

Date : May 20, 2016

SAMPLE IDENTIFICATION

Internal code : 16C30-NGA4-1-DM

Customer identification : Agarwood - Thailand - Batch #TH-58530

Type : Essential oil

Source : *Aquilaria crassna*

Customer : Nature Gifts

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

Analysis date : 2016-04-07

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.	
Butyric acid	1.63	808	0.04				Aliphatic acid
Isovaleric acid	2.32	863	0.02				Aliphatic acid
2-Methylbutyric acid	2.46	876	0.03				Aliphatic acid
Valeric acid	3.03	917	0.08	0.08	1687	14.22	Aliphatic acid
Benzaldehyde	3.91	972	0.20	0.07	1441	6.57	Simple phenolic
Caproic acid	4.77	1022	0.40	0.43	1795	20.14*	Fatty acid
Salicylaldehyde	5.35	1055	0.04	0.40	1588	10.21*	Simple phenolic
Acetophenone	5.76	1078	0.08	0.03	1559	9.33	Simple phenolic
Enanthic acid	6.35	1108	0.19	0.15	1916	28.44	Fatty acid
2'-Hydroxyacetophenone	7.74	1163	0.06				Simple phenolic
Caprylic acid	9.02	1209	0.49	0.38	2016	34.45	Fatty acid
Benzylacetone	10.67	1248	3.99	3.35	1755	17.80	Simple phenolic
Pelargonic acid	12.97	1302	0.18				Fatty acid
Unknown (m/z = 107, 122 (57), 164 (37), 79 (33), 91 (21))	18.25	1387	0.69				Simple phenolic
Capric acid	18.55	1392	0.05	0.08	2225	41.27	Fatty acid
(1R,6S,9R)-6,10,10-Trimethyl-11-oxatricyclo[7.2.1.0]dodecane (15-nor-Agarofuran)	19.38	1405	0.03				Norsesquiterpene
α -Guaiene	20.74	1421	0.39	0.43	1532	8.49	Sesquiterpene
Unknown (m/z = 122, 107 (58), 91 (36), 93 (36), 79 (35), 178 (32))	21.65	1433	0.50				Simple phenolic
α -Humulene	21.90	1436	0.37	[0.40]	1588	10.21*	Sesquiterpene
4,5-diepi-Aristolochene	23.20	1452	0.71	0.62	1603	10.68	Sesquiterpene
β -Agarofuran?	23.55	1456	4.14	3.79	1635	11.91	Sesquiterp. ether
δ -Guaiene	25.95	1485	1.33	1.59	1639	12.09	Sesquiterpene
Nootkatene	26.17	1488	0.54				Sesquiterpene
Unknown (m/z = 205, 91 (32), 109 (28), 105 (25), 220 (23))	27.10	1499	0.29				Oxygenated sesquiterp.
β -Vetivenene	29.34	1528	0.90	0.80	1748	17.35	Sesquiterpene
Unknown (m/z = 218, 157 (95), 109 (88), 91 (81), 185 (53), 105 (49), 77 (40))	30.78	1547	1.86				Oxygenated sesquiterp
β -Vetivenene isomer II	32.61	1571	0.38	[0.43]	1795	20.14*	Sesquiterpene
Unknown (m/z = 93, 107 (50), 91 (48), 41 (40), 79 (33), 55 (33), 77 (32)... 205 (6)...)	32.81	1574	1.01				Oxygenated sesquiterp
Unknown (m/z = 111, 126 (78), 41 (64), 109 (63), 162	33.17	1578	1.14				Oxygenated sesquiterp

