



**PLANT THERAPY**  
100% PURE ESSENTIAL OILS

## GC/MS BATCH NUMBER: M30104

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**ESSENTIAL OIL:** MAY CHANG  
**BOTANICAL NAME:** LITSEA CUBEBA  
**ORIGIN:** CHINA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF MAY CHANG OIL	%
GERANIAL	39.3
NERAL	30.2
LIMONENE	12.7
SABINENE	1.6
$\alpha$ -PINENE	1.4
MYRCENE	1.3
LINALOOL	1.2
(E)-ISOCITRAL	1.1
1,8-CINEOLE	1.1
$\beta$ -PINENE	1.1
6-METHYL-5-HEPTEN-2-ONE	1.1

Comments from Robert Tisserand: Has a classic lemony, fruity odor. Slightly low on three of the ten key ISO constituents, but not enough to be a concern.

**Date :** May 11, 2017

*SAMPLE IDENTIFICATION*

**Internal code :** 17E04-PTH11-1-DM

**Customer identification :** May Chang - China - M3010467R

**Type :** Essential oil

**Source :** *Litsea cubeba*

**Customer :** Plant Therapy

*ANALYSIS*

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

**Analyst :** Benoit Roger Ph. D.

**Analysis date :** 2017-05-10

Checked and approved by :

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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.	
α-Thujene	3.31*	922	0.04	0.07	955	1.15*	Monoterpene
α-Pinene	3.41*	928	1.40	1.36	944	1.10*	Monoterpene
Camphene	3.69*	945	0.32	0.30	1000	1.38*	Monoterpene
Sabinene	4.13*	971	1.57	1.54	1055	1.89*	Monoterpene
β-Pinene	4.19*	975	1.08	1.06	1039	1.72*	Monoterpene
Myrcene	4.47*	991	1.37	1.29	1116	2.45*	Monoterpene
Dehydro-1,8-cineole	4.47*	991	[1.37]	0.05	1130	2.62*	Monoterp. ether
6-Methyl-5-hepten-2-one	4.51*	994	1.06	1.05	1276	4.64*	Aliphatic ketone
6-Methyl-5-hepten-2-ol	4.70*	1005	0.04	0.04	1410	6.70*	Aliphatic alcohol
α-Terpinene	4.93*	1017	0.04	0.05	1122	2.53*	Monoterpene
Limonene	5.19*	1031	12.90	12.65	1144	2.81*	Monoterpene
para-Cymene	5.19*	1031	[12.90]	0.03	1207	3.64*	Monoterpene
β-Phellandrene	5.19*	1031	[12.90]	1.34	1147	2.85*	Monoterpene
1,8-Cineole	5.22*	1033	1.09	[1.34]	1147	2.85*	Monoterp. ether
cis-β-Ocimene	5.33*	1039	0.02	0.10	1188	3.37*	Monoterpene
γ-Terpinene	5.70*	1059	0.09	[0.10]	1188	3.37*	Monoterpene
cis-Sabinene hydrate	6.00*	1076	0.03	0.04	1404	6.62*	Monoterp. alcohol
Terpinolene	6.17*	1085	0.08	0.08	1223	3.85*	Monoterpene
para-Cymenene	6.38*	1097	0.04	0.03	1370	6.07*	Monoterpene
Rose furan	6.38*	1097	[0.04]	0.03	1344	5.65*	Monoterp. ether
Linalool	6.62*	1106	1.19	1.21	1492	8.61*	Monoterp. alcohol
cis-Limonene oxide	7.30*	1131	0.03	[0.03]	1370	6.07*	Monoterp. ether
trans-Limonene oxide	7.42*	1136	0.03	0.03	1383	6.27*	Monoterp. ether
exo-Isocitral	7.66*	1145	0.10	0.08	1430	7.13*	Monoterp. aldehyde
Camphor	7.72*	1147	0.03	0.01	1424	6.98*	Monoterp. ketone
Citronellal	7.91*	1154	0.62	0.58	1418	6.83*	Monoterp. aldehyde
(Z)-Isocitral	8.19*	1164	0.75	0.53	1475	8.20*	Monoterp. aldehyde
Rosefuran epoxide	8.43*	1173	0.03	0.03	1531	9.68*	Monoterp. ether
Borneol	8.48*	1175	0.07	0.11	1608	12.52*	Monoterp. alcohol
Terpinen-4-ol	8.68*	1182	0.25	0.24	1528	9.60*	Monoterp. alcohol
(E)-Isocitral	8.80*	1186	1.13	0.84	1504	8.88*	Monoterp. aldehyde
α-Terpineol	9.31*	1203	0.41	0.41	1626	13.22*	Monoterp. alcohol
trans-Piperitol	9.65*	1211	0.04	0.02	1666	15.34*	Monoterp. alcohol
Nerol	10.53*	1230	0.46	0.49	1731	18.78*	Monoterp. alcohol
Citronellol	10.84*	1237	0.13	0.09	1707	17.46*	Monoterp. alcohol
Neral	11.30*	1247	30.22	30.53	1606	12.45*	Monoterp. aldehyde
cis-Isogeraniol	11.39*	1249	0.03	0.01	1739	19.31*	Monoterp. alcohol
Piperitone	11.72*	1256	0.04	0.15	1619	12.93*	Monoterp. ketone
Geraniol	11.87*	1260	0.92	0.97	1782	22.11*	Monoterp. alcohol
Geranial	12.90*	1283	39.29	39.79	1658	14.86*	Monoterp. aldehyde

