

Date : 2023-12-21

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 23L14-PTH03

Customer Identification : Organic Basil Linalool - Egypt - B20104R

Type : Essential Oil

Source : *Ocimum basilicum* ct. Linalool

Customer : Plant Therapy

Checked and approved by:

Alexis St-Gelais, Ph. D., Chimiste 2013-174

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GAS CHROMATOGRAPHIC ANALYSIS

Method : PC-MAT-014 - Analysis of the composition of an essential oil or other volatile liquide by FAST GC-FID

✖ISO

Results : See analysis summary (next page)

Analyst : Sylvain Mercier, M. Sc., Chimiste 2014-005

Date : 2023-12-19

PHYSICOCHEMICAL DATA

Refractive index : 1.4766 ± 0.0003 (20 °C)

Method : PC-MAT-016 - Measure of the refractive index of a liquid.

Analyst : Cindy Caron B. Sc.

Date : 2023-12-19

CONCLUSION

No adulterant, contaminant or diluent has been detected using this method.

ANALYSIS SUMMARY - CONSOLIDATED CONTENTS

New readers of similar reports are encouraged to read table footnotes at least once.

Identification	%	Class
Ethanol	tr	Aliphatic alcohol
Isovaleral	tr	Aliphatic aldehyde
2-Methylbutyral	tr	Aliphatic aldehyde
Isoamyl alcohol	0.01	Aliphatic alcohol
2-Methylbutanol	tr	Aliphatic alcohol
(2E)-Hexenal	0.01	Aliphatic aldehyde
(3Z)-Hexenol	0.02	Aliphatic alcohol
Hexanol	0.01	Aliphatic alcohol
Hashishene	0.01	Monoterpene
α -Thujene	0.05	Monoterpene
α -Pinene	0.52	Monoterpene
Camphene	0.11	Monoterpene
Thuja-2,4(10)-diene	0.01	Monoterpene
Benzaldehyde	0.02	Simple phenolic
β -Pinene	1.00	Monoterpene
Sabinene	0.49	Monoterpene
Octen-3-ol	0.05	Aliphatic alcohol
Octan-3-one	0.04	Aliphatic ketone
6-Methyl-5-hepten-2-one	0.01	Aliphatic ketone
Myrcene	1.00	Monoterpene
Pseudolimonene	0.01	Monoterpene
α -Phellandrene	0.02	Monoterpene
Δ^3 -Carene	0.01	Monoterpene
(3Z)-Hexenyl acetate	0.04	Aliphatic ester
α -Terpinene	0.07	Monoterpene
<i>para</i> -Cymene	0.18	Monoterpene
1,8-Cineole	9.27	Monoterpenic ether
Limonene	0.44	Monoterpene
(Z)- β -Ocimene	0.05	Monoterpene
(E)- β -Ocimene	0.51	Monoterpene
γ -Terpinene	0.06	Monoterpene
<i>cis</i> -Sabinene hydrate	0.15	Monoterpenic alcohol
<i>cis</i> -Linalool oxide (fur.)	0.06	Monoterpenic alcohol
Octanol	0.06	Aliphatic alcohol
<i>trans</i> -Linalool oxide (fur.)	0.02	Monoterpenic alcohol
<i>para</i> -Cymenene	0.01	Monoterpene
Terpinolene	0.11	Monoterpene
6,7-Epoxy-myrcene	0.03	Monoterpenic ether
Hotrienol	0.04	Monoterpenic alcohol
Linalool	48.22	Monoterpenic alcohol

