

GC/MS BATCH NUMBER: D80100

ESSENTIAL OIL: DAVANA
BOTANICAL NAME: ARTEMISIA PALLENS
ORIGIN: INDIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF DAVANA OIL	%
cis-DAVANONE	52.2
BICYCLOGERMACRENE	9.4
DAVANA ETHER II	2.8
DAVANA ETHER I	2.3
ARTEDOUGLASIA OXIDE C	2.2
DAVANONE B	1.8
(E)- ETHYL-CINNAMATE	1.3
GERMACRENE D	1.2
ARTEDOUGLASIA OXIDE A	1.2
γ-CADINOL	1.0

Comments from Robert Tisserand: This is a genuine and beautifully fruity Davana oil with a good percentage of the major constituent, davanone.

Date : October 28, 2015

SAMPLE IDENTIFICATION

Internal code : 15J20-PTH3-1-LC

Customer identification : Davana - India - D8010052R

Type : Essential oil

Source : *Artemisia pallens*

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.

Analysis date : 2015-10-21

IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Acetone	0.30	483	0.03	0.03	715	0.40	Aliphatic ketone
Ethyl 2-methylbutyrate	1.78	845	0.16	0.10	1035	1.45	Aliphatic ester
Ethyl isovalerate	1.85	852	0.11	0.12	1038	1.47	Aliphatic ester
5-Ethyl-2-methyl-2-vinyltetrahydrofuran	2.51	907	0.12	0.16	1020	1.31	Furan
2-Methyl-2,5-divinyltetrahydrofuran	2.61	914	0.09				Furan
α -Pinene	2.78	924	0.04	0.04	985	1.06	Monoterpene
Unknown arbusculone derivative I	3.07	943	0.57	0.57	1091	1.94	Furan
Propyl 2-methylbutyrate	3.13	947	0.27	0.26	1110	2.14	Aliphatic ester
5,5-Dimethyl-2(5H)-furanone	3.45	967	0.08	9.44	1656	14.21*	Lactone
Sabinene	3.50	970	0.02	0.01	1083	1.87	Monoterpene
β -Pinene	3.55	973	0.02	0.01	1063	1.69	Monoterpene
Benzaldehyde	3.59	976	0.02	0.01	1457	7.41	Simple phenolic
Myrcene	3.81	990	0.08	0.08	1139	2.51*	Monoterpene
Unknown arbusculone derivative II	4.14	1009	0.20	0.19	1179	3.00	Furan
α -Terpinene	4.22	1014	0.07	[0.08]	1139	2.51*	Monoterpene
Unknown arbusculone derivative III	4.39*	1024	0.52	0.32	1208	3.39	Furan
para-Cymene	4.39*	1024	[0.52]	0.19	1228	3.67	Monoterpene
Limonene	4.49	1029	0.02	0.01	1157	2.73	Monoterpene
cis- β -Ocimene	4.64	1038	0.01	0.17	1206	3.36*	Monoterpene
trans- β -Ocimene	4.81	1048	0.02	0.02	1220	3.56	Monoterpene
Lavender lactone	4.89	1052	0.06	0.08	1621	12.55	Lactone
γ -Terpinene	4.97*	1057	0.18	[0.17]	1206	3.36*	Monoterpene
cis-Arbusculone	4.97*	1057	[0.18]	0.04	1399	6.21	Furan
cis-Arbusculol?	5.08	1063	0.01				Furan
trans-Arbusculone	5.29	1075	0.08	0.07	1441	7.07	Furan
trans-Arbusculol?	5.42	1083	0.04				Furan
2-Methylbutyl 2-methylbutyrate	5.83	1105	0.29	0.31	1252	4.02	Aliphatic ester
Linalool	5.89	1108	0.65	0.64	1515	8.79	Monoterp. alcohol
2-Methylbutyl isovalerate	5.95	1111	0.32				
Nonanal	5.99	1112	0.03	0.02	1356	5.56	Monoterp. aldehyde
cis-para-Menth-2-en-1-ol	6.26	1125	0.03	0.02	1503	8.38	Monoterp. alcohol
Terpinen-4-ol	7.48	1180	0.34	0.34	1544	9.74	Monoterp. alcohol
nor-Davanone	8.78	1224	0.19	0.26	1590	11.24	Furan
Methyl hydrocinnamate	10.60	1273	0.03				Phenylpropanoid ester

