

**Roses Over Vetiver Essential Oil**

# **ESSENTIAL OIL ANALYSIS**

Laboratoire  
**PhytoChemia**





Date : July 19, 2017

SAMPLE IDENTIFICATION

Internal code : 17G04-FSE11-1-DM

Customer identification : Roses over Vetiver - Bulgaria & Honduras - LL-72717

Type : Essential oil

Source : *Vetiveria zizanoides* + *Rosa x damascena*

Customer : Flowers Shining Everywhere Inc.



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 : 2017-07-11



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.	
Ethanol	0.35	632	0.14	0.17	781	0.61	Aliphatic alcohol
Pentanal	0.86	699	0.02				Aliphatic aldehyde
Furfural	2.21	845	0.04	0.04	1402	6.31	Furan
Hexanol	2.72	884	0.03	0.03	1302	4.80*	Aliphatic alcohol
Heptanal	3.13	912	0.04	0.03	1124	2.40*	Aliphatic aldehyde
$\alpha$ -Pinene	3.43	930	0.31	0.33	942	1.02	Monoterpene
Sabinene	4.15	972	0.02	0.02	1058	1.74	Monoterpene
$\beta$ -Pinene	4.21	976	0.08	0.07	1041	1.58	Monoterpene
Myrcene	4.49	993	0.17	0.15	1113	2.27	Monoterpene
$\alpha$ -Terpinene	4.96	1019	0.01	[0.03]	1124	2.40*	Monoterpene
Limonene	5.18	1031	0.02	0.02	1138	2.57	Monoterpene
<i>trans</i> - $\beta$ -Ocimene	5.54	1051	0.01	0.01	1197	3.34	Monoterpene
$\gamma$ -Terpinene	5.73	1061	0.03	0.02	1184	3.16	Monoterpene
Linalool	6.69	1109	0.31	2.41	1482	7.96*	Monoterp. alcohol
<i>cis</i> -Rose oxide	6.81	1113	0.10	0.10	1291	4.64	Monoterp. ether
Phenylethyl alcohol	7.16*	1126	0.23	0.16	1815	22.78	Simple phenolic
<i>trans</i> -Rose oxide	7.16*	1126	[0.23]	[0.03]	1302	4.80*	Monoterp. ether
Terpinen-4-ol	8.80	1186	0.08	0.17	1537	9.25*	Monoterp. alcohol
$\alpha$ -Terpineol	9.46	1206	0.08	0.10	1635	12.78*	Monoterp. alcohol
Nerol	10.62	1232	2.39	3.48	1726	17.35*	Monoterp. alcohol
Citronellol	10.94	1239	5.41	5.81	1705	16.27	Monoterp. alcohol
Neral	11.18	1245	0.17	0.17	1594	11.32	Monoterp. aldehyde
Geraniol	12.00	1263	5.28	5.97	1780	20.55	Monoterp. alcohol
Geranial	12.70	1278	0.27	0.21	1651	13.49	Monoterp. aldehyde
Geranyl formate	14.07	1306	0.02	0.04	1640	12.97*	Monoterp. ester
<i>para</i> -Vinylguaiacol	15.16	1322	0.03	0.36	2111	38.75	Phenylpropanoid
Methyl geranate	15.82*	1332	0.05	0.06	1614	12.02	Monoterp. ester
2-Norprezizene	15.82*	1332	[0.05]				Norsesquiterpene
$\alpha$ -Ylangene	16.02	1336	0.10	0.07	1428	6.73	Sesquiterpene
12-Norisoziza-5-ene	16.96	1350	1.73	1.80	1444	7.07	Norsesquiterpene
Unknown (m/z = 119, 147 (97), 91 (87), 105 (76), 161 (74), 134 (61), 175 (58), 190 (55))	17.19	1353	0.47				Norsesquiterpene
Citronellyl acetate	17.28	1355	0.12	0.09	1599	11.50	Monoterp. ester
Eugenol	17.56	1359	0.52	0.43	2052	36.81	Phenylpropanoid
Neryl acetate	17.61	1360	0.26	0.23	1669	14.38	Monoterp. ester
6- <i>epi</i> -Nigritene	18.31	1370	1.70	[2.41]	1482	7.96*	Norsesquiterpene
Nigritene	18.86	1379	2.49	2.81	1497	8.28	Norsesquiterpene
Geranyl acetate	19.11	1382	0.18	0.16	1696	15.79	Monoterp. ester
$\alpha$ -Gurjunene	19.39	1387	0.28	0.43	1463	7.51	Sesquiterpene