Phenylethyl alcohol	0.02	Simple phenolic
Octen-3-yl acetate	0.07	Aliphatic ester
<i>cis-para</i> -Menth-2-en-1-ol	0.01	Monoterpenic alcohol
Limona ketone	0.02	Normonoterpenic ketone
(<i>Z</i>)-Myroxide	0.01	Monoterpenic ether
Camphor	0.52	Monoterpenic ketone
(<i>E</i>)-Myroxide	0.14	Monoterpenic ether
Isomenthone	0.02	Monoterpenic ketone
Borneol	0.12	Monoterpenic alcohol
δ -Terpineol	0.17	Monoterpenic alcohol
Terpinen-4-ol	0.56	Monoterpenic alcohol
<i>para</i> -Cymen-8-ol	0.03	Monoterpenic alcohol
α -Terpineol	0.91	Monoterpenic alcohol
Methylchavicol	0.78	Phenylpropanoid
(<i>3E,5E</i>)-2,6-Dimethylocta-3,5,7-trien-2-ol	0.06	Monoterpenic alcohol
Octyl acetate	0.24	Aliphatic ester
Nerol	0.02	Monoterpenic alcohol
Citronellol	0.10	Monoterpenic alcohol
Carvone	0.01	Monoterpenic ketone
Linalyl acetate	0.01	Monoterpenic ester
Geraniol	0.14	Monoterpenic alcohol
Chavicol	0.01	Phenylpropanoid
Geranial	0.04	Monoterpenic aldehyde
Citronellyl formate	0.02	Monoterpenic ester
Bornyl acetate	0.99	Monoterpenic ester
Lavandulyl acetate	0.01	Monoterpenic ester
<i>trans</i> -Pinocarvyl acetate	0.02	Monoterpenic ester
Geranyl formate	0.02	Monoterpenic ester
<i>exo</i> -2-Hydroxycineole acetate	0.09	Monoterpenic ester
α -Cubebene	0.09	Sesquiterpene
Eugenol	5.84	Phenylpropanoid
Neryl acetate	0.07	Monoterpenic ester
α -Copaene	0.17	Sesquiterpene
β -Bourbonene	0.27	Sesquiterpene
<i>cis</i> - β -Elemene	0.08	Sesquiterpene
1,5-diepi- β -Bourbonene	0.02	Sesquiterpene
Geranyl acetate	0.03	Monoterpenic ester
β -Cubebene	0.10	Sesquiterpene
β -Elemene	1.87	Sesquiterpene
Unknown	0.09	Unknown
α -Cedrene	0.04	Sesquiterpene
α -Gurjunene	0.01	Sesquiterpene
Methyleugenol	0.12	Phenylpropanoid
<i>cis</i> - α -Bergamotene	0.12	Sesquiterpene
β -Caryophyllene	0.25	Sesquiterpene

β-Copaene	0.06	Sesquiterpene
β-Gurjunene	0.16	Sesquiterpene
α-Guaiene	[5.69]	Sesquiterpene
<i>trans</i> -α-Bergamotene	[5.69]	Sesquiterpene
<i>cis</i> -Muuro-la-3,5-diene	0.04	Sesquiterpene
<i>cis</i> -β-Bergamotene?	0.15	Sesquiterpene
Cadina-4,11-diene	0.01	Sesquiterpene
α-Humulene	0.74	Sesquiterpene
allo-Aromadendrene	0.07	Sesquiterpene
<i>cis</i> -Muuro-la-4(15),5-diene	0.46	Sesquiterpene
(<i>E</i>)-β-Farnesene	0.17	Sesquiterpene
γ-Muuro-lene	0.06	Sesquiterpene
Germacrene D	2.67	Sesquiterpene
β-Selinene	0.51	Sesquiterpene
Valencene	0.01	Sesquiterpene
Viridiflorene	0.02	Sesquiterpene
Bicyclo-germacrene	0.86	Sesquiterpene
α-Muuro-lene	0.17	Sesquiterpene
Germacrene A	0.74	Sesquiterpene
(<i>Z</i>)-α-Bisabolene	0.05	Sesquiterpene
δ-Guaiene	1.08	Sesquiterpene
γ-Cadinene	2.55	Sesquiterpene
<i>trans</i> -Calamenene	0.25	Sesquiterpene
δ-Cadinene	0.14	Sesquiterpene
β-Sesquiphellandrene	0.18	Sesquiterpene
10-epi-Cubebol?	0.11	Sesquiterpenic alcohol
α-Cadinene	0.07	Sesquiterpene
Maaliol	0.14	Sesquiterpenic alcohol
(<i>E</i>)-Nerolidol	0.13	Sesquiterpenic alcohol
Germacrene D-4-ol	0.01	Sesquiterpenic alcohol
Spathulenol	0.25	Sesquiterpenic alcohol
Caryophyllene oxide	0.01	Sesquiterpenic ether
Globulol	0.04	Sesquiterpenic alcohol
Viridiflorol	0.04	Sesquiterpenic alcohol
Humulene epoxide II	0.04	Sesquiterpenic ether
10-epi-Cubenol	0.47	Sesquiterpenic alcohol
10-epi-γ-Eudesmol	0.04	Sesquiterpenic alcohol
τ-Cadinol	2.39	Sesquiterpenic alcohol
β-Eudesmol	0.10	Sesquiterpenic alcohol
α-Eudesmol	0.07	Sesquiterpenic alcohol
α-Cadinol	0.10	Sesquiterpenic alcohol
(3 <i>Z</i>)-Caryophylla-3,8(13)-dien-5β-ol	0.05	Sesquiterpenic alcohol
α-Bisabolol	0.05	Sesquiterpenic alcohol
Unknown	0.01	Lignan
Unknown	0.03	Oxygenated sesquiterpene