Unknown (m/z = 43, 69 (80), 41 (80), 109 (40)... 152 (5))	13.44*	1295	0.10				Oxygenated monoterp.
Neric acid	16.20*	1338	0.03	0.07	2206	42.20*	Monoterp. acid
Unknown (m/z = 110, 95 (74), 82 (41), 109 (33), 111 (28)... 153 (12))	16.59*	1344	0.06				
$\alpha$ -Copaene	17.59*	1359	0.07	[0.08]	1430	7.13*	Sesquiterpene
Geranic acid	18.78*	1377	0.35	0.41	2253	43.36*	Monoterp. acid
$\beta$ -Elemene	18.78*	1377	[0.35]	0.06	1524	9.43*	Sesquiterpene
Unknown (m/z = 81, 59 (97), 85 (84), 41 (82), 69 (53), 82 (45)...)	19.20*	1384	0.11	0.06	1925	32.14*	
$\beta$ -Caryophyllene	20.45*	1402	0.90	0.92	1521	9.31*	Sesquiterpene
$\alpha$ -Humulene	23.18*	1435	0.08	0.08	1581	11.54*	Sesquiterpene
<i>trans</i> - $\beta$ -Farnesene	24.34*	1449	0.07	[0.15]	1619	12.93*	Sesquiterpene
Bicyclogermacrene	26.60*	1476	0.09	0.03	1644	14.18*	Sesquiterpene
$\beta$ -Bisabolene	28.62*	1500	0.02	[39.79]	1658	14.86*	Sesquiterpene
Caryophyllene oxide	33.56*	1569	0.12	0.07	1847	26.49*	Sesquiterp. ether
Spathulenol	33.56*	1569	[0.12]	0.03	2020	36.57*	Sesquiterp. alcohol
Geranylgeraniol isomer	51.13*	2126	0.12	0.12	2594	50.49*	Diterp. alcohol
<b>Total identified</b>			<b>98.79%</b>	<b>99.08%</b>			