$\beta$ -Caryophyllene	20.63	1404	0.17	[0.17]	1537	9.25*	Sesquiterpene
$\beta$ -Copaene	21.14	1411	0.22	0.15	1507	8.53	Sesquiterpene
Methyleugenol	21.61	1416	0.37	5.99	1932	30.91*	Phenylpropanoid
Prezizaene	22.81*	1431	0.70	0.25	1621	12.31*	Sesquiterpene
Unknown (m/z = 175, 161 (73), 105 (64), 190 (63), 119 (59), 91 (44), 133 (35))	22.81*	1431	[0.70]				Norsesquiterpene
Khusimene	23.17	1435	0.25	0.40	1628	12.52*	Sesquiterpene
(E)-Isoeugenol	25.05	1457	0.42	4.13	2247	42.47	Phenylpropanoid
Germacrene D	25.65	1465	0.23	[0.40]	1628	12.52*	Sesquiterpene
$\alpha$ -Amorphene	25.83*	1467	0.42	0.37	1608	11.81	Sesquiterpene
$\beta$ -Vetispiroene	26.32	1473	0.41	0.44	1650	13.42	Sesquiterpene
$\delta$ -Guaiene	27.57	1488	0.16	[0.10]	1635	12.78*	Sesquiterpene
$\delta$ -Amorphene	27.70	1489	0.07	[0.04]	1640	12.97*	Sesquiterpene
Nootkatene	27.82	1491	0.16	0.25	1688	15.38	Sesquiterpene
trans-Calamenene	28.50	1499	0.19	0.85	1748	18.51*	Sesquiterpene
$\alpha$ -Calacorene	30.23*	1523	0.94	0.49	1802	21.97	Sesquiterpene
$\gamma$ -Vetivenene	30.23*	1523	[0.94]	[3.48]	1726	17.35*	Sesquiterpene
$\beta$ -Calacorene	31.35	1539	0.36	0.21	1851	25.18	Sesquiterpene
$\beta$ -Vetivenene	31.77	1544	0.88	[0.85]	1748	18.51*	Sesquiterpene
$\beta$ -Vetivenene isomer I	32.10	1549	0.13	0.36	1796	21.59*	Sesquiterpene
Caryophyllene oxide	32.69	1557	0.24	0.21	1847	24.90	Sesquiterp. ether
$\beta$ -Vetivenene isomer II	32.87	1560	0.44	[0.36]	1796	21.59*	Sesquiterpene
Unknown (m/z = 202, 187 (94), 91 (78), 105 (52), 131 (50))	33.67	1571	0.21				Sesquiterpene
Khusimone	34.03	1576	0.40	0.23	2104	38.54*	Norsesquiterp. ketone
Junenol	34.89	1588	0.18	[5.99]	1932	30.91*	Sesquiterp. alcohol
Unknown (m/z = 150, 43 (81), 177 (65), 107 (56), 91 (54), 220 (42))	35.37	1594	0.72				Oxygenated sesquiterp.
Hexadecane	35.82	1601	0.20	[0.25]	1621	12.31*	Alkane
Cyclocopacamphan-12-ol (epimer A)	37.92	1653	0.79				Sesquiterp. alcohol
Cyclocopacamphan-12-ol (epimer B)	38.04	1656	0.83				Sesquiterp. alcohol
Zizanol	38.20	1660	1.45				Sesquiterp. alcohol
epi-Zizanone	38.47	1666	0.39				Sesquiterp. ketone
trans-8-Heptadecene	38.99*	1679	3.85	[3.48]	1726	17.35*	Alkene
Khusiol	38.99*	1679	[3.85]				Sesquiterp. alcohol
Zizanal	39.18	1683	0.84				Sesquiterp. aldehyde
Heptadecane	40.00	1705	0.83	1.02	1712	16.62	Alkane
Vetiselinenol	40.13	1709	3.00	3.66	2264	42.91	Sesquiterp. alcohol
(2E,6E)-Farnesol	40.52	1721	1.81	2.26	2281	43.31	Sesquiterp. alcohol

Khusimol	40.74	1728	0.90	2.10	2359	45.07*	Sesquiterp. alcohol
Isovalencenol	42.11	1771	0.47	0.32	2417	46.31	Sesquiterp. alcohol
Octadecane	43.03	1800	0.32	0.14	1822	23.27	Alkane
(E)-Isovalencenal	43.10	1803	0.92				Sesquiterp. aldehyde
β-Vetivone	43.28	1809	1.42	1.51	2332	44.45	Sesquiterp. ketone
(Z)-Isovalencenal	43.56*	1819	6.42				Sesquiterp. aldehyde
Isozizanoic acid	43.56*	1819	[6.42]	8.44	2779	53.19	Sesquiterp. acid
α-Vetivone	43.97	1835	1.96	[2.10]	2359	45.07*	Sesquiterp. ketone
Zizanoic acid	44.49	1853	7.73	9.77	2850	54.41	Sesquiterp. acid
trans-9-Nonadecene	45.12	1876	1.25	1.16	1916	29.80	Alkene
Nonadecane	45.96*	1908	5.14	[5.99]	1932	30.91*	Alkane
Eicosane	48.39	2006	0.48	0.65	2032	35.94	Alkane
Heneicosane	50.75	2108	2.19	2.69	2135	39.49	Alkane
Tricosane	55.02	2308	0.55	1.99	2324	44.27	Alkane
Pentacosane	58.95	2510	0.16	0.12	2531	48.61	Alkane
Total identified			74.17%	76.11%			

\*: 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 : Orange liquid  
Refractive Index : 1.5045 ± 0.0003 (20 °C)

CONCLUSION

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





