elongated	3																				
	Radially - tangentially elongated	4																				
6. Ground tissue	Polyhedral parenchyma	1	8	7	7	7	6	5	1	1	1	1	1	5	5	5	1	1	1	1	2	2
	Water-bearing cells	2																				
	Folded parenchyma	3																				
	Palisade cells	4																				
	Water-bearing cells + palisade cells	5																				
	Water-bearing cells + palisade cells + folded parenchyma	6																				
	Polyhedral parenchyma + water-bearing cells	7																				
	Polyhedral parenchyma + palisade cells	8																				
7. Mechanical tissue	Present	1	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1	1	1	1	2	2
	Wanting	2																				

Supplementary Table 8. Cont.

III. Lamina anatomical features Cont.			Taxa																			
			24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
8. Mesophyll type	Centric	1	4	3	3	3	1	1	2	3	2	3	1	1	1	1	2	2	2	2	1	2
	Dorsiventral	2																				
	Isolateral	3																				
	Isobilateral	4																				
	Ill-differentiated	5																				
9. Number and shape of vascular units	One V.B.	1	1	3	3	5	5	5	6	6	2	6	5	1	5	5	4	3	3	6	6	5
	Three V.Bs.	2																				
	Four V.Bs.	3																				
	Five V.Bs.	4																				
	More than five V.Bs.	5																				
	One V.S.	6																				
	One V.S. + two V.Bs.	7																				
	One V.S. + numerous V.Bs.	8																				
10. Kranz tissue	Present	1	2	1	1	1	1	1	2	2	2	2	1	1	2	2	1	1	2	2	1	1
10.1. Presence	Wanting	2																				
10.2. Type	Atriplcoid type	1	0	1	1	1	2	2	0	0	0	0	3	4	0	0	1	1	0	0	5	1
	Kochioid type	2																				
	Kranz-ventrodorsal type	3																				
	Salsoloid type	4																				
	Pilosoid type	5																				
11. Idioblasts	Detected	1	2	1	1	1	2	1	1	1	1	2	1	1	2	2	2	2	2	2	1	1
11.1. Crystals	Undetected	2																				

V. B.: Vascular Bundle; V. S.: Vascular Strand

Supplementary Table 8. Cont.

III. Lamina anatomical features Cont.			Taxa																			
			24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
11.1.1. Druses	Detected	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	2	2
11.1.2. Raphides	Undetected	2																				
11.1.3. Styloids	Detected	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	2	2
	Undetected	2																				
11.1.4. Sandy crystals	Detected	1	2	2	2	2	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2
	Undetected	2																				
11.2. Tanniniferous idioblasts	Detected	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	2	2
	Undetected	2																				

Supplementary Table 8. Cont.

IV. Lamina epidermal features (LM)			Taxa																					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. Leaf type acc. to occurrence of stomata	Amphistomatic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Hypostomatic	2																						
2. Epidermal cell shape	Polygonal	1	1	1	1	1	1	1	2	2	2	2	2	2	1	1	2	1	1	1	1	1	1	1	1
2.1. Abaxial surface	Irregular	2																							
2.2. Adaxial surface	Polygonal	1	1	1	1	1	1	1	1	1	1	2	1	2	1	1	2	1	1	1	1	2	1	2	1
	Irregular	2																							
3. Anticlinal walls	Straight	1	1	1	1	1	1	1	2	2	2	2	2	3	1	1	2	1	1	1	1	1	1	1	1
3.1. Abaxial surface	Sinuate	2																							
	Sinuate with knobs	3																							
	Curved	4																							
3.2. Adaxial surface	Straight	1	1	1	1	1	1	1	1	1	1	2	1	3	1	1	2	1	1	1	1	3	1	2	1
	Sinuate	2																							
	Sinuate with knobs	3																							
	Curved	4																							
4. Leaf type acc. to stomatal distribution	Homostomatic	1	2	2	1	1	1	2	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2
4.1. Abaxial surface	Heterostomatic	2																							
4.2. Adaxial surface	Homostomatic	1	2	2	1	1	1	2	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2
	Heterostomatic	2																							
5. Stomatal type	One type	1	3	2	1	1	1	3	1	1	1	1	1	4	1	2	4	2	4	3	2	2	3	4	2
5.1. Abaxial surface	Two types	2																							
	Three types	3																							
	Four types	4																							
5.2. Adaxial surface	One type	1	3	2	1	1	1	3	1	1	1	1	1	4	1	2	4	2	4	3	2	3	3	4	3
	Two types	2																							
	Three types	3																							
	Four types	4																							

