

Table S8. Phytochemical composition, identification and major groups of chemical components (%) of essential oil (EO) of *Clinopodium pulegium* (Cp), *C. serpyllifolium* (Cs), and *C. thymifolium* (Ct).

			Sample and yield								
			Cp	Cs	Ct1	Ct2	Ct3	Ct4	Ct5	Ct6	Ct7
			0.83	0.91	1.00	1.05	1.10	1.12	0.98	0.90	1.20
Component	RI ^a	RI ^b	EO±SD	EO±SD	EO±SD	EO±SD	EO±SD	EO±SD	EO±SD	EO±SD	EO±SD
MH			16.17	8.31	5.61	6.31	2.55	3.15	3.83	2.92	2.20
α -Thujene	924	1029	-	-	1.35±0.01	1.15±0.01	0.65±0.03	0.79±0.01	1.15±0.01	0.86±0.01	1.05±0.01
α -Pinene*	938	1025	1.22±0.03	0.52±0.02	0.72±0.01	0.36±0.01	-	-	0.93±0.01	-	-
Verbenene	960	1121	-	-	0.42±0.01	2.17±0.01	0.43±0.01	-	-	0.43±0.05	-
Camphene*	962	1056	0.24±0.01	-	0.44±0.01	0.61±0.03	-	-	-	-	-
Sabinene	971	1126	3.25±0.01	1.43±0.01	-	-	-	-	-	-	-
β -Pinene	982	1092	-	-	1.12±0.01	1.30±0.01	1.22±0.01	1.38±0.01	1.07±0.03	1.63±0.03	1.15±0.01
Myrcene	992	1173	-	-	0.24±0.01	0.23±0.03	-	-	0.52±0.01	-	-

α -Terpinene	1016	1192	0.64±0.01	-	-	-	0.25±0.01	-	-	-	-
Limonene	1032	1204	5.62±0.01	6.12±0.02	1.32±0.01	0.13±0.01	-	-	-	-	-
(Z)- β -Ocimene*	1052	1218	0.61±0.01	0.13±0.01	-	-	-	-	-	-	-
γ -Terpinene	1057	1225	0.22±0.01	0.11±0.01	-	-	-	-	-	-	-
allo-Ocimene	1128	1370	0.24±0.01	-	-	0.36±0.01	-	0.98±0.01	0.16±0.01	-	-
OM			68.67	64.99	82.04	69.40	73.64	82.26	81.1	84.07	85.31
trans-Linalool oxide*	1088	1434	-	-	0.74±0.01	1.14±0.01	0.24±0.01	0.36±0.01	0.32±0.01	0.21±0.01	0.41±0.01
Linalool*	1099	1548	2.64±0.01	-	0.36±0.01	0.34±0.03	-	-	-	-	-
cis-p-Menth-2-en-1-ol	1118	1600	-	-	1.31±0.01	1.65±0.01	2.12±0.01	1.42±0.01	1.36±0.01	1.72±0.01	0.98±0.01
α -Campholenal	1129	1496	-	-	-	0.38±0.01	-	-	-	-	-
Isopulegol	1145	1551	-	1.34±0.01	-	0.65±0.05	-	-	-	-	-
trans-Pinocarveol	1147	1658	-	-	0.22±0.01	0.21±0.01	0.35±0.01	0.76±0.01	0.37±0.01	0.24±0.01	0.66±0.01
Menthone	1148	1462	1.12±0.01	0.24±0.01	0.86±0.01	1.15±0.01	1.54±0.01	1.33±0.01	1.16±0.01	0.94±0.01	0.96±0.01

Camphor	1151	1499	1.23±0.03	0.35±0.01	-	-	-	-	-	-	-
Pinocarvone	1160	1565	-	4.81±0.02	1.74±0.01	2.12±0.01	1.14±0.01	2.31±0.01	1.16±0.01	1.96±0.01	0.96±0.01
Borneol*	1176	1699	-	-	0.37±0.01	2.42±0.01	0.38±0.01	-	0.48±0.01	0.38±0.01	-
Terpinen-4-ol	1184	1601	-	-	-	0.22±0.01	-	-	-	-	-
α-Terpineol	1186	1686	0.12±0.01	-	0.57±0.01	0.32±0.01	0.1±0.01	-	-	0.12±0.01	-
Myrtenol	1197	1782	0.31±0.01	-	0.45±0.03	0.31±0.01	-	-	0.28±0.01	0.21±0.01	-
Verbenone	1204	1705	-	1.32±0.02	-	-	-	-	-	-	-
trans-Carveol	1215	1815	-	-	-	0.12±0.02	-	-	-	-	-
β-Cyclocitral	1223	1629	0.33±0.01	-	-	-	-	-	-	-	-
Pulegone	1234	1641	26.23±0.01	13.11±0.01	70.02±0.01	42.90±0.01	51.60±0.01	46.87±0.01	67.25±0.01	63.63±0.01	15.87±0.01
Piperitone	1250	1719	1.23±0.02	2.12±0.01	2.32±0.01	2.17±0.01	3.34±0.01	7.53±0.01	2.21±0.01	3.03±0.01	0.26±0.01
Piperitonene	1340	1882	2.00±0.01	-	-	-	-	-	1.14±0.01	-	-
α-Terpenyl acetate	1349	1685	0.34±0.01	-	-	-	-	-	-	-	-