Mint sulfide?	0.02	Sesquiterpenic sulfide
Phytone	0.02	Terpenic ketone
Unknown	0.03	Oxygenated sesquiterpene
Phytol	0.02	Diterpenic alcohol
Unknown	0.04	Lignan
Dehydrodieugenol	0.02	Lignan
Consolidated total	98.24	

tr: The compound has been detected below 0.005% of the total signal

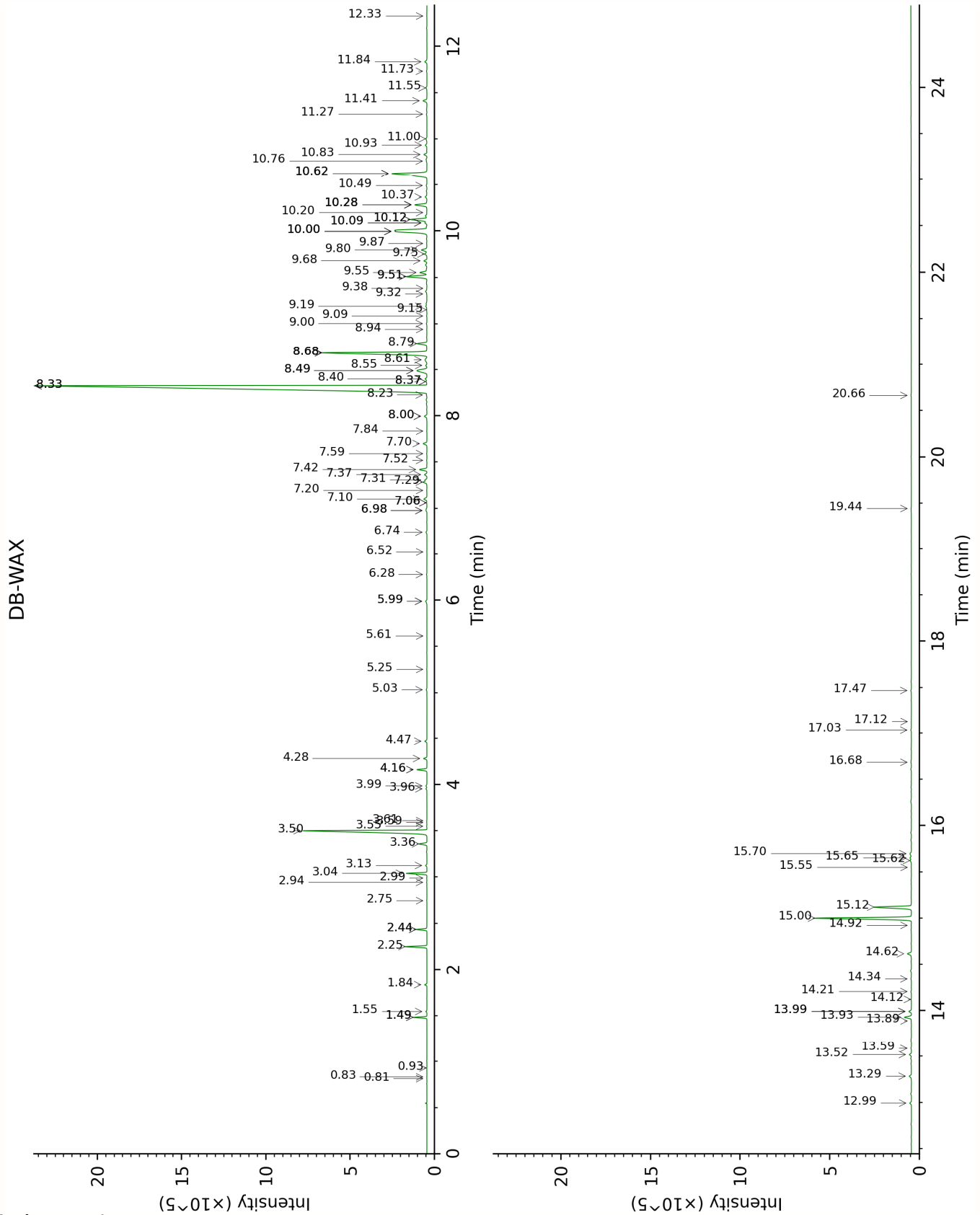
Note: no correction factor was applied

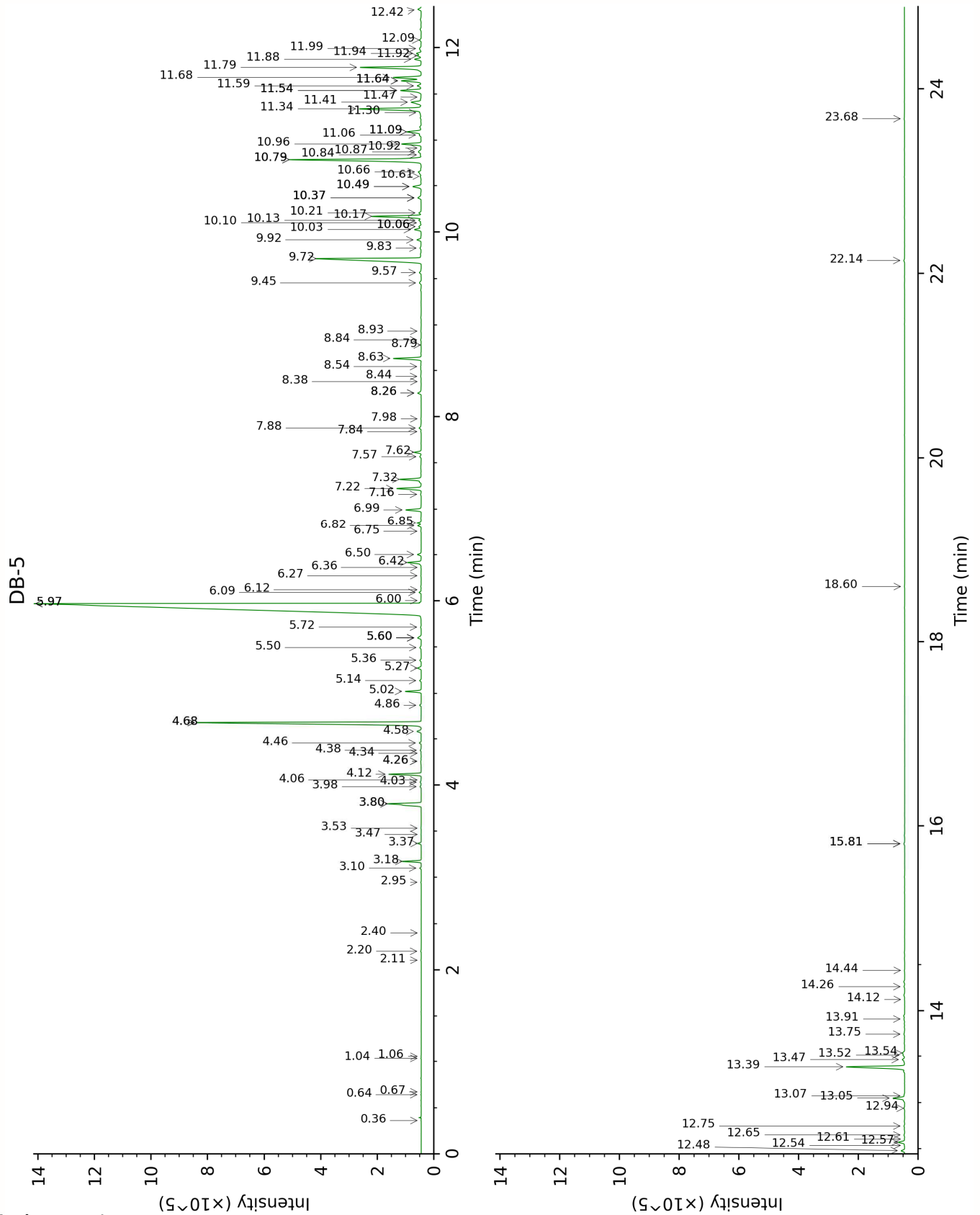
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm is set to prioritize data from the most standard DB-5 column, and smallest values so as to avoid overestimating individual content. This process is semi-automatic. Advanced users are invited to consult the "Full analysis data" table after the chromatograms in this report to access the full untreated data and perform their own calculations if needed.