Supplementary Table 8. Cont.

IV. Lamina epidermal features (LM) Cont.			Taxa																			
			24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1. Leaf type acc. to occurrence of stomata	Amphistomatic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1
	Hypostomatic	2																				
2. Epidermal cell shape	Polygonal	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1	2	1	2	2
2.1. Abaxial surface	Irregular	2																				
2.2. Adaxial surface	Polygonal	1	2	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	2	2
	Irregular	2																				
3. Anticlinal walls	Straight	1	1	1	1	1	1	1	2	2	4	2	1	1	1	1	1	1	2	1	3	2
3.1. Abaxial surface	Sinuate	2																				
	Sinuate with knobs	3																				
	Curved	4																				
3.2. Adaxial surface	Straight	1	3	1	1	1	1	1	2	2	4	1	1	1	1	1	1	1	1	1	3	2
	Sinuate	2																				
	Sinuate with knobs	3																				
	Curved	4																				
4. Leaf type acc. to stomatal distribution	Homostomatic	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1
4.1. Abaxial surface	Heterostomatic	2																				
4.2. Adaxial surface	Homostomatic	1	2	2	2	1	2	1	1	1	1	1	1	2	1	1	2	2	2	0	1	1
	Heterostomatic	2																				
5. Stomatal type	One type	1	3	2	2	1	2	1	1	1	1	1	1	1	1	1	2	2	4	2	1	1
5.1. Abaxial surface	Two types	2																				
	Three types	3																				
	Four types	4																				
5.2. Adaxial surface	One type	1	3	2	2	1	2	1	1	1	1	1	1	2	1	1	2	2	4	0	1	1
	Two types	2																				
	Three types	3																				
	Four types	4																				

Supplementary Table 8. Cont.

V. Lamina epidermal features (SEM)			Taxa																						
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
1. Surface sculpture	Ruminate	1	5	1	1	1	2	5	9	2	2	1	1	1	4	7	1	1	1	4	1	8	1	1	2
1.1. Abaxial surface	Rugose	2																							
	Reticulate	3																							
	Favulariate	4																							
	Rugose-ruminate	5																							
	Ruminate-rugose	6																							
	Rugose-scalariform	7																							
	Reticulate-rugose	8																							
	Colliculate	9																							
	Ruminate-reticulate	10																							
	Ill-defined	11																							
1.2. Adaxial surface	Ruminate	1	5	6	1	1	1	1	3	2	1	1	1	1	4	7	1	1	2	4	1	8	1	6	4
	Rugose	2																							
	Reticulate	3																							
	Favulariate	4																							
	Rugose-ruminate	5																							
	Ruminate-rugose	6																							
	Rugose-scalariform	7																							
	Reticulate-rugose	8																							
	Colliculate	9																							
	Ill-defined	10																							
2. Anticlinal wall	Broad	1	1	2	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	1	1
2.1. Width	Narrow	2																							
2.1.1. Abaxial surface	Ill-defined	3																							

Supplementary Table 8. Cont.

