

Analysis Vetiver, Ruh Khus Essential Oil

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Date : August 9, 2017

SAMPLE IDENTIFICATION

Internal code : 17G28-FSE14-1-CC

Customer identification : Ruh Khus - India - Lot#SA-400417

Type : Essential oil

Source : *Vetiveria zizanoides*

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 : 2017-08-01



Checked and approved by :

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



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IDENTIFIED COMPOUNDS

Identification	Column: BPS			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
12-Norisoziza-5-ene	16.06	1336	0.04	0.07	1445	6.93	Norsesquiterpene
α -Ylangene	17.11	1352	0.06	0.09	1423	6.55	Sesquiterpene
α -Copaene	17.33	1355	0.22	0.19	1433	6.70	Sesquiterpene
6-epi-Nigritene	18.32	1370	0.13	0.11	1485	7.86	Norsesquiterpene
Nigritene	18.87	1379	0.04	0.05	1505	8.33	Norsesquiterpene
β -Caryophyllene	20.26	1400	0.34	0.30	1511	8.45	Sesquiterpene
6,9-Guadiene	21.71	1429	0.30	0.21	1539	9.10	Sesquiterpene
Prezizaene	22.93	1432	0.75	1.04	1619	11.92*	Sesquiterpene
Khusimene	23.26	1436	0.78	0.91	1639	12.64	Sesquiterpene
allo-Aromadendrene	23.84	1443	0.56	0.60	1566	10.00	Sesquiterpene
15,10R-Dimethylbicyclo[4.4.0]decan-6-en-3-one	25.29	1460	1.32				Terpenic ketone
α -Amorphene	25.98	1469	2.32	2.15	1614	11.73	Sesquiterpene
β -Vetispiene	26.51*	1475	3.79	2.49	1658	13.43	Sesquiterpene
α -Vetispiene	26.51*	1475	[3.79]	[1.04]	1619	11.92*	Sesquiterpene
cis-Eudesma-6,11-diene?	26.51*	1475	[3.79]				Sesquiterpene
Valencene isomer?	26.79	1478	0.33	0.30	1626	12.19	Sesquiterpene
γ -Amorphene	27.06	1482	0.57	0.70	1686	14.84	Sesquiterpene
δ -Amorphene	27.99	1493	1.77	1.60	1647	12.92	Sesquiterpene
Nootkatene	28.33	1497	0.50	0.50	1701	15.60	Sesquiterpene
Eremophila-1(10),7(11)-diene	28.83	1503	2.00				Sesquiterpene
γ -Vetivenene	29.51	1513	0.27	0.23	1718	16.44	Sesquiterpene
α -Calacorene	30.58	1528	0.43	0.55	1820	22.48	Sesquiterpene
β -Vetivenene	31.97*	1547	4.48	3.95	1756	18.36	Sesquiterpene
α -Elemol	31.97*	1547	[4.48]	0.72	2000	34.08	Sesquiterp. alcohol
cis-Eudesmen-6-ol?	32.77	1558	1.23				Sesquiterp. alcohol
Unknown (m/z = 202, 187 (75), 145 (56), 159 (41), 131 (48), 91 (38))	33.26	1565	1.37				Sesquiterpene
Khusimone	34.54	1583	2.97	1.40	2094	37.90	Norsesquiterp. ketone
Selin-6-en-4 α -ol?	35.91	1604	0.94	1.09	2052	36.31	Sesquiterp. alcohol
Unknown (m/z = 187, 202 (69), 145 (28), 131 (23), 91 (20), 105 (20))	36.08	1608	1.01				Sesquiterpene
Unknown (m/z = 81, 161 (92), 204 (79), 43 (78), 105 (66), 121 (64), 93 (63)... 222 (10))	36.20	1611	0.51				Oxygenated sesquiterp.
α -Cadinol	38.07	1656	2.78	1.41	2115	38.50	Sesquiterp. alcohol
Zizanol	38.89	1676	1.05				Sesquiterp. alcohol

