



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: G40104

ESSENTIAL OIL: GINGER ROOT CO2
BOTANICAL NAME: ZINGIBER OFFICINALIS
ORIGIN: NIGERIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF GINGER ROOT CO2 OIL	%
[6]-GINGEROL	11.1
ZINGERONE	8.3
[10]-SHOGAOL	6.3
α -ZINGIBERENE	4.8
[8]-GINGEROL	4.1
DECANAL	3.2
[8]-SHOGAOL	2.9
[10]-GINGEROL	2.7
[11]-PARADOL	2.3
β -SESQUIPELLANDRENE	2.1
[13]-PARADOL	1.8
1-DEHYDRO-[10]-GINGERDIONE	1.8
[15]-PARADOL	1.3
δ -CADINENE	1.2
[9]-PARADOL	1.1
(E,E)- α -FARNESENE	1.0
α -CURCUMENE	1.0

Comments from Robert Tisserand:
Excellent rich spicy odor quality. Contains 36% gingerols and shogaols, important active ingredients not found in Ginger essential oil.

Date : April 20, 2017

SAMPLE IDENTIFICATION

Internal code : 17D10-PTH13-1-DM

Customer identification : Ginger Root Co2 - Nigeria - G4010467R

Type : Essential oil

Source : *Zingiber officinalis*

Customer : Plant Therapy


ANALYSIS

Method : PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-04-18

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.	
2,4-Pentadienal?	2.14	839	1.76	2.21	1062	2.03*	Aliphatic aldehyde
Tricyclene	3.22	917	0.01	0.01	914	1.04	Monoterpene
α -Pinene	3.40	928	0.14	0.20	938	1.14	Monoterpene
Camphene	3.69	945	0.40	0.59	994	1.42	Monoterpene
Sabinene	4.12	970	0.01	[2.21]	1062	2.03*	Monoterpene
β -Pinene	4.18	974	0.02	0.03	1034	1.77	Monoterpene
Myrcene	4.46	991	0.07	0.16	1111	2.51*	Monoterpene
α -Phellandrene	4.73	1006	0.04	[0.16]	1111	2.51*	Monoterpene
Limonene	5.14	1029	0.12	0.13	1135	2.83	Monoterpene
β -Phellandrene	5.17	1030	0.40	1.00	1143	2.91*	Monoterpene
1,8-Cineole	5.20	1032	0.29	[1.00]	1143	2.91*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.32	1039	0.01	0.01	1203	3.72*	Monoterpene
γ -Terpinene	5.69	1059	tr	[0.01]	1203	3.72*	Monoterpene
Terpinolene	6.16	1084	0.02	0.03	1218	3.94	Monoterpene
Rose furan	6.37	1096	0.03	0.03	1344	5.83	Monoterp. ether
Linalool	6.59	1106	0.06	0.09	1488	8.78	Monoterp. alcohol
Camphor	7.70	1146	0.01	0.02	1418	7.12	Monoterp. ketone
Borneol	8.45	1173	0.20	0.19	1618	13.51	Monoterp. alcohol
α -Terpineol	9.27	1202	0.16	0.21	1624	13.79*	Monoterp. alcohol
Decanal	9.82	1214	3.22	4.56	1437	7.57	Aliphatic aldehyde
Neral	11.00	1240	0.15	0.13	1611	13.12	Monoterp. aldehyde
Geraniol	11.63	1254	0.04	0.08	1775	22.60	Monoterp. alcohol
Geranial	12.48	1273	0.24	0.60	1643	14.77*	Monoterp. aldehyde
Bornyl acetate	12.80	1280	0.01	0.01	1509	9.32	Monoterp. ester
2-Undecanone	13.71	1300	0.15	0.10	1554	10.95	Aliphatic ketone
α -Ylangene	16.84	1348	0.02	0.11	1425	7.27*	Sesquiterpene
α -Copaene	17.53	1358	0.07	[0.11]	1425	7.27*	Sesquiterpene
β -Cubebene	18.51	1373	0.01	0.01	1474	8.46	Sesquiterpene
β -Elemene	18.72	1376	0.06	0.05	1530	10.10	Sesquiterpene
Sesquithujene	19.92	1395	0.08	0.09	1518	9.62	Sesquiterpene
β -Caryophyllene	20.37	1401	0.02	0.02	1523	9.80	Sesquiterpene
<i>trans</i> - α -Bergamotene	21.51	1415	0.20	0.19	1532	10.17	Sesquiterpene
9-epi- β -Caryophyllene	23.84	1443	0.05	0.15	1658	15.59*	Sesquiterpene
<i>trans</i> - β -Farnesene	24.31	1449	0.08	0.87	1622	13.73	Sesquiterpene
Germacrene D	25.33	1461	0.27	0.36	1615	13.35	Sesquiterpene
β -Selinene	25.93	1468	0.04	[0.21]	1624	13.79*	Sesquiterpene
<i>ar</i> -Curcumene	26.38	1473	1.01	4.27	1691	17.29*	Sesquiterpene
α -Selinene	26.78	1478	0.49	[0.60]	1643	14.77*	Sesquiterpene
α -Zingiberene	27.85	1491	4.77	7.85	1652	15.26	Sesquiterpene
γ -Cadinene	28.19	1495	0.09	[0.15]	1658	15.59*	Sesquiterpene
(<i>E,E</i>)- α -Farnesene	28.70	1502	1.01	2.38	1692	17.39*	Sesquiterpene