V. Lamina epidermal features (SEM) Cont.			Taxa																						
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
2.1.2 Adaxial surface	Broad	1	1	2	1	1	1	2	2	2	2	2	2	2	1	1	1	2	2	1	2	2	2	1	1
	Narrow	2																							
	Ill-defined	3																							
2.2. Elevation	Raised	1	1	1	1	1	1	1	2	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1	1
2.2.1. Abaxial surface	Depressed	2																							
	Ill-defined	3																							
2.2.2. Adaxial surface	Raised	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1	2
	Depressed	2																							
	Ill-defined	3																							
2.3. Striation	Smooth	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1
2.3.1. Abaxial surface	Striated	2																							
	Ill-defined	3																							
2.3.2. Abaxial surface	Smooth	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	2	2	1	2
	Striated	2																							
	Ill-defined	3																							
3. Periclinal wall	Raised	1	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2	2	1	2	2	2	2	2
3.1. Elevation	Depressed	2																							
3.1.1. Abaxial surface	Ill-defined	3																							
3.1.2. Adaxial surface	Raised	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	2	2	2	2	1
	Depressed	2																							
	Ill-defined	3																							

Supplementary Table 8. Cont.

V. Lamina epidermal features (SEM) Cont.			Taxa																					
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
3.2. Striation	Smooth	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1
3.2.1. Abaxial surface	Striated	2																							
	Pitted	3																							
	Ill-defined	4																							
3.2.2. Abaxial surface	Smooth	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1
	Striated	2																							
	Pitted	3																							
	Ill-defined	4																							
4. Stomata	Elliptic	1	2	1	3	1	1	1	1	1	1	1	1	2	1	1	1	3	1	1	1	1	1	1	4
4.1. Stomatal opening shape	Semicircular	2																							
4.1.1. Abaxial surface	Semicircular - elliptic	3																							
	Circular - elliptic	4																							
	Slit-like	5																							
	Lens shaped	6																							
	Ill-defined	7																							
4.1.2. Adaxial surface	Elliptic	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	4
	Semicircular	2																							
	Semicircular - elliptic	3																							
	Elliptic - lens shaped	4																							
	Slit-like	5																							
	Lens shaped	6																							
	Ill-defined	7																							

Supplementary Table 8. Cont.

V. Lamina epidermal features (SEM) Cont.			Taxa																						
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
4.2. Stomatal opening elevation	Sunken	1	1	1	2	2	2	1	2	2	3	3	2	2	1	1	1	2	1	1	2	2	1	2	2
4.2.1. Abaxial surface	Leveled	2																							
	Elevated	3																							
	Ill-defined	4																							
4.2.2. Adaxial surface	Sunken	1	1	1	2	2	2	1	2	2	3	3	1	2	1	1	1	2	2	1	3	2	1	2	3
	Leveled	2																							
	Elevated	3																							
	Ill-defined	4																							
5. Epicuticular wax	Granules	1	3	4	3	4	4	3	1	1	1	1	1	3	3	3	3	1	3	3	1	1	3	3	3
5.1. Abaxial surface	Platelets	2																							
	Granules + platelets	3																							
	Granules + platelets + polyangular rodlets	4																							
	Platelets + rhomboid crystals	5																							
	Absent	6																							
5.2. Adaxial surface	Granules	1	3	4	3	5	1	3	1	1	1	1	1	3	1	3	3	1	3	3	1	3	1	3	1
	Platelets	2																							
	Granules + platelets	3																							
	Granules + polyangular rodlets	4																							
	Granules + platelets + polyangular rodlets	5																							
	Granules + platelets + fissured crust	6																							
	Platelets + rhomboid crystals	7																							
	Absent	8																							

Supplementary Table 8. Cont.

