

## GC/MS BATCH NUMBER: CF0108

---

**ESSENTIAL OIL:** CLARY SAGE  
**BOTANICAL NAME:** SALVIA SCLAREA  
**ORIGIN:** FRANCE

KEY CONSTITUENTS PRESENT IN THIS BATCH OF CLARY SAGE OIL	%
LINALYL ACETATE	57.6
LINALOOL	22.4
$\alpha$ -TERPINEOL	4.3
GERANYL ACETATE	2.5
GERANIOL	1.9
$\beta$ -CARYOPHYLLENE	1.7
NERYL ACETATE	1.3
MYRCENE	1.2
GERMACRENE D	1.1

Comments from Robert Tisserand: Beautiful musky-sweet-herbal odor profile. All five AFNOR standards are within range.

**Date :** January 11, 2018

*SAMPLE IDENTIFICATION*

**Internal code :** 18A09-PTH2-1-CC

**Customer identification :** Clary Sage - France - CF0108710R

**Type :** Essential oil

**Source :** *Salvia sclarea*

**Customer :** Plant Therapy

*ANALYSIS*

**Method :** PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Identifications double-checked by GC-MS

**Analyst :** Sylvain Mercier, M. Sc., chimiste

**Analysis date :** 2018-01-11

Checked and approved by :



Alexis St-Gelais, M. Sc., chimiste 2013-174

*Note: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.*

*This report is digitally signed, it is only considered valid if the digital signature is intact.*

IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Isovaleral	0.67	674	tr				Aliphatic aldehyde
2-Methylbutyral	0.70	678	tr				Aliphatic aldehyde
<i>cis</i> -Hex-3-en-1-ol	2.51	865	0.03	0.03	1330	5.28	Aliphatic alcohol
<i>trans</i> -Hex-2-en-1-ol	2.69	879	0.01	0.01	1354	5.64	Aliphatic alcohol
Hexanol	2.75	883	0.01	0.01	1305	4.90	Aliphatic alcohol
$\alpha$ -Pinene	3.43	927	0.09	0.09	941	1.03	Monoterpene
Sabinene	4.15	969	0.01	0.01	1058	1.77	Monoterpene
$\beta$ -Pinene	4.21	973	0.08	0.08	1037	1.61	Monoterpene
Myrcene	4.49	989	1.18	1.15	1113	2.31*	Monoterpene
<i>trans</i> -Dehydroxylinalool oxide	4.55	993	0.01	0.02	1151	2.79	Monoterp. ether
Pseudolimonene	4.71	1002	0.06	0.06	1108	2.25	Monoterpene
$\alpha$ -Phellandrene	4.76	1005	0.01	[1.15]	1113	2.31*	Monoterpene
$\alpha$ -Terpinene	4.96	1015	tr	tr	1119	2.38	Monoterpene
<i>para</i> -Cymene	5.18*	1028	0.30	0.01	1207	3.48	Monoterpene
Limonene	5.18*	1028	[0.30]	0.30	1136	2.60	Monoterpene
$\beta$ -Phellandrene	5.22	1029	tr	0.01	1143	2.69*	Monoterpene
1,8-Cineole	5.24	1031	0.01	[0.01]	1143	2.69*	Monoterp. ether
<i>cis</i> - $\beta$ -Ocimene	5.37	1038	0.57	0.59	1181	3.18*	Monoterpene
<i>trans</i> - $\beta$ -Ocimene	5.55	1048	0.85	0.85	1200	3.39	Monoterpene
$\gamma$ -Terpinene	5.74	1058	0.01	[0.59]	1181	3.18*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	6.02	1073	0.03	0.03	1381	6.04	Monoterp. alcohol
Terpinolene	6.22	1084	0.08	0.08	1220	3.67	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	6.34	1090	0.10	0.11	1406	6.49*	Monoterp. alcohol
Linalool	6.85	1111	22.35	29.66	1502	8.57	Monoterp. alcohol
Hotrienol	6.88	1113	0.02	0.02	1528	9.41	Monoterp. alcohol
Camphor	7.82	1146	0.02	0.04	1422	6.81	Monoterp. ketone
Borneol	8.70	1178	0.04	4.35	1624	12.99*	Monoterp. alcohol
Terpinen-4-ol	8.86	1184	0.01	0.01	1534	9.61	Monoterp. alcohol
$\alpha$ -Terpineol	9.64	1206	4.30	[4.35]	1624	12.99*	Monoterp. alcohol
Linalyl formate	9.88	1212	0.19				Monoterp. ester
Nerol	10.86	1233	0.86	0.93	1729	18.47	Monoterp. alcohol
Neral	11.23	1241	0.02	0.01	1606	12.16	Monoterp. aldehyde
Linalyl acetate	11.78	1253	57.55	50.30	1509	8.80	Monoterp. ester
Geraniol	12.02	1259	1.94	2.05	1783	21.80	Monoterp. alcohol
Geranial	12.78	1275	0.02	0.02	1645	13.96	Monoterp. aldehyde
Bornyl acetate	13.00	1280	0.03	0.04	1511	8.86	Monoterp. ester
Geranyl formate	14.12	1302	0.02	[4.35]	1624	12.99*	Monoterp. ester
$\alpha$ -Cubebene	16.06	1332	0.02	[0.11]	1406	6.49*	Sesquiterpene
$\alpha$ -Copaene	17.80	1358	0.34	0.30	1424	6.86	Sesquiterpene
Neryl acetate	17.98	1360	1.29	1.31	1655	14.44*	Monoterp. ester

