

# Analysis Ylang Essential Oil

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**Phyto**Chemia



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Date : December 14, 2016

SAMPLE IDENTIFICATION

Internal code : 16L05-FSE11-1-DM

Customer identification : Ylang Ylang Complete - Lot#MP15L78

Type : Essential oil

Source : *Cananga odorata*

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).

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2016-12-12

Checked and approved by :



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



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IDENTIFIED COMPOUNDS

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Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
3-Methyl-3-buten-1-yl acetate	2.78	887	0.03	0.03	1128	2.13	Aliphatic ester
$\alpha$ -Pinene	3.37	925	0.11	0.12	947	0.87	Monoterpene
Prenyl acetate	3.40	927	0.08	0.08	1186	2.81	Aliphatic ester
Camphene	3.66	943	tr	tr	998	1.08	Monoterpene
Sabinene	3.99	960	tr	0.01	1053	1.48	Monoterpene
$\beta$ -Pinene	4.15	972	0.04	0.03	1039	1.36	Monoterpene
Myrcene	4.43	989	0.05	0.04	1115	1.97	Monoterpene
6-Methyl-5-hepten-2-one	4.52	995	0.01	0.01	1268	3.89	Aliphatic ketone
cis-Hex-3-en-1-yl acetate	4.83	1013	0.03	0.03	1252	3.66	Aliphatic ester
Hexyl acetate	4.96	1019	0.03	0.02	1217	3.18	Aliphatic ester
para-Methylanisole	5.15*	1030	2.03	2.08	1356	5.12	Simple phenolic
Limonene	5.15*	1030	[2.03]	0.01	1140	2.27	Monoterpene
1,8-Cineole	5.18	1032	0.13	0.13	1142	2.30	Monoterp. ether
cis- $\beta$ -Ocimene	5.30	1039	tr	tr	1180	2.73	Monoterpene
trans- $\beta$ -Ocimene	5.48	1048	0.01	0.01	1200	2.97	Monoterpene
Benzyl alcohol	5.81	1065	0.02	0.02	1787	18.97	Simple phenolic
Terpinolene	6.14	1084	0.01	0.01	1222	3.25	Monoterpene
Methyl benzoate	6.58	1104	0.99	1.11	1522	7.97*	Phenolic ester
Linalool	6.76	1111	4.87	5.08	1487	7.31*	Monoterp. alcohol
Benzyl acetate	8.40	1172	0.98	1.91	1645	11.90	Phenolic ester
para-Cymen-8-ol	9.22	1200	0.03	0.02	1763	17.54	Monoterp. alcohol
$\alpha$ -Terpineol	9.42	1205	0.13	2.43	1628	11.19*	Monoterp. alcohol
Geraniol	11.95	1262	0.74	0.75	1773	18.13	Monoterp. alcohol
1-Nitro-2-phenylethane	14.68	1314	0.04				Simple phenolic
$\delta$ -Elemene	15.13	1321	0.09	0.08	1438	6.39	Sesquiterpene
$\alpha$ -Cubebene	15.77	1330	0.15	0.16	1422	6.08	Sesquiterpene
$\alpha$ -Ylangene	17.01	1349	0.14	0.12	1429	6.22	Sesquiterpene
$\alpha$ -Copaene	17.51	1357	1.04	1.12	1447	6.55	Sesquiterpene
Eugenol	17.82	1362	0.41	0.42	2044	34.97	Phenylpropanoid
$\beta$ -Cubebene	18.46	1372	0.13	[5.08]	1487	7.31*	Sesquiterpene
$\beta$ -Elemene	18.74	1376	0.37	13.60	1539	8.46*	Sesquiterpene
Geranyl acetate	19.50	1388	4.15	8.63	1690	13.88*	Monoterp. ester
$\beta$ -Caryophyllene	20.70	1404	12.94	[13.60]	1539	8.46*	Sesquiterpene
$\beta$ -Copaene	20.99	1407	0.07	0.07	1519	7.91	Sesquiterpene
trans- $\beta$ -Bergamotene	21.32	1411	0.30	[1.11]	1522	7.97*	Sesquiterpene
cis-Muurola-3,5-diene	22.76*	1429	0.28	0.17	1564	9.22	Sesquiterpene
cis- $\beta$ -Farnesene	22.76*	1429	[0.28]	3.74	1595	10.13*	Sesquiterpene
$\alpha$ -Humulene	23.31*	1435	1.38	[3.74]	1595	10.13*	Sesquiterpene
allo-Aromadendrene	23.31*	1435	[3.38]	0.17	1572	9.46	Sesquiterpene
trans- $\beta$ -Farnesene	23.84	1442	0.14	0.10	1620	10.90	Sesquiterpene



(E)-Isoeugenol	24.84	1454	0.21	0.18	2225	40.56	Phenylpropanoid
(E)-Cinnamyl acetate	25.25	1459	0.50	0.45	2032	34.27	Phenylpropanoid ester
$\alpha$ -Amorphene	25.84*	1466	18.10	[2.43]	1628*	11.19*	Sesquiterpene
Germacrene D*	25.84*	1466	[18.10]	16.65	1642	11.76*	Sesquiterpene
$\beta$ -Selinene	26.27	1470	0.31	[16.65]	1642	11.76*	Sesquiterpene
Bicyclgermacrene	26.72*	1476	0.81	0.42	1653	12.29	Sesquiterpene
$\alpha$ -Selinene	26.72*	1476	[0.81]	0.41	1650	12.13	Sesquiterpene
$\alpha$ -Muurofene	27.52	1485	1.11	0.60	1647	11.97	Sesquiterpene
$\delta$ -Gualene	27.77	1488	1.97	[16.65]	1642	11.76*	Sesquiterpene
(Z,E)- $\alpha$ -Farnesene	28.20	1494	0.16	[8.63]	1690	13.88*	Sesquiterpene
$\beta$ -Bisabolene	28.52*	1498	0.96	0.94	1658	12.50	Sesquiterpene
(E,E)- $\alpha$ -Farnesene	29.33*	1509	10.43	8.66	1708	14.66*	Sesquiterpene
$\delta$ -Cadinene	29.33*	1509	[10.43]	[8.63]	1690	13.88*	Sesquiterpene
trans-Calamenene	29.45	1510	1.67	[8.66]	1708	14.66*	Sesquiterpene
trans-Cadina-1,4-diene	30.31	1522	0.19	[8.63]	1690	13.88*	Sesquiterpene
$\alpha$ -Cadinene	30.65	1527	0.29	0.24	1714	14.93	Sesquiterpene
Caryophyllene oxide	33.66*	1568	0.17	0.08	1851	22.80	Sesquiterp. ether
(E)-Nerolidol	33.66*	1568	[0.17]	0.13	1984	31.46	Sesquiterp. alcohol
Spathulenol	33.82	1570	0.13	0.09	2007	32.81	Sesquiterp. alcohol
Viridiflorol	34.55	1580	0.10	0.10	1991	31.88	Sesquiterp. alcohol
Junenol	35.84	1604	0.47	0.31	1925	27.86	Sesquiterp. alcohol
1,10-diepi-Cubenol	36.34	1613	0.05	0.30	1945	29.14*	Sesquiterp. alcohol
1-epi-Cubenol	36.52	1617	0.27	0.33	1956	29.83	Sesquiterp. alcohol
