



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: TK0105

ESSENTIAL OIL: TURMERIC ORGANIC C02
BOTANICAL NAME: CURCUMA LONGA
ORIGIN: INDIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF TURMERIC ORGANIC C02 OIL	%
β -TURMERONE	21.6
GERMACRONE	17.4
α -TURMERONE	13.6
β -SESQUIPHELLANDRENE	6.4
α -ZINGIBERENE	4.4
α r-TURMERONE	3.0
α r-CURCUMENE	2.8
(E)- α -ATLANTONE	1.8
TUMERONE	1.2
trans- γ -BISABOLENE	1.2
β -BISABOLENE	1.1
trans- α -BISABOLENE	1.1
(6S,7R)-BISABOLONE	1.0
1,8-CINEOLE	1.0

Comments from Robert Tisserand: Beautifully fresh, powdery-woody odor profile. Constituents are in expected amounts.

Date : August 23, 2017

SAMPLE IDENTIFICATION

Internal code : 17H22-PTH1-1-DM

Customer identification : Turmeric CO2 Organic - India - TK010574R

Type : Essential oil

Source : *Curcuma longa*

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

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-08-23

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.	
Toluene	1.32	759	0.01	0.07	945	1.22*	Simple phenolic
α -Thujene	3.31	920	0.01	[0.07]	945	1.22*	Monoterpene
α -Pinene	3.42	926	0.07	[0.07]	945	1.22*	Monoterpene
Myrcene	4.48	989	0.05	0.79	1108	2.58*	Monoterpene
α -Phellandrene	4.76	1005	0.81	[0.79]	1108	2.58*	Monoterpene
α -Terpinene	4.94	1015	0.01	0.02	1122	2.76	Monoterpene
para-Cymene	5.13	1025	0.48	0.47	1212	3.93	Monoterpene
Limonene	5.17	1027	0.11	1.15	1145	3.06*	Monoterpene
β -Phellandrene	5.20	1029	0.06	[1.15]	1145	3.06*	Monoterpene
1,8-Cineole	5.23	1030	1.02	[1.15]	1145	3.06*	Monoterp. ether
cis- β -Ocimene	5.35	1037	0.01	0.04	1192	3.64*	Monoterpene
trans- β -Ocimene	5.53	1047	0.02	0.01	1205	3.84	Monoterpene
γ -Terpinene	5.72	1057	0.03	[0.04]	1192	3.64*	Monoterpene
Terpinolene	6.20	1083	0.05	0.05	1227	4.16	Monoterpene
Terpinen-4-ol	8.79	1182	0.04	0.09	1526	10.31*	Monoterp. alcohol
α -Terpineol	9.45	1203	0.06	0.15	1621	14.25*	Monoterp. alcohol
α -Phellandrene epoxide	9.71	1209	0.05	1.02	1719	19.77*	Monoterpene
Ethylguaiacol	12.90	1279	0.04	0.03	1943	34.58	Simple phenolic
β -Elemene	18.90	1375	0.03	0.56	1519	10.05*	Sesquiterpene
Sesquithujene	20.08	1393	0.11	0.11	1506	9.60	Sesquiterpene
β -Caryophyllene	20.58	1400	0.53	[0.56]	1519	10.05*	Sesquiterpene
α -Santalene	20.98	1405	0.93	1.06	1512	9.79	Sesquiterpene
trans- α -Bergamotene	22.15	1419	0.05	[0.09]	1526	10.31*	Sesquiterpene
Unknown (m/z = 91, 69 (88), 109 (71), 95 (62), 67 (56), 202 (53))	22.88	1427	0.11				
Unknown (m/z = 91, 129 (77), 143 (69), 94 (56), 185 (54), 200 (53))	23.18	1431	0.14				
α -Humulene	23.37	1433	0.24	0.19	1582	12.42	Sesquiterpene
Thujopsadiene	24.05	1441	0.25	0.21	1597	13.04	Sesquiterpene
trans- β -Farnesene	24.51	1447	0.37	0.42	1615	13.93	Sesquiterpene
γ -Curcumene	26.07	1465	0.11	[0.15]	1621	14.25*	Sesquiterpene
ar-Curcumene	26.64	1472	2.82	8.75	1698	18.34*	Sesquiterpene
α -Zingiberene	27.94	1488	4.39	4.46	1653	15.98	Sesquiterpene
β -Bisabolene	28.88	1499	1.14	1.19	1658	16.23	Sesquiterpene
trans- γ -Bisabolene	30.02	1515	1.17	[8.75]	1698	18.34*	Sesquiterpene
β -Sesquiphellandrene	30.38	1520	6.43	[8.75]	1698	18.34*	Sesquiterpene
trans- α -Bisabolene	32.06	1544	1.12	[1.02]	1719	19.77*	Sesquiterpene
cis-Sesquisabinene hydrate	33.15	1559	0.23				Sesquiterp. alcohol
(E)-Nerolidol	33.97	1571	0.11	0.16	1995	36.96	Sesquiterp. alcohol