β-Bourbonene	18.22	1364	0.04	0.04	1446	7.30	Sesquiterpene
β-Cubebene	18.77	1372	0.06	0.06	1473	7.84	Sesquiterpene
β-Elemene	19.04	1376	0.02	0.01	1524	9.26	Sesquiterpene
Geranyl acetate	19.52	1383	2.49	2.47	1689	16.05*	Monoterp. ester
β-Caryophyllene	20.75	1401	1.65	1.84	1517	9.07*	Sesquiterpene
β-Copaene	21.64	1412	0.02	[1.84]	1517	9.07*	Sesquiterpene
α-Humulene	23.53	1434	0.09	0.10	1574	10.87	Sesquiterpene
Germacrene D	25.78	1461	1.11	1.12	1610	12.35	Sesquiterpene
β-Selinene	26.41	1468	0.07	[4.35]	1624	12.99*	Sesquiterpene
Bicyclogermacrene	27.00	1475	0.21	0.21	1631	13.30	Sesquiterpene
γ-Cadinene	28.84	1497	0.01	[1.31]	1655	14.44*	Sesquiterpene
( <i>E,E</i> )-α-Farnesene	29.22	1503	0.03	[2.47]	1689	16.05*	Sesquiterpene
δ-Cadinene	29.49	1506	0.07	0.08	1663	14.81	Sesquiterpene
Caryophyllene oxide	33.93	1569	0.08	0.09	1836	25.57	Sesquiterp. ether
Spathulenol	34.13	1572	0.05	0.05	2011	36.13	Sesquiterp. alcohol
β-Eudesmol	38.00	1648	0.03	0.01	2101	39.22	Sesquiterp. alcohol
Sclareoloxide	44.98	1863	0.04	0.04	2072	38.29	Diterp. ether
Manoyl oxide	47.41	1957	0.01	0.01	2191	41.68	Diterp. ether
Sclareol	53.33	2216	0.53	0.54	2979	57.09	Diterp. alcohol
<b>Total identified</b>			<b>99.07%</b>	<b>99.15%</b>			

