

GC/MS BATCH NUMBER: AHO100

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

KEY CONSTITUENTS PRESENT IN THIS BATCH OF AMYRIS OIL	%
VALERIANOL	25.0
α-ELEMOL	10.0
α-EUDES MOL	9.4
β-EUDES MOL	8.2
γ-EUDES MOL	7.7
7-Epi-α-EUDES MOL	6.7
10-Epi-γ-EUDES MOL	6.6
β-SESQUIPELLANDRENE	3.1
α-COPAENE	2.1
α-ZINGIBERENE	2.0
Ar-CURCUMENE	1.9
DRIMENOL	1.7
AMORPHA-4,11-DIENE	1.5
GUAIOL	1.3
SELINA-3,7(11)-DIENE	1.2
α-SELINENE	1.0
γ-CURCUMENE	1.0

Comments from Robert Tisserand:
An excellent amyris oil, which conforms to the ISO standard, except that alpha-eudesmol is slightly high (9.4% instead of 9.0%), and 7-epi-alpha-eudesmol is slightly low (6.7% instead of 7%). These do not concern me.

Date : August 19, 2015

SAMPLE IDENTIFICATION

Internal code : 15H10-PTH4-1-AS

Customer identification : Amyris -Haiti - AH0100412

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).
Identifications double-checked by GC-MS. Oil diluted 1:2 in hexanes prior to analysis.

Analyst : Alexis St-Gelais, M. Sc.

Analysis date : 2015-08-12

IDENTIFIED COMPOUNDS

Identification	Colonne: BP5			Colonne: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Limonene	4.46	1028	0.01	0.01	1155	2.70	Monoterpene
α -Cubebene	13.38	1331	0.04	0.02	1418	6.61	Sesquiterpene
α -Copaene	14.85	1357	2.09	2.02	1436	6.98	Sesquiterpene
β -Cubebene	15.68	1371	0.14	0.15	1485	7.98	Sesquiterpene
β -Elemene	15.93	1376	0.09	0.06	1529	9.24	Sesquiterpene
β -Caryophyllene	17.30	1400	0.89	0.89	1526	9.16	Sesquiterpene
α -Humulene	19.84*	1433	0.84	0.43	1585	11.07	Sesquiterpene
Amorpha-4,11-diene analog	19.84*	1433	[0.84]				Sesquiterpene
Amorpha-4,11-diene	20.29	1439	1.47	1.59	1592	11.32	Sesquiterpene
Amorpha-4,7(11)-diene	21.77	1459	0.33				Sesquiterpene
β -Chamigrene	21.96	1461	0.20				Sesquiterpene
γ -Curcumene	22.32	1466	0.73	1.07	1631	13.03*	Sesquiterpene
α -Curcumene	22.91*	1473	2.07	1.84	1711	16.97	Sesquiterpene
β -Selinene	22.91*	1473	[2.07]	[1.07]	1631	13.03*	Sesquiterpene
α -Selinene	23.23*	1478	0.86	0.16	1638	13.36	Sesquiterpene
4-epi-cis-Dihydroagarofuran	23.23*	1478	[0.86]				Sesquiterp. ether
Valencene	23.50	1481	0.32				Sesquiterpene
α -Zingiberene	24.01*	1488	2.09	1.52	1662	14.52	Sesquiterpene
β -Dihydroagarofuran	24.01*	1488	[2.09]				Sesquiterp. ether
δ -Cadinene	24.59	1496	0.50	0.39	1683	15.49	Sesquiterpene
β -Bisabolene	24.91	1500	0.70	0.73	1666	14.72	Sesquiterpene
7-epi- α -Selinene	25.27	1504	0.76				Sesquiterpene
β -Sesquiphellandrene	26.25	1516	3.22	2.85	1706	16.66	Sesquiterpene
Selina-3,7(11)-diene	26.52	1519	1.18	1.20	1689	15.78	Sesquiterp. ether
α -Agarofuran	26.93	1524	0.68	0.67	1774	20.88	Sesquiterp. ether
α -Elemol	29.01	1549	9.93	9.79	2014	36.05	Sesquiterp. alcohol
trans-Nerolidol	30.46	1566	0.59	0.52	2004	35.69	Sesquiterp. alcohol
Rosifoliol	32.71	1593	0.44	0.27	1913	30.50	Sesquiterp. alcohol
10-epi- γ -Eudesmol	33.41	1602	6.83	6.50	1994	35.23	Sesquiterp. alcohol
Unknown (m/z = 161, 59 (62), 204 (53), 81 (42), 189 (40), 79 (39), 93 (36), 91 (34)...))	34.00	1614	1.32				Sesquiterpenoid
γ -Eudesmol	34.61	1627	7.08	6.87	2086	38.55	Sesquiterp. alcohol
Valerianol	36.00*	1656	36.73	29.37	2134	39.99*	Sesquiterp. alcohol
α -Eudesmol	36.00*	1656	[36.73]	13.10	2139	40.12*	Sesquiterp. alcohol
β -Eudesmol	36.00*	1656	[36.73]	[29.37]	2134	39.99*	Sesquiterp. alcohol
7-epi- α -Eudesmol	36.15	1659	6.71	[13.10]	2139	40.12*	Sesquiterp. alcohol
(6R,7R)-Bisabolone	39.12	1729	0.28				Sesquiterp. ketone

(6S,7R)-Bisabolone	39.60	1743	0.46				Sesquiterp. ketone
Drimenol	40.02	1756	1.69	1.80	2383	46.03	Sesquiterp. alcohol
Total identified			89.95%	83.82%			

*: 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 : Light yellow, viscous liquid

Refractive index : 1.5065 ± 0.0003 (20 °C)

CONCLUSION

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

Checked and approved by :

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

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