

GC/MS BATCH NUMBER: AHO101

ESSENTIAL OIL: AMYRIS
BOTANICAL NAME: AMYRIS BALSAMIFERA
ORIGIN: HAITI

KEY CONSTITUENTS PRESENT IN THIS BATCH OF AMYRIS OIL	%
VALERIANOL + α -EUDESMOL + β -EUDESMOL	33.3
α -ELEMOL	10.7
7-epi- α -EUDESMOL	7.8
γ -EUDESMOL	7.2
10-EPI- γ -EUDESMOL	7.2
β -SESQUIPELLANDRENE	3.3
α -CURCUMENE	2.5
DRIMENOL	2.3
AMORPHA-4,11-DIENE	1.5
α -ZINGIBERENE	1.4
SELINA-3,7(11)-DIENE	1.1

Comments from Robert Tisserand: The odor quality is very good. The composition also looks good as far as I can tell from the lab report. Five of the key ISO constituents conform to the standard for Amyris oil. The other three, valerianol, α -eudesmol and β -eudesmol, are co-eluting, so we can't see how much of each is there, but the total for all three, 33%, looks right.

Date : September 9, 2016

SAMPLE IDENTIFICATION

Internal code : 16I06-PTH4-1-DM

Customer identification : Amyris – AHO10162R

Type : Essential oil

Source : *Amyris balsamifera*

Customer : Plant Therapy

ANALYSIS

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

Analyst : Alexis St-Gelais, M. Sc., chimiste

Analysis date : 2016-09-07

Checked and approved by :

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

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IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
α -Copaene	16.98	1349	0.07	0.08	1437	6.38	Sesquiterpene
β -Cubebene	18.02	1365	0.04	0.05	1467	6.94	Sesquiterpene
β -Elemene	18.61	1374	0.09	0.17	1531	8.21*	Sesquiterpene
β -Caryophyllene	20.23	1398	0.06	0.04	1526	8.10	Sesquiterpene
<i>trans</i> - α -Bergamotene	21.81	1417	0.03	[0.17]	1531	8.21*	Sesquiterpene
Amorpha-4,11-diene analog	23.01	1432	0.62	0.43	1580	9.71	Sesquiterpene
Amorpha-4,11-diene	23.55	1438	1.46	1.64	1587	9.89	Sesquiterpene
β -Chamigrene	24.79	1453	0.12	0.12	1623	11.00	Sesquiterpene
Amorpha-4,7(11)-diene	25.16	1458	0.28				Sesquiterpene
Unknown (m/z = 189, 95 (81), 133 (66), 91 (66), 105 (60), 204 (47))	25.45	1461	0.16				Sesquiterpene
γ -Curcumene	25.70	1464	0.59	1.77	1630	11.27*	Sesquiterpene
α -Curcumene	26.31	1471	2.47	5.42	1701	14.39*	Sesquiterpene
α -Selinene	26.88	1477	0.81	[1.77]	1630	11.27*	Sesquiterpene
4- <i>epi-cis</i> -Dihydroagarofuran	27.16	1481	0.29				Sesquiterp. ether
α -Zingiberene	27.51*	1485	1.90	1.44	1661	12.57	Sesquiterpene
β -Dihydroagarofuran	27.51*	1485	[1.90]				Sesquiterp. ether
7- <i>epi</i> - α -Selinene	28.31	1495	0.45	1.34	1665	12.79*	Sesquiterpene
β -Bisabolene	28.50	1498	0.87	[1.34]	1665	12.79*	Sesquiterpene
β -Sesquiphellandrene	29.94	1517	3.32	[5.42]	1701	14.39*	Sesquiterpene
Selina-3,7(11)-diene	30.33	1523	1.06	1.17	1688	13.78	Sesquiterpene
Liguloxide	30.83	1529	0.73				Sesquiterp. ether
α -Elemol	32.69	1555	10.67	10.63	2011	33.06	Sesquiterp. alcohol
(<i>E</i>)-Nerolidol	33.76	1569	0.65	0.72	2000	32.44	Sesquiterp. alcohol
Guaiol	35.50	1593	0.52	0.57	2013	33.19	Sesquiterp. alcohol
Rosifoliol analog?	35.67	1597	0.78	1.44	2032	34.26	Sesquiterp. alcohol
10- <i>epi</i> - γ -Eudesmol	36.05	1606	7.17	7.08	1992	31.94	Sesquiterp. alcohol
Unknown, not seen in MS	36.47	1616	2.06				
γ -Eudesmol	36.94	1627	7.22	7.57	2080	36.20	Sesquiterp. alcohol
τ -Cadinol	37.13	1632	0.19	0.23	2067	35.78	Sesquiterp. alcohol
τ -Muurolol	37.29	1636	0.26	0.26	2092	36.64	Sesquiterp. alcohol
Hinesol	37.42*	1639	0.99	0.71	2108	37.19	Sesquiterp. alcohol
α -Cadinol	37.42*	1639	[0.99]	0.23	2135	38.05	Sesquiterp. alcohol
Valerianol	38.05*	1654	33.31	41.03	2125	37.74†*	Sesquiterp. alcohol
α -Eudesmol	38.05*	1654	[33.31]	[41.03]	2130	37.93†*	Sesquiterp. alcohol
β -Eudesmol	38.05*	1654	[33.31]	[41.03]	2125	37.74*	Sesquiterp. alcohol
7- <i>epi</i> - α -Eudesmol	38.21	1658	7.83	[41.03]	2130	37.93†*	Sesquiterp. alcohol
Unknown (m/z = 159, 145)	38.82	1673	0.43				Oxygenated sesquiterp.