ar-Dihydroturmerone	34.86	1583	0.51	3.00	2205	43.09*	Sesquiterp. ketone
ar-Turmerol	35.29	1589	0.30				Sesquiterp. alcohol
trans-Sesquisabinene hydrate	35.45	1591	0.14				Sesquiterp. alcohol
Tumerone	36.96	1624	1.22				Sesquiterp. ketone
ar-Turmerone	38.77	1668	3.01	2.56	2062	39.12	Sesquiterp. ketone
β-Turmerone	39.08	1676	38.08†	21.58	2146	41.56*	Sesquiterp. ketone
Germacrone	39.11	1676	[38.08]†	17.37	2072	39.45	Sesquiterp. ketone
(Z)-γ-Atlantone	39.28	1681	0.14	0.30	2089	39.99	Sesquiterp. ketone
Unknown (m/z = 120, 91 (37), 85 (36), 41 (34), 77 (28), 119 (27), 93 (27)...))	39.68	1690	1.00				Oxygenated sesquiterp.
(E)-γ-Atlantone	39.91	1696	0.34	0.73	2107	40.52	Sesquiterp. ketone
α-Turmerone	40.21	1705	13.60	13.75	2127	41.06	Sesquiterp. ketone
(Z)-α-Atlantone	40.62	1718	0.17	[21.58]	2146	41.56*	Sesquiterp. ketone
(6S,7R)-Bisabolone	41.44	1744	1.03	1.14	2181	42.48	Sesquiterp. ketone
<i>C. longa</i> biomarker I	41.63	1750	0.44	0.29	2290	45.06	Oxygenated sesquiterp.
Unknown (m/z = 83, 55 (20), 53 (6), 91 (6))	41.91	1758	0.75				Oxygenated sesquiterp.
ar-Turmerol analogue?	42.09	1764	0.51	0.42	2425	47.95	Sesquiterp. alcohol
(E)-α-Atlantone	42.43	1775	1.80	[3.00]	2205	43.09*	Sesquiterp. ketone
<i>C. longa</i> biomarker II	43.30	1803	0.32	0.34	2556	50.56	Oxygenated sesquiterp.
<i>C. longa</i> biomarker III	45.70	1890	0.47	0.40	2744	54.03	Oxygenated sesquiterp.
Unknown (m/z = 83, 135 (75), 118 (44), 55 (29), 91 (27), 232 (21))	45.86	1896	0.20				Oxygenated sesquiterp.
Unknown (m/z = 83, 137 (72), 110 (60), 55 (37), 109 (26)...))	46.10	1906	0.36				Oxygenated sesquiterp.
Unknown (m/z = 83, 149 (65), 135 (53), 55 (30), 214 (27)... 232? (11))	47.20	1950	0.13				Oxygenated sesquiterp.
<i>C. longa</i> biomarker IV	50.96	2108	0.21	0.20	3128	60.48	Oxygenated sesquiterp.
Total identified			85.25%	83.08%			