Unknowns: Unknown compounds' mass spectral data is presented in the "Full analysis data" table. The occurrence of unknown compounds is to be expected in many samples, and does not denote particular problems unless noted otherwise in the conclusion.

Bracketed value ([xx]): A bracketed percent value indicate that two or more compound percentage could not be solved due to coelution.

This page was intentionally left blank. The following pages present the complete data of the analysis.





FULL ANALYSIS DATA

Ethanol	Column DB-WAX			Column DB-5		
	0.93	908.6	tr	0.36	500.2	tr
Isovaleral	0.83	886.0	tr	0.64	641.0	tr
2-Methylbutyral	0.82	879.6	tr	0.67	651.4	tr
Isoamyl alcohol	3.61	1176.6	0.01	1.04	733.0	0.01
2-Methylbutanol	3.59	1175.1	0.01	1.06	736.1	tr
(2E)-Hexenal	3.55	1172.0	0.02	2.11	849.8	0.01
(3Z)-Hexenal	5.99*	1348.9	[0.10]	2.20	857.8	0.02
Hexanol	5.61	1322.1	0.01	2.40	874.0	0.01
Hashishene	1.49*	992.2	[0.53]	2.95	916.2	0.01
α -Thujene	1.55	1001.0	0.04	3.10	926.3	0.05
α -Pinene	1.49*	992.2	[0.53]	3.18	931.1	0.52
Camphene	1.84	1028.3	0.10	3.37	943.9	0.11
Thuja-2,4(10)-diene	2.44*	1084.7	[0.49]	3.47	950.3	0.01
Benzaldehyde	7.52	1460.3	0.02	3.53	954.7	0.02
β -Pinene	2.25	1067.2	1.00	3.80*	972.1	[1.49]
Sabinene	2.44*	1084.7	[0.49]	3.80*	972.1	[1.49]
Octen-3-ol	6.98*	1420.2	[0.10]	3.98	984.3	0.05
Octan-3-one	4.16*	1217.2	[0.53]	4.03	987.5	0.04
6-Methyl-5-hepten-2-one	5.25	1294.8	0.01	4.06	989.1	0.01
Myrcene	3.04	1133.5	0.99	4.12	993.1	1.00
Pseudolimonene	2.99	1129.5	0.01	4.26*	1002.3	[0.04]
α -Phellandrene	2.94	1126.1	0.02	4.26*	1002.3	[0.04]
Δ 3-Carene	2.75	1111.0	0.01	4.34	1007.9	0.01
(3Z)-Hexenyl acetate	5.03	1279.2	0.04	4.38	1009.9	0.04
α -Terpinene	3.13	1139.9	0.07	4.46	1014.9	0.07
<i>para</i> -Cymene	4.28	1225.8	0.18	4.58	1022.7	0.18
1,8-Cineole	3.50	1168.4	9.27	4.68*	1028.7	[9.73]
Limonene	3.36	1157.6	0.44	4.68*	1028.7	[9.73]
(Z)- β -Ocimene	3.96	1202.5	0.05	4.86	1040.3	0.05
(E)- β -Ocimene	4.16*	1217.2	[0.53]	5.02	1050.2	0.51
γ -Terpinene	3.99	1204.7	0.06	5.14	1057.5	0.06
<i>cis</i> -Sabinene hydrate	7.10	1429.4	0.21	5.27	1066.0	0.15
<i>cis</i> -Linalool oxide (fur.)	6.74	1402.3	0.06	5.36	1071.3	0.06
Octanol	8.37*	1524.2	[0.05]	5.50	1079.9	0.06
<i>trans</i> -Linalool oxide (fur.)	7.06*	1426.4	[0.03]	5.60*	1086.4	[0.18]
<i>para</i> -Cymenene	6.52	1387.0	0.01	5.60*	1086.4	[0.18]
Terpinolene	4.47	1239.0	0.11	5.60*	1086.4	[0.18]
6,7-Epoxyterpinene	6.28	1369.6	0.03	5.72	1093.7	0.03