\*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

Note: no correction factor was applied

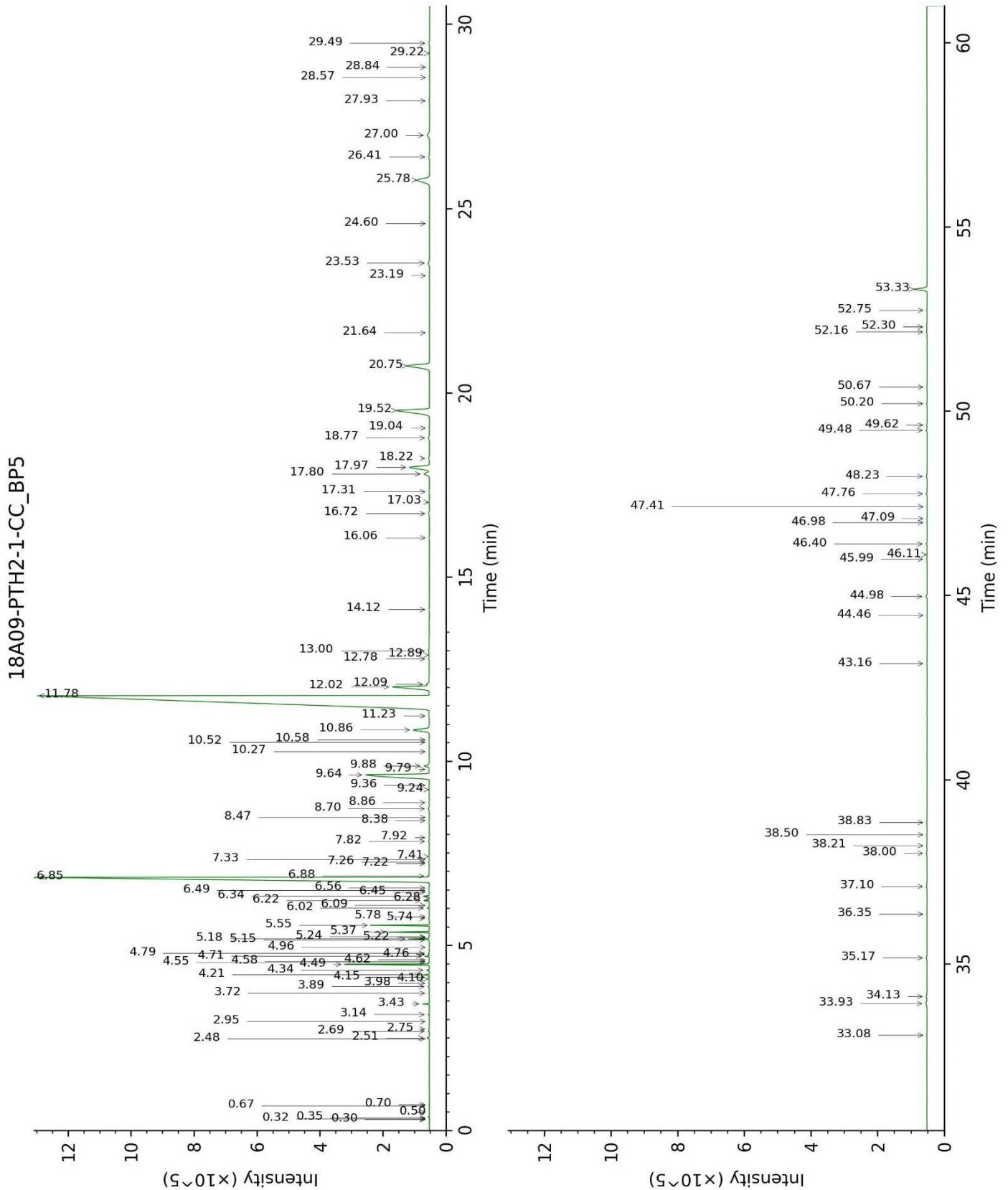
#### OTHER DATA

**Physical aspect :** Faintly yellow liquid

**Refractive index :** 1.4588 ± 0.0003 (20 °C)

#### CONCLUSION

No adulterant, contaminant or diluent were detected using this method.



18A09-PTH2-1-CC\_WAX