Methyl (Z)-cinnamate	12.28	1312	0.16	1.14	1837	25.18	Phenylpropanoid ester
Ethyl hydrocinnamate	14.38	1349	0.12				Phenylpropanoid ester
β -Elemene	15.80	1373	0.35	0.48	1536	9.46	Sesquiterpene
Geranyl acetate	16.29	1382	0.81	0.74	1711	16.97	Monoterp. ester
Ethyl (Z)-cinnamate	16.33	1383	0.89	4.07	1910	30.38*	Phenylpropanoid ester
Davanafuran isomer	16.52	1386	0.03				Furan
Methyl (E)-cinnamate	16.79	1391	0.74	0.64	1980	34.42	Phenylpropanoid ester
β -Caryophyllene	17.15	1397	0.18	0.22	1530	9.29	Sesquiterpene
cis-threo-Davanafuran	17.94	1408	0.35				Furan
Aromadendrene	18.36	1414	0.27	0.29	1539	9.57	Sesquiterpene
allo-Aromadendrene	19.82*	1433	0.47	0.68	1573	10.67	Sesquiterpene
α -Humulene	19.82*	1433	[0.47]	0.08	1597	11.47	Sesquiterpene
Unknown davanone analog	21.01	1448	0.12				
Germacrene D	21.63	1457	1.20	1.20	1632	13.07	Sesquiterpene
Ethyl (E)-cinnamate	22.18	1464	1.28	4.34	2036	36.83*	Phenylpropanoid ester
β -Selinene	22.40	1467	0.52	1.34	1637	13.30*	Sesquiterpene
Bicyclgermacrene	22.90*	1473	13.08	[9.44]	1656	14.21*	Sesquiterpene
α -Selinene	22.90*	1473	[13.08]	[1.34]	1637	13.30*	Sesquiterpene
Davana ether I	22.90*	1473	[13.08]				Sesquiterp. ether
γ -Cadinene	24.46	1494	0.39	0.30	1680	15.38	Sesquiterpene
δ -Cadinene	25.53*	1507	3.06	0.23	1687	15.71	Sesquiterpene
Davana ether II	25.53*	1507	[3.06]				Sesquiterp. ether
Artedouglasia oxide C	25.85	1511	2.22				Sesquiterp. ketone
Artedouglasia oxide A	26.62	1520	1.19				Sesquiterp. ketone
Davanone B isomer	28.74	1545	0.76				Sesquiterp. ketone
Davanone B	29.39	1553	1.80	[4.07]	1910	30.38*	Sesquiterp. ketone
(E)-Nerolidol	30.35	1565	0.61	0.41	2000	35.57	Sesquiterp. alcohol
Spathulenol	30.61*	1568	0.70	[4.34]	2036	36.83*	Sesquiterp. alcohol
Davanone D	30.61*	1568	[0.70]				Sesquiterp. ketone
cis-Davanone	32.15	1586	52.20	51.75	1975	34.11	Sesquiterp. ketone
Unknown (m/z = 95, 67 (59), 93 (41), 41 (32), 109 (32)...))	33.60	1606	0.68				
τ -Cadinol	35.02	1635	1.02	1.07	2086	38.58	Sesquiterp. alcohol
Unknown (m/z = 163, 43 (47), 121 (16)... 234 (6))	37.28	1682	2.34	1.94	2315	44.54	
β -Davanone-2-ol	39.28	1734	0.06	0.15	2545	49.32	Sesquiterp. alcohol
Total identified			89.28%	84.58%			

*: 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 yellow liquid

Refractive index : 1.4873 ± 0.0003 (20 °C)

CONCLUSION

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

Checked and approved by :

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

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