V. Lamina epidermal features (SEM) Cont.			Taxa																			
			24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**
1. Surface sculpture	Ruminate	1	6	1	1	1	3	2	1	3	1	1	2	9	11	2	1	6	10	3	1	1
1.1. Abaxial surface	Rugose	2																				
	Reticulate	3																				
	Favulariate	4																				
	Rugose-ruminate	5																				
	Ruminate-rugose	6																				
	Rugose-scalariform	7																				
	Reticulate-rugose	8																				
	Colliculate	9																				
	Ruminate-reticulate	10																				
	Ill-defined	11																				
1.2. Adaxial surface	Ruminate	1	6	1	1	1	3	2	1	3	1	10	1	9	10	2	1	3	1	1	1	1
	Rugose	2																				
	Reticulate	3																				
	Favulariate	4																				
	Rugose-ruminate	5																				
	Ruminate-rugose	6																				
	Rugose-scalariform	7																				
	Reticulate-rugose	8																				
	Colliculate	9																				
	Ill-defined	10																				
2. Anticlinal wall	Broad	1	1	1	2	2	2	2	2	2	2	2	2	2	3	2	1	1	2	2	1	2
2.1. Width	Narrow	2																				
2.1.1. Abaxial surface	Ill-defined	3																				

Supplementary Table 8. Cont.

V. Lamina epidermal features (SEM) Cont.			Taxa																			
			24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
2.1.2 Adaxial surface	Broad	1	1	1	2	2	2	2	2	2	2	3	2	2	3	2	1	2	1	2	1	1
	Narrow	2																				
	Ill-defined	3																				
2.2. Elevation	Raised	1	1	1	1	1	2	1	1	2	1	1	1	2	3	1	1	1	1	2	1	1
2.2.1. Abaxial surface	Depressed	2																				
	Ill-defined	3																				
2.2.2. Adaxial surface	Raised	1	1	1	1	1	2	1	1	2	1	3	1	2	3	1	1	2	1	1	1	1
	Depressed	2																				
	Ill-defined	3																				
2.3. Striation	Smooth	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1
2.3.1. Abaxial surface	Striated	2																				
	Ill-defined	3																				
2.3.2. Abaxial surface	Smooth	1	1	1	1	1	1	1	1	1	1	3	1	1	3	1	1	1	1	1	2	2
	Striated	2																				
	Ill-defined	3																				
3. Periclinal wall	Raised	1	2	2	2	2	1	2	2	1	2	2	2	1	3	2	2	2	2	1	2	2
3.1. Elevation	Depressed	2																				
3.1.1. Abaxial surface	Ill-defined	3																				
3.1.2. Adaxial surface	Raised	1	2	2	2	2	1	2	2	1	2	3	2	1	3	2	2	1	2	2	2	2
	Depressed	2																				
	Ill-defined	3																				

Supplementary Table 8. Cont.

V. Lamina epidermal features (SEM) Cont.			Taxa																			
			24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
3.2. Striation	Smooth	1	1	1	3	3	1	1	1	1	3	3	1	1	4	1	1	1	1	1	2	1
3.2.1. Abaxial surface	Striated	2																				
	Pitted	3																				
	Ill-defined	4																				
3.2.2. Abaxial surface	Smooth	1	1	1	3	3	1	1	1	1	3	4	1	1	4	1	1	1	1	1	1	1
	Striated	2																				
	Pitted	3																				
	Ill-defined	4																				
4. Stomata	Elliptic	1	1	1	1	1	1	5	1	1	1	1	5	1	5	7	1	6	1	1	1	1
4.1. Stomatal opening shape	Semicircular	2																				
4.1.1. Abaxial surface	Semicircular - elliptic	3																				
	Circular - elliptic	4																				
	Slit-like	5																				
	lens shaped	6																				
	Ill-defined	7																				
4.1.2. Adaxial surface	Elliptic	1	1	1	1	1	1	5	1	1	1	1	1	5	5	1	1	6	1	7	1	1
	Semicircular	2																				
	Semicircular - elliptic	3																				
	Elliptic - lens shaped	4																				
	Slit-like	5																				
	lens shaped	6																				
	Ill-defined	7																				

Supplementary Table 8. Cont.