Khusiol	39.09	1681	0.88				Sesquiterp. alcohol
Zizanal	39.25	1685	1.48				Sesquiterp. aldehyde
Vetiselinol	40.60	1723	2.66	3.46	2284	43.05	Sesquiterp. alcohol
Khusimol	41.39	1749	5.14	4.97	2358	44.72*	Sesquiterp. alcohol
Isovalencenol	42.65	1788	7.00	7.43	2400	45.66	Sesquiterp. alcohol
Isovalencenol isomer	42.91	1796	1.47	2.34	2422	46.09	Sesquiterp. alcohol
(Z)-Isovalencenal	43.64	1823	0.98				Sesquiterp. aldehyde
β -Vetivone	43.41	1814	3.04	3.46	2336	44.23	Sesquiterp. ketone
α -Vetivone	44.08†	1839	9.90	[4.97]	2358	44.72*	Sesquiterp. ketone
Zizanic acid	44.37†	1849	[9.90]	6.86	2850	54.10	Sesquiterp. acid
Total Identified			62.52%	49.18%			

*: Two or more compounds are coeluting on this column

(xx): Duplicate percentage due to coelutions, not taken account in the identified total

†: Peak apexes were resolved, but the peaks overlapped and were summed for analysis.

Note: no correction factor was applied

OTHER DATA

Physical aspect : Viscous green liquid

Refractive index : N/A (Too viscous)

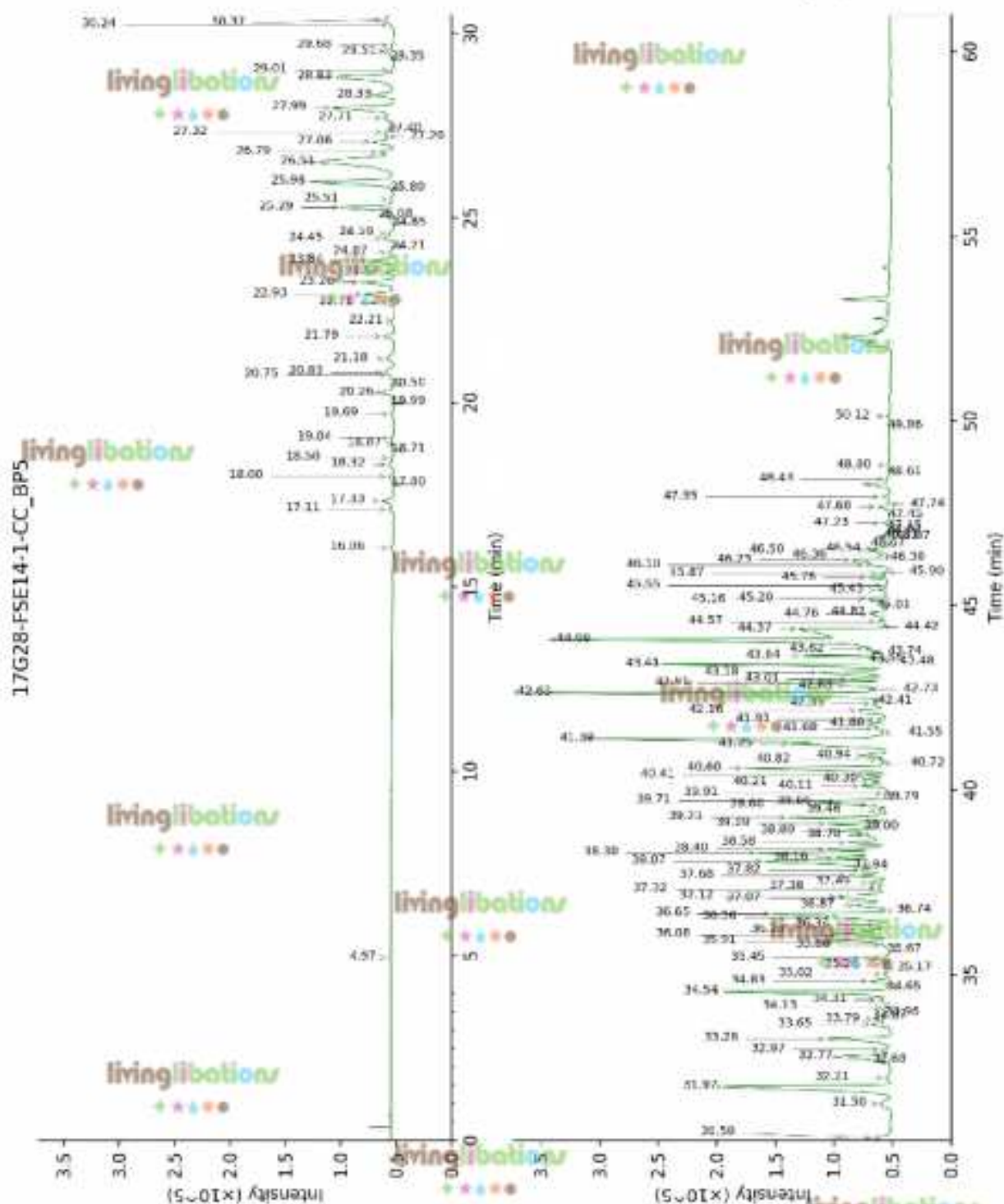
CONCLUSION

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

Essential oil, *Peperomia zosterifolia*
Internal Code: 17G28-FSE14-1-CC

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Report prepared for
Flowers Shining Everywhere Inc.