Piperitenone oxide	1366	1941	33.12±0.01	41.70±0.01	3.08±0.01	13.30±0.01	12.83±0.03	21.68±0.01	5.37±0.01	11.63±0.01	65.21±0.01
SH			3.95	10.07	1.96	10.88	6.49	2.41	1.90	5.46	1.09
α -Copaene	1377	1484	0.34±0.01	0.42±0.02	0.26±0.01	0.25±0.01	0.61±0.01	0.95±0.01	0.32±0.01	0.51±0.01	0.25±0.01
β -Bourbonene	1383	1508	-	-	0.41±0.03	0.34±0.05	0.25±0.01	-	0.31±0.01	0.23±0.01	0.22±0.01
β -Elemene	1389	1593	-	1.62±0.01	0.32±0.01	0.93±0.01	1.17±0.01	0.51±0.01	0.24±0.01	0.75±0.01	-
<i>E</i> -Caryophyllene*	1424	1585	0.42±0.01	1.14±0.03	0.35±0.01	1.57±0.01	1.31±0.01	0.42±0.01	0.43±0.01	0.93±0.01	0.43±0.01
β -Copaene	1429	1584	0.51±0.01	0.63±0.01	0.25±0.01	1.13±0.03	-	0.31±0.01	-	0.25±0.01	-
<i>trans</i> - α -Bergamotene	1433	1580	-	-	-	-	-	-	-	0.23±0.01	-
(<i>Z</i>)- β -Farnesene	1454	1639	0.41±0.01	-	-	1.21±0.01	-	-	-	-	-
α -Humulene	1456	1654	-	-	-	-	0.84±0.01	-	-	0.17±0.01	-
<i>allo</i> -Aromadendrene*	1465	1662	-	-	-	1.32±0.01	0.31±0.01	-	-	0.54±0.01	-
Germacrene D*	1481	1692	1.71±0.01	2.61±0.01	0.37±0.01	0.44±0.01	0.52±0.01	0.22±0.01	0.37±0.01	0.32±0.01	0.19±0.01
β -Bisabolene	1494	1729	0.24±0.02	-	-	0.94±0.01	0.54±0.01	-	0.23±0.01	0.51±0.01	-

Viridiflorene	1496	1697	-	-	-	1.14±0.01	-	-	-	-	-
Bicyclogermacrene	1500	1718	-	3.65±0.02	-	-	-	-	-	-	-
β -Curcumene	1514	1731	-	-	-	-	0.94±0.01	-	-	0.71±0.01	-
δ -Cadinene	1517	1745	0.32±0.01	-	-	1.61±0.01	-	-	-	0.31±0.01	-
OS			1.75	1.88	0.57	4.15	3.89	0.25	0.37	1.82	0.36
Spathulenol*	1577	2101	-	0.51±0.01	-	0.16±0.01	-	-	-	-	-
Caryophyllene oxide*	1581	1955	1.16±0.01	0.52±0.01	0.31±0.01	1.32±0.01	2.67±0.01	-	-	0.62±0.01	-
γ -Eudesmol	1632	2135	-	0.32±0.03	0.26±0.03	2.16±0.01	0.46±0.01	0.25±0.05	0.37±0.05	0.65±0.01	0.36±0.07
α -Cadinol	1655	2208	0.34±0.01	0.53±0.01	-	0.15±0.05	-	-	-	-	-
α -Bisabolol	1688	2116	0.25±0.03	-	-	0.36±0.01	-	-	-	-	-
α -Bisabolol oxide	1748	2511	-	-	-	-	0.76±0.01	-	-	0.55±0.01	-
PC			0.22	0.61	-	0.37	-	-	-	-	-
Carvacrol*	1298	2239	-	-	-	0.37±0.01	-	-	-	-	-

Eugenol*	1370	2175	0.22±0.01	0.61±0.02	-	-	-	-	-	-	-
CC			0.14	2.21	-	0.82	0.33	-	0.32	0.22	-
1-Octen-3-ol	974	1433	-	2.21±0.01	-	0.61±0.01	0.33±0.01	-	0.32±0.01	0.22±0.01	-
3-Octanol acetate	1125	1376	-	-	-	0.21±0.01	-	-	-	-	-
β-Ionone	1487	1924	0.14±0.01	-	-	-	-	-	-	-	-
H			0.37	2.86	1.89	3.54	4.78	5.11	5.42	3.11	3.76
Eicosane*	2000	2000	0.16±0.01	0.22±0.03	0.44±0.01	-	0.35±0.01	0.22±0.01	-	0.24±0.01	3.31±0.01
Heneicosane*	2100	2100	-	0.51±0.01	-	-	-	-	-	-	-
Docosane*	2200	2200	0.21±0.01	2.13±0.01	1.45±0.03	2.21±0.01	3.81±0.01	4.89±0.03	5.24±0.01	1.72±0.01	3.45±0.01
Tricosane*	2300	2300	-	-	-	0.45±0.01	-	-	-	-	-
Tetracosane*	2400	2400	-	-	-	0.43±0.03	-	-	-	0.38±0.03	-
Pentacosane*	2500	2500	-	-	-	-	0.42±0.01	-	-	0.53±0.01	-
Hexacosane*	2600	2600	-	-	-	0.45±0.01	0.20±0.03	-	0.18±0.01	0.24±0.01	-

<i>Total identified (%)</i>	91.27	90.93	92.07	95.47	91.68	93.18	92.94	97.6	92.72
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Retention indices were determined relative to a series of *n*-alkanes (C₈–C₄₀) on capillary columns VF5-ms (RI^a) and CP Wax 52 (RI^b); identification method: RI comparison of RIs with those listed in a homemade library; reported in the literature [87] and/or authentic samples; comparison of mass spectra with those in mass spectral libraries NIST02 [88] and Wiley 9; *, injection reference compounds; SD, standard deviation; MH, Monoterpene hydrocarbons; OM, Oxygenated monoterpenes; SH, Sesquiterpene hydrocarbons; OS, Oxygenated sesquiterpenes; PC, Phenolic compounds; CC, Carbonylic compounds; H, Hydrocarbons.