Hotrienol	9.00	1573.1	0.04	5.97*	1109.7	[48.26]
Linalool	8.33*	1520.8	[48.28]	5.97*	1109.7	[48.26]
Phenylethyl alcohol	12.33	1849.1	0.02	6.00	1111.8	0.02
Octen-3-yl acetate	5.99*	1348.9	[0.10]	6.09	1117.4	0.07
<i>cis-para</i> -Menth-2-en-1-ol	8.33*	1520.8	[48.28]	6.12	1119.2	0.01
Limona ketone	8.00*	1495.5	[0.17]	6.27	1128.9	0.02
(<i>Z</i>)-Myroxide	7.06*	1426.4	[0.03]	6.36	1134.6	0.01
Camphor	7.42	1453.0	0.47	6.42	1138.0	0.52
(<i>E</i>)-Myroxide	7.31	1444.5	0.12	6.50	1143.6	0.14
Isomenthone	7.20	1436.3	0.02	6.76	1159.6	0.02
Borneol	10.00*†	1652.0	[1.93]	6.82	1163.5	0.12
δ-Terpineol	9.68	1626.5	0.18	6.85	1165.6	0.17
Terpinen-4-ol	8.79	1556.5	0.60	6.99	1174.8	0.56
<i>para</i> -Cymen-8-ol	11.73	1796.5	0.03	7.16	1185.5	0.03
α-Terpineol	10.00*†	1652.0	[1.93]	7.22	1189.6	0.91
Methylchavicol	9.51*†	1612.8	[1.48]	7.32	1195.9	0.78
(<i>3E,5E</i>)-2,6-Dimethylocta-3,5,7-trien-2-ol	11.55	1781.3	0.07	7.57	1211.8	0.06
Octyl acetate	7.28	1442.9	0.27	7.62	1215.1	0.24
Nerol	11.27	1757.4	0.04	7.84	1230.0	0.02
Citronellol	10.93	1729.0	0.11	7.88	1232.6	0.10
Carvone	10.20	1668.4	0.02	7.98	1239.2	0.01
Linalyl acetate	8.37*	1524.2	[0.05]	8.26*	1257.8	[0.15]
Geraniol	11.84	1805.5	0.14	8.26*	1257.8	[0.15]
Chavicol	16.68	2268.1	0.03	8.38	1266.1	0.01
Geranial	10.28*	1675.2	[0.84]	8.44	1269.9	0.04
Citronellyl formate	9.09	1579.4	0.02	8.54	1277.0	0.02
Bornyl acetate	8.49*	1533.4	[1.06]	8.63	1282.9	0.99
Lavandulyl acetate	8.94	1568.2	0.01	8.78	1293.1	0.01
<i>trans</i> -Pinocarvyl acetate	9.32	1597.7	0.02	8.84	1296.8	0.02
Geranyl formate	10.12*	1662.4	[1.14]	8.93	1303.0	0.02
<i>exo</i> -2-Hydroxycineole acetate	10.28*	1675.2	[0.84]	9.45	1339.6	0.09
α-Cubebene	6.98*	1420.2	[0.10]	9.57	1347.5	0.09
Eugenol	15.00	2097.1	5.89	9.72	1358.0	5.84
Neryl acetate	10.37	1682.0	0.13	9.83	1366.0	0.07
α-Copaene	7.37	1448.9	0.16	9.92	1372.3	0.17
β-Bourbonene	7.70	1473.7	0.25	10.03	1380.1	0.27
<i>cis</i> -β-Elemene	8.49*	1533.4	[1.06]	10.06*	1382.3	[0.10]
1,5-diepi-β-Bourbonene	7.59	1465.7	0.02	10.06*	1382.3	[0.10]