(61), 91 (58), 55 (55), 81 (55), 121 (53)... 205 (13), 220 (16)							
Unknown (m/z = 131, 216 (95), 145 (82), 91 (64), 160 (46), 105 (43), 117 (43), 159 (40))	33.54	1583	0.49				Oxygenated sesquiterp
Unknown (m/z = 202, 145 (99), 131 (84), 91 (51), 187 (47), 173 (36), 77 (32), 115 (32), 159 (31)... 218 (7))	34.13	1591	1.13				Oxygenated sesquiterp
10-epi- γ -Eudesmol	34.59	1597	1.06	1.23	1989	32.83	Sesquiterp. alcohol
Unknown (m/z = 91, 105 (75), 79 (74), 93 (68), 95 (64), 77 (56), 107 (57)... 218 (39), 234 (4))	34.96	1602	1.80				Oxygenated sesquiterp
γ -Eudesmol	35.92	1623	3.11	3.35	2076	36.82	Sesquiterp. alcohol
Eremoligenol	36.07	1627	2.63	2.74	2080	36.98	Sesquiterp. alcohol
Unknown (m/z = 105, 107 (72), 91 (70), 161 (60), 147 (59), 93 (50)... 204 (20), 220 (8))	36.77	1643	5.76	5.06	2092	37.38	Oxygenated sesquiterp
Valerianol	36.97	1648	6.38	6.48	2117	38.25	Sesquiterp. alcohol
α -Eudesmol	37.12	1651	2.30	1.95	2120	38.34	Sesquiterp. alcohol
Unknown (m/z = 43, 81 (91), 143 (81), 67 (71), 105 (69), 93 (65), 41 (65)... 204 (34), 234 (3))	37.42	1658	1.43				Oxygenated sesquiterp
Unknown (m/z = 109, 43 (62), 125 (53), 91 (31), 41 (29)... 202 (8), 236 (2))	37.58	1662	3.83				Oxygenated sesquiterp
Valenca-1(10),8-dien-11-ol	37.82	1668	3.60				Sesquiterp. alcohol
Dehydro-jinkoh-eremol	37.95	1671	0.63				Sesquiterp. alcohol
(1S,2S,6S,9R)-6,10,10-Trimethyl-11-oxatricyclo[7.2.1.0]dodecane-2-carbaldehyde (β -Agarofuranal)	38.28	1679	2.36				Sesquiterp. aldehyde
Unknown (m/z = 93, 91 (33), 121 (32), 80 (29)... 205 (5), 220 (6))	38.76	1690	2.82				Oxygenated sesquiterp
Vetispira-2(11),6-dien-14-al	39.87	1720	0.86				Sesquiterp. aldehyde
Unknown (m/z = 109, 220 (48), 67 (43), 110 (39), 68 (38))	40.18	1730	0.92				Oxygenated sesquiterp
Eremophila-9,11-dien-8-one	40.32	1734	0.56				Sesquiterp. ketone

(Neopetasane)							
Unknown (m/z = 218, 161 (100), 147 (85), 91 (42), 162 (42), 175 (34), 133 (31), 203 (31))	42.12	1791	5.97	5.75	2286	42.70	Oxygenated sesquiterp
Unknown (m/z = 189, 91 (74), 93 (62), 79 (58), 107 (54), 105 (50)... 248 (9))	42.47	1802	0.46				Oxygenated sesquiterp
Unknown (m/z = 216, 201 (35), 91 (28), 159 (28), 105 (25), 145 (25), 173 (22))	42.63	1807	0.62				Oxygenated sesquiterp
8-Hydroxy-eremophilone	43.13*	1825	0.40				Sesquiterp. alcohol
Baimuxinal?	43.13*	1825	[0.40]				Sesquiterp. aldehyde
Unknown (m/z = 122, 107 (95), 91 (55), 234 (53), 79 (43), 93 (40))	44.38	1870	0.97				Oxygenated sesquiterp
Unknown (m/z = 145, 121 (68), 91 (67), 105 (57), 119 (55), 79 (53), 160 (48)... 234 (36))	44.71	1882	0.26				Oxygenated sesquiterp
Unknown (m/z = 122, 107 (97), 234 (55), 91 (54), 79 (43), 93 (41))	46.32	1944	2.13				Oxygenated sesquiterp
Dibenzylacetone	47.54	1993	1.96				Simple phenolic
Unknown (m/z = 91, 92 (41), 131 (36), 104 (23), 117 (20)... 222 (11))	48.21	2021	1.01				Oxygenated sesquiterp
1,5-Diphenyl-1-penten-3-one	51.75	2177	0.49				Simple phenolic
Flindersiachromone	54.92	2330	0.17				Chromone
Total identified				41.15%	33.70%		

*: 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 : Bright brownish liquid

Refractive index : 1.5100 ± 0.0003 (20 °C)

CONCLUSION

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