(82), 202 (73), 91 (53), 131 (52))							
Caryophyllenyl acetate	39.17	1680	0.85				Sesquiterp. ester
(6R,7R)-Bisabolone	41.04	1735	0.79				Sesquiterp. ketone
(6S,7R)-Bisabolone	41.28	1743	0.96	0.87	2195	39.78	Sesquiterp. ketone
Drimenol	41.86	1761	2.27	2.25	2374	43.99	Sesquiterp. alcohol
Total identified			89.72%	87.26%			

*: Two or more compounds are coeluting on this column

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

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

Note: no correction factor was applied

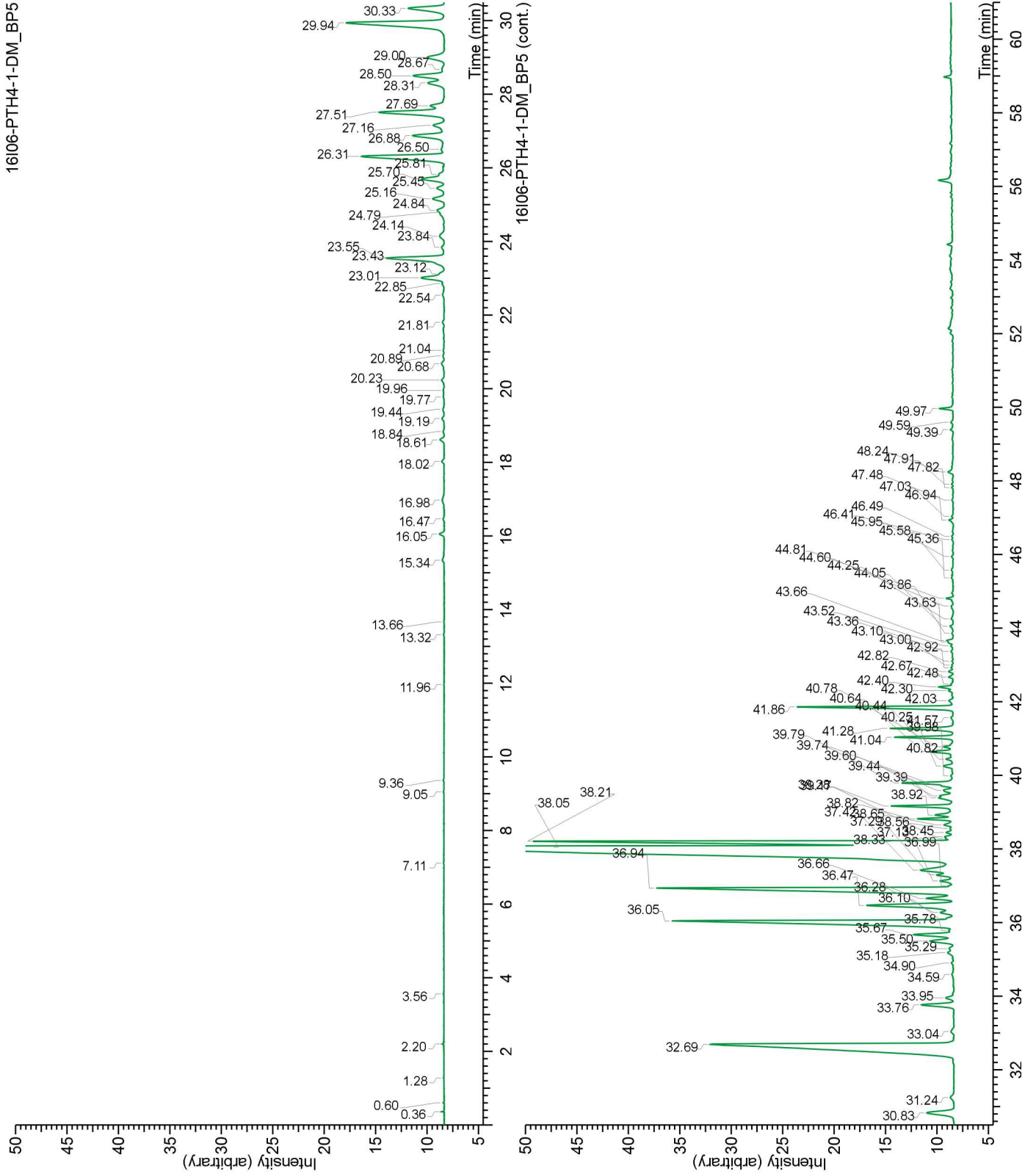
OTHER DATA

Physical aspect : Faintly yellow liquid

Refractive index : 1.5035 ± 0.0003 (20 °C)

CONCLUSION

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



16106-PTH4-1-DM_WAX