Geranyl acetate	10.76	1714.5	0.03	10.10	1385.2	0.03
β -Cubebene	8.00*	1495.5	[0.17]	10.13	1387.1	0.10
β -Elemene	8.68*	1548.3	[7.72]	10.17	1390.2	1.87
Unknown OCSA I [m/z 161, 105 (83), 119 (69), 81 (34), 91 (29), 93 (28)...204]				10.21	1392.7	0.09
α -Cedrene	8.23	1513.1	0.04	10.37*	1404.2	[0.16]
α -Gurjunene	7.84	1483.6	0.01	10.37*	1404.2	[0.16]
Methyleugenol	13.52	1956.6	0.12	10.37*	1404.2	[0.16]
<i>cis</i> - α -Bergamotene	8.40	1526.6	0.12	10.49*	1413.2	[0.37]
β -Caryophyllene	8.68*	1548.3	[7.72]	10.49*	1413.2	[0.37]
β -Copaene	8.55	1537.7	0.07	10.61	1421.6	0.06
β -Gurjunene	8.61	1542.4	0.21	10.66	1425.5	0.16
α -Guaiene	8.68*	1548.3	[7.72]	10.79*	1435.4	[5.69]
<i>trans</i> - α - Bergamotene	8.68*	1548.3	[7.72]	10.79*	1435.4	[5.69]
<i>cis</i> -Muurolo-3,5- diene	9.15	1584.6	0.03	10.84	1439.2	0.04
<i>cis</i> - β -Bergamotene?				10.87	1441.6	0.15
Cadina-4,11-diene	9.38	1602.5	0.01	10.92	1444.7	0.01
α -Humulene	9.51*†	1612.8	[1.48]	10.96	1448.0	0.74
allo- Aromadendrene	9.19	1587.5	0.07	11.06	1455.2	0.07
<i>cis</i> -Muurolo-4(15),5- diene	9.55*†	1616.3	[0.52]	11.09*	1457.8	[0.62]
(<i>E</i>)- β -Farnesene	9.75	1632.4	0.17	11.09*	1457.8	[0.62]
γ -Muurolole	9.80	1635.9	0.39	11.30	1473.2	0.06
Germacrene D	10.00*†	1652.0	[1.93]	11.34	1476.3	2.67
β -Selinene	10.09*	1659.4	[0.12]	11.41	1481.6	0.51
Valencene	10.09*	1659.4	[0.12]	11.47	1485.7	0.01
Viridiflorene	9.87	1641.5	0.02	11.54*	1491.0	[0.89]
Bicyclogermacrene	10.28*	1675.2	[0.84]	11.54*	1491.0	[0.89]
α -Muurolole	10.28*	1675.2	[0.84]	11.59	1494.7	0.17
Germacrene A	10.62*	1703.0	[3.32]	11.64*	1498.8	[0.79]
(<i>Z</i>)- α -Bisabolene	10.49	1691.9	0.05	11.64*	1498.8	[0.79]
δ -Guaiene	10.12*	1662.4	[1.14]	11.68	1501.5	1.08
γ -Cadinene	10.62*	1703.0	[3.32]	11.79	1509.9	2.55
<i>trans</i> -Calamenene	11.41	1769.5	0.26	11.88	1516.8	0.25
δ -Cadinene	10.62*	1703.0	[3.32]	11.92	1519.8	0.14
β - Sesquiphellandrene	10.83	1720.5	0.19	11.94	1521.7	0.18
10-epi-Cubebol?	13.99*	2000.4	[0.15]	11.99	1525.8	0.11
α -Cadinene	11.00	1734.9	0.09	12.08	1533.1	0.07
Maaliol	13.28	1935.0	0.16	12.42	1559.1	0.14