δ-Cadinene	28.96	1505	1.17	[2.38]	1692	17.39*	Sesquiterpene
β-Sesquiphellandrene	30.10	1521	2.06	[4.27]	1691	17.29*	Sesquiterpene
α-Elemol	31.76	1544	0.10	0.11	1989	35.88	Sesquiterp. alcohol
cis-Sesquisabinene hydrate	32.77	1558	0.04				Sesquiterp. alcohol
(E)-Nerolidol	33.53	1569	0.10	0.09	1997	36.21	Sesquiterp. alcohol
trans-Sesquisabinene hydrate	34.58	1584	0.33				Sesquiterp. alcohol
(cis?)-Zingiberenol	36.20	1611	0.16	0.16	1982	35.52	Sesquiterp. alcohol
(trans?)-Zingiberenol	37.05	1632	0.08	0.12	2004	36.48	Sesquiterp. alcohol
β-Eudesmol	37.55	1644	0.14	0.18	2105	39.89	Sesquiterp. alcohol
Zingerone	38.38	1664	8.34	12.40	2653	51.92	Phenylbutanoid
Linoleic acid	51.72	2153	0.52	0.52	3069	59.08	Fatty acid
Stearic acid	52.33*	2181	0.14	0.14	3075	59.18*	Fatty acid
[6]-Shogaol	55.45	2330	0.71	8.19	3353	63.46	Gingerol derivative
[7]-Paradol	55.56	2336	0.19	0.29	3226	61.55	Gingerol derivative
[6]-Gingerol	57.13	2415	11.07				Gingerol derivative
Methyl [6]-gingerol	57.29	2423	0.24				Gingerol derivative
[9]-Paradol	58.96	2511	1.06	1.05	3449	64.88	Gingerol derivative
[8]-Shogaol	59.10	2518	2.89	3.44	3567	66.57	Gingerol derivative
Diacetoxy-[6]-gingerdiol	59.56	2543	0.54				Gingerol derivative
[8]-Gingerol	61.04	2624	4.08				Gingerol derivative
[10]-Shogaol	63.04	2737	6.31	5.58	3798	69.75	Gingerol derivative
[11]-Paradol	63.51	2765	2.34				Gingerol derivative
[10]-Gingerol	64.80	2841	2.72				Gingerol derivative
[13]-Paradol	68.12	3047	1.81	1.04	3714	68.62	Gingerol derivative
1-Dehydro-[10]-gingerdione	68.98	3101	1.76				Gingerol derivative
[15]-Paradol	70.32	3190	1.27	1.05	3977	72.18	Gingerol derivative
1-Dehydro-[12]-gingerdione	72.37	3318	0.45				Gingerol derivative
Total identified			66.45%	61.10%			

*: 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-brown liquid

Refractive index : 1.5070 ± 0.0003 (20 °C)

CONCLUSION

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