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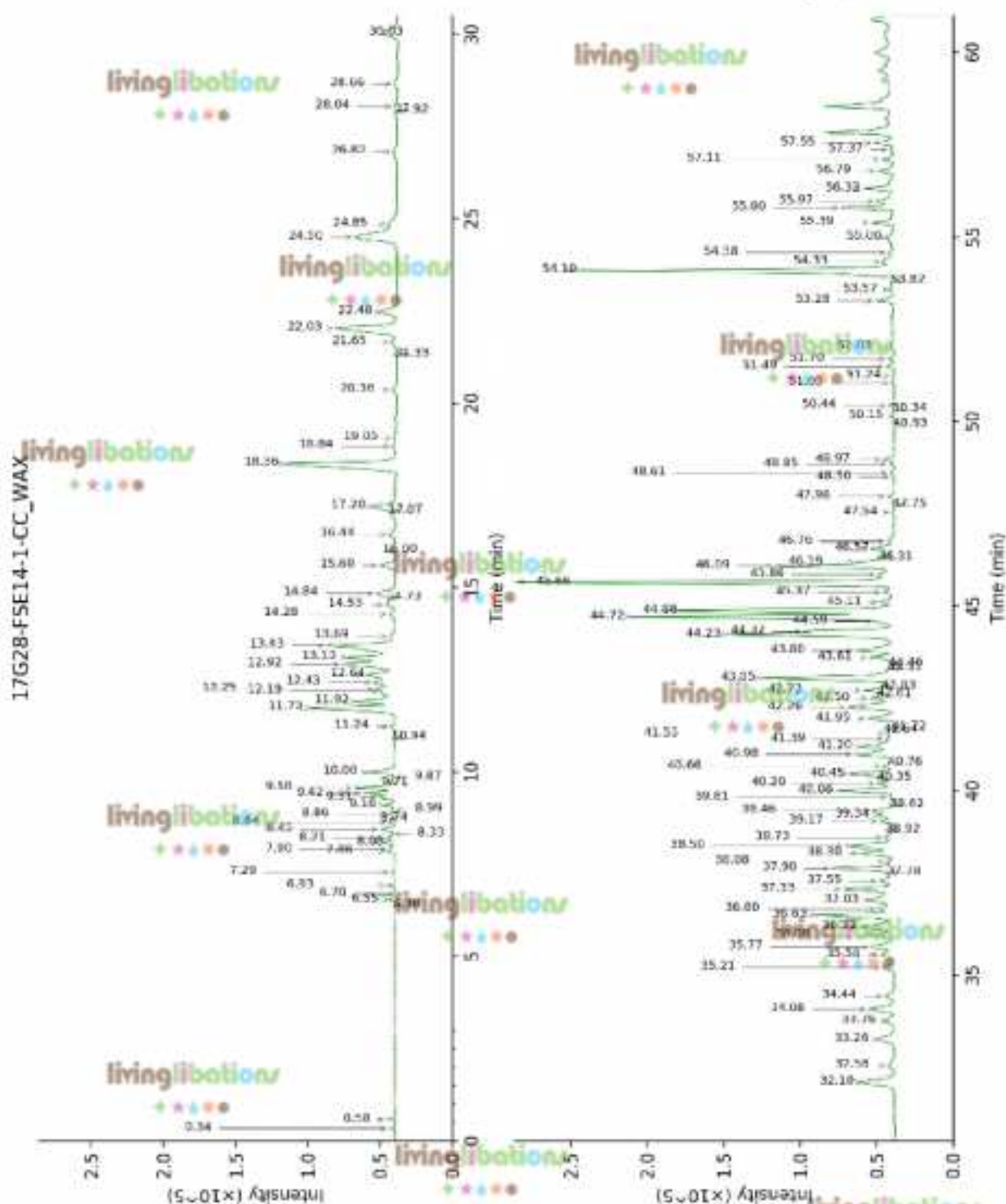
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Essential oil, *Vetiveria zizanioides*
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