V. Lamina epidermal features (SEM) Cont.			Taxa																			
			24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**
4.2. Stomatal opening elevation	Sunken	1	2	2	2	1	1	2	3	2	3	2	1	2	2	4	1	1	2	3	1	3
4.2.1. Abaxial surface	Leveled	2																				
	Elevated	3																				
	Ill-defined	4																				
4.2.2. Adaxial surface	Sunken	1	2	2	2	1	1	2	2	2	1	1	2	2	2	2	1	1	3	4	2	3
	Leveled	2																				
	Elevated	3																				
	Ill-defined	4																				
5. Epicuticular wax	Granules	1	3	3	1	3	5	3	1	3	2	1	1	3	2	6	3	3	3	3	3	3
5.1. Abaxial surface	Platelets	2																				
	Granules + platelets	3																				
	Granules + platelets + polyangular rodlets	4																				
	Platelets + rhomboid crystals	5																				
	Absent	6																				
5.2. Adaxial surface	Granules	1	3	3	1	3	7	3	1	3	2	6	1	3	2	8	3	3	3	3	3	1
	Platelets	2																				
	Granules + platelets	3																				
	Granules + polyangular rodlets	4																				
	Granules + platelets + polyangular rodlets	5																				
	Granules + platelets + fissured crust	6																				
	Platelets + rhomboid crystals	7																				
	Absent	8																				

Supplementary Table 8. Cont.

VI. Qualitative palynological features			Taxa																			
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1. Pollen size	Small	1	2	2	2	2	2	3	1	1	1	1	2	3	2	2	3	2	2	2	3	3
	Medium	2																				
	Large	3																				
2. Polarity	Apolar	1	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1
	Isopolar	2																				
3.Pollen shape	Sub oblate	1	4	4	4	3	2	4	2	3	2	2	3	3	2	3	2	2	3	4	2	3
	Oblate - spheroidal	2																				
	Prolate - spheroidal	3																				
	Prolate	4																				
4. Pore number	Pantoporate	1	2	2	2	2	4	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1
	Tricolpate	2																				
	Tetracolpate	3																				
	Tri- and tetracolpate	4																				
	Pantocolpate	5																				
5. Pore number	1 - 10	1	0	0	0	0	0	0	3	2	3	3	3	2	1	1	1	1	1	0	3	3
	11 - 20	2																				
	20 - 40	3																				
	40 - 60	4																				
	60 - 90	5																				
6. Operculum	Developed	1	0	0	0	0	0	0	1	1	2	1	2	1	2	2	1	2	1	0	2	1
	Undeveloped	2																				
7. Annulus	Developed	1	0	0	0	0	0	0	1	1	1	1	1	2	1	1	1	2	1	0	2	1
	Undeveloped	2																				

Supplementary Table 8. Cont.

VI. Qualitative palynological features Cont.			Taxa																			
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
8. Pore depth	Deeply excavated	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	2	0
	Protuberant	2																				
9. Margo	Developed	1	1	2	1	2	2	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0
	Undeveloped	2																				
10. Colpi	Oblong	1	1	1	3	2	2	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	Fusiform	2																				
	Slit-like	3																				
11. Sculpture	Echinate - punctate	1	1	1	2	3	4	3	5	6	7	8	9	3	6	9	9	10	10	6	1	1
	favulariate	2																				
	Microechinate - punctate	3																				
	Scabrate - microechinate	4																				
	Scabrate - echinate	5																				
	Microechinate	6																				
	Granulate - echinate	7																				
	Scabrate	8																				
	Granulate	9																				
	Verrucate	10																				
	Scabrate - granulate	11																				
	Reticulate - granulate	12																				
	Microechinate - echinate	13																				
12. Echini	Few	1	1	3	0	2	4	3	2	1	4	0	0	3	3	0	0	0	0	2	2	3
	Medium	2																				
12.1. Density	Dense	3																				
	Very dense	4																				

Supplementary Table 8. Cont.