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

†: Peaks apexes were resolved, but peaks overlapped and were summed for analysis

Note: no correction factor was applied

OTHER DATA

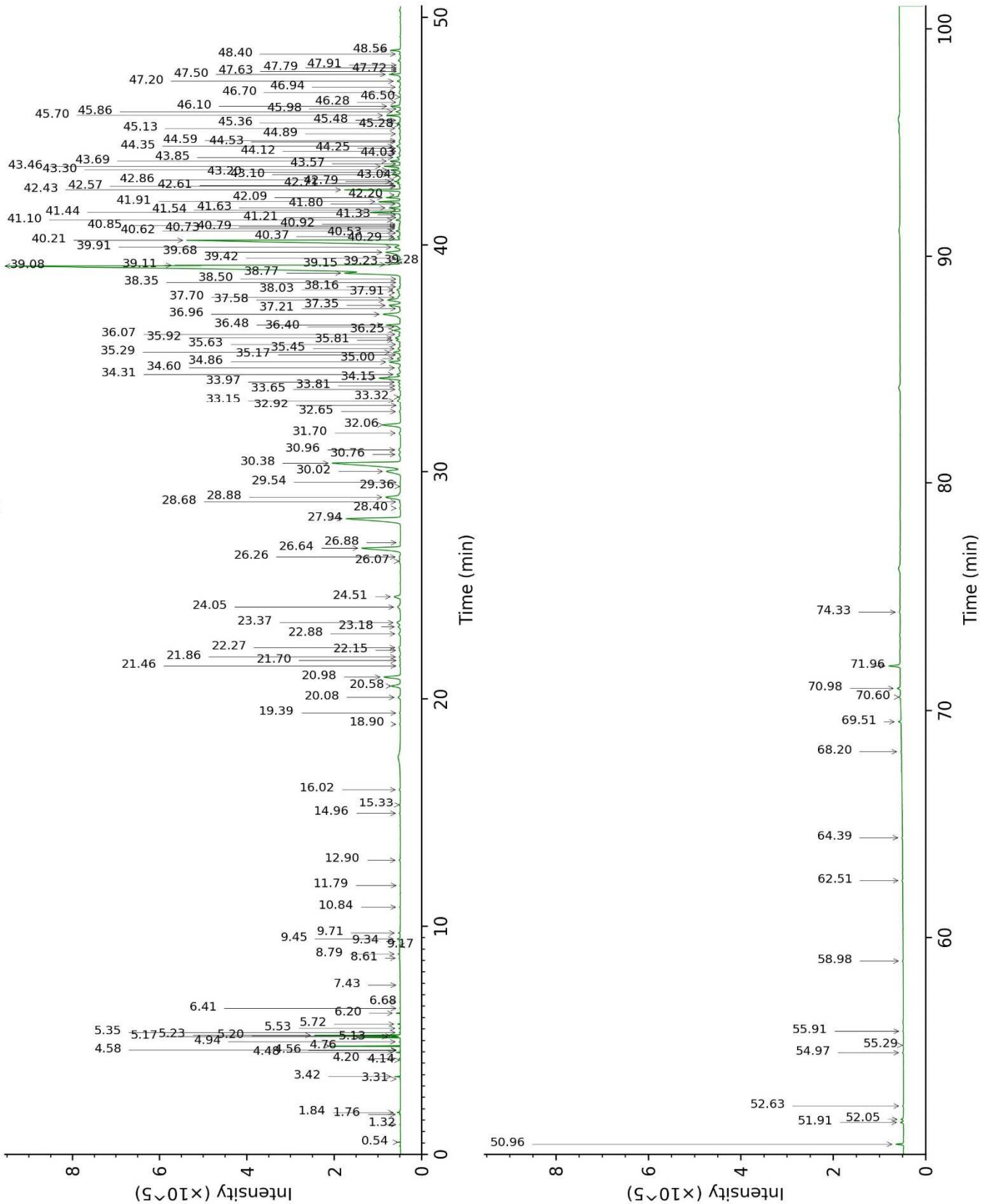
Physical aspect : Bright yellow liquid

Refractive index : 1.5095 ± 0.0003 (20 °C)

CONCLUSION

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

17H22-PTH1-1-DM_BP5



17H22-PTH1-1-DM_WAX