(E)-Nerolidol	13.99*	2000.4	[0.15]	12.48	1564.0	0.13
Germacrene D-4-ol	13.89	1990.6	0.02	12.54	1568.5	0.01
Spathulenol	14.62	2060.1	0.28	12.57	1571.2	0.25
Caryophyllene oxide	12.99	1908.2	0.10	12.60	1573.8	0.01
Globulol	14.12	2012.8	0.02	12.65	1577.4	0.04
Viridiflorol	14.21	2021.0	0.03	12.75	1584.9	0.04
Humulene epoxide II	13.59	1962.9	0.03	12.94	1600.0	0.04
10-epi-Cubenol	13.93	1994.4	0.44	13.05	1608.9	0.47
10-epi- γ -Eudesmol	14.34	2034.1	0.04	13.07	1610.9	0.04
τ -Cadinol	15.12	2109.0	2.39	13.39	1636.8	2.39
β -Eudesmol	15.62	2159.3	0.08	13.47	1643.3	0.10
α -Eudesmol	15.55	2151.9	0.02	13.52	1647.3	0.07
α -Cadinol	15.70	2166.7	0.12	13.54	1649.1	0.10
(3Z)-Caryophylla-3,8(13)-dien-5 β -ol	17.03	2304.6	0.04	13.75	1666.6	0.05
α -Bisabolol	15.65	2162.1	0.09	13.91	1680.1	0.05
Unknown OCSA IV [m/z 133, 93 (97), 131 (85), 145 (83), 107 (69)...220]	17.12	2314.4	0.01	14.12	1697.5	0.01
Unknown UNKN CLXIX [m/z 93, 81 (90), 107 (83), 95 (75), 91 (71), 71 (70), 121 (68), 105 (68)...220 (47)]	17.47	2351.5	0.04	14.26	1709.2	0.03
Mint sulfide?				14.44	1724.5	0.02
Phytone	14.92	2089.5	0.02	15.81*	1845.2	[0.04]
Unknown LYUN VII [m/z 43, 107 (97), 81 (83), 121 (77), 123 (74), 93 (73)...220 (26)...]	20.66	2719.8	0.03	15.81*	1845.2	[0.04]
Phytol	19.44	2573.3	0.02	18.60	2112.3	0.02
Unknown OCSA V [m/z 326, 148 (67), 147 (41), 117 (30), 91 (22)...]				22.14	2501.0	0.04
Dehydrodieugenol				23.68	2689.5	0.02
Total reported		97.63%			98.30%	

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, only the first one is taken into account in the consolidated total

Essential Oil, *Ocimum basilicum* ct. *Linalool*

Internal code: 23L14-PTH03

Organic Basil Linalool - Egypt - B20104R

Report prepared for:

Plant Therapy

†: Peaks apexes were resolved, but peaks overlapped and were summed for analysis

tr: The compound has been detected below 0.005% of total signal.

Note: no correction factor was applied

R.T.: Retention time (minutes)

R.I.: Retention index