VI. Qualitative palynological features Cont.			Taxa																		
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
12.2. Arrangement	Regular	1	1	1	0	2	3	3	2	1	3	0	0	1	1	0	0	0	0	1	3	1
	Rather regular	2																				
	Irregular	3																				
13. Puncta	Few	1	3	3	0	1	0	3	0	0	0	0	0	1	0	0	0	0	0	0	3	3
13.1. Density	Medium	2																				
	Dense	3																				
13.2. Arrangement	Regular	1	2	2	0	1	0	2	0	0	0	0	0	1	0	0	0	0	0	0	2	2
	Irregular	2																				
14. Extexinous bodies	Detected	1	2	2	2	2	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1
	Undetected	2																				
15. Foreign particles	Detected	1	2	2	2	2	2	2	1	1	1	1	1	2	2	2	1	1	1	2	2	1
	Undetected	2																				

Supplementary Table 8. Cont.

VI. Qualitative palynological features Cont.			Taxa																			
			24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**
1. Pollen size	Small	1	2	2	1	1	2	2	1	1	1	1	1	1	1	2	3	3	3	2	3	3
	Medium	2																				
	Large	3																				
2. Polarity	Apolar	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	2	2
	Isopolar	2																				
3.Pollen shape	Sub oblate	1	4	1	2	2	3	2	2	2	3	3	2	2	3	2	2	3	3	4	3	2
	Oblate - spheroidal	2																				
	Prolate - spheroidal	3																				
	Prolate	4																				
4. Pore number	Pantoporate	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	3	5
	Tricolpate	2																				
	Tetracolpate	3																				
	Tri- and tetracolpate	4																				
	Pantocolpate	5																				
5. Pore number	1 - 10	1	0	4	4	4	5	5	3	3	5	3	3	3	4	5	3	0	5	0	0	0
	11 - 20	2																				
	20 - 40	3																				
	40 - 60	4																				
	60 - 90	5																				
6. Operculum	Developed	1	0	2	1	2	2	2	2	1	2	2	2	1	1	2	2	0	2	0	0	0
	Undeveloped	2																				
7. Annulus	Developed	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0	2	0	0	0
	Undeveloped	2																				

Supplementary Table 8. Cont.

VI. Qualitative palynological features Cont.			Taxa																			
			24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**
8. Pore depth	Deeply excavated	1	0	1	0	1	1	1	0	0	1	1	1	0	0	1	1	0	1	0	0	0
	Protuberant	2																				
9. Margo	Developed	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2
	Undeveloped	2																				
10. Colpi	Oblong	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	2	2
	Fusiform	2																				
	Slit-like	3																				
11. Sculpture	Echinate - punctate	1	6	7	11	9	5	7	7	11	5	5	5	7	7	7	1	12	13	3	13	13
	favulariate	2																				
	Microechinate - punctate	3																				
	Scabrate - microechinate	4																				
	Scabrate - echinate	5																				
	Microechinate	6																				
	Granulate - echinate	7																				
	Scabrate	8																				
	Granulate	9																				
	Verrucate	10																				
	Scabrate - granulate	11																				
	Reticulate - granulate	12																				
	Microechinate - echinate	13																				
12. Echini	Few	1	4	3	0	0	2	2	2	0	3	3	1	2	1	1	4	0	4	2	4	4
	Medium	2																				
12.1. Density	Dense	3																				
	Very dense	4																				

Supplementary Table 8. Cont.

VI. Qualitative palynological features Cont.			Taxa																			
			24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
12.2. Arrangement	Regular	1	2	3	0	0	2	2	2	0	2	2	1	2	1	1	3	0	3	2	3	3
	Rather regular	2																				
	Irregular	3																				
13. Puncta	Few	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0
13.1. Density	Medium	2																				
	Dense	3																				
13.2. Arrangement	Regular	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0
	Irregular	2																				
14. Extexinous bodies	Detected	1	2	1	1	1	1	1	1	1	2	1	1	1	1	1	2	2	2	2	2	1
	Undetected	2																				
15. Foreign particles	Detected	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1
	Undetected	2																				