\*: 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

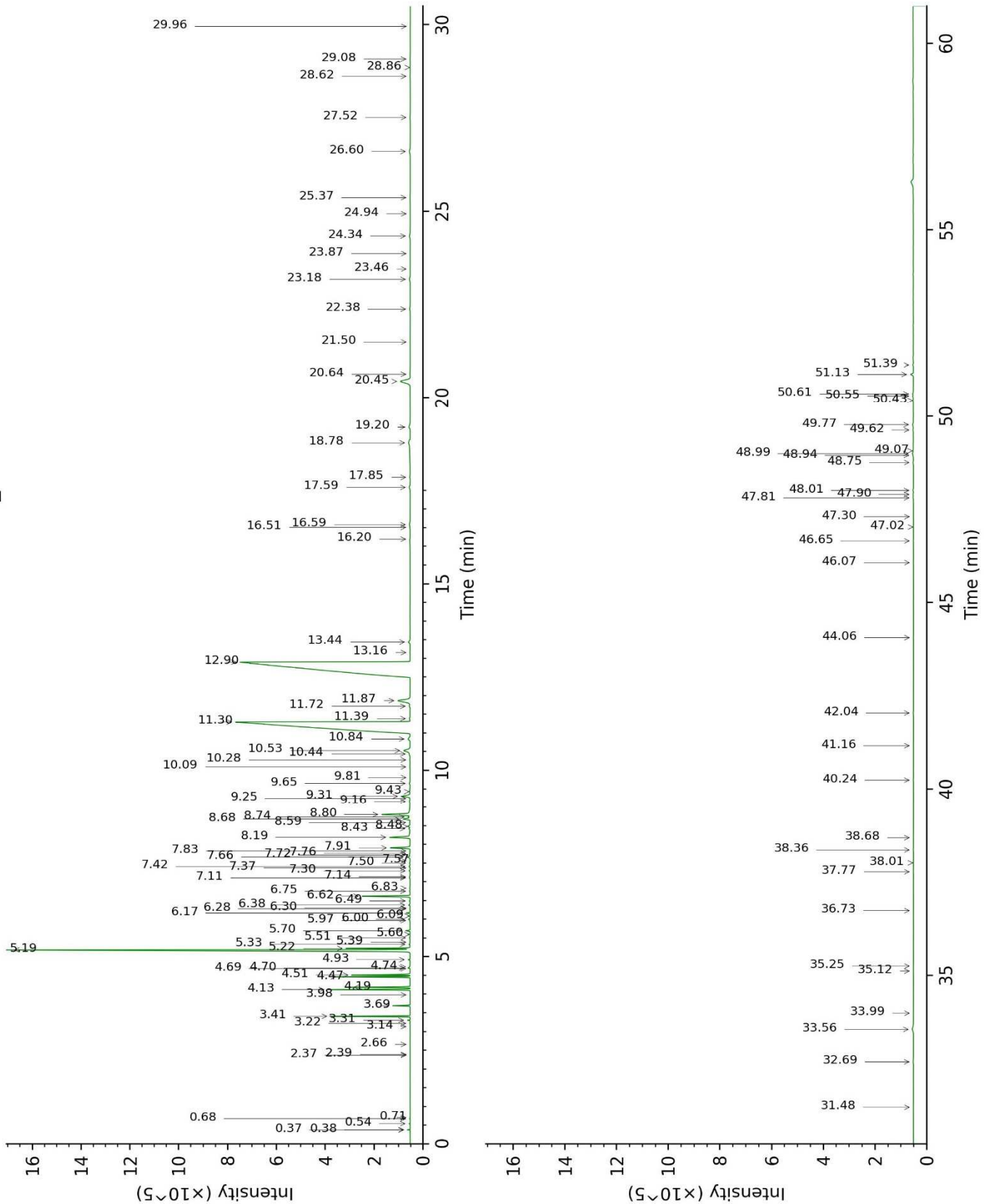
**Physical aspect :** Yellow liquid

**Refractive index :** 1.4825  $\pm$  0.0003 (20 °C)

#### CONCLUSION

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

17E04-PTH11-1-DM\_BP5



17E04-PTH11-1-DM\_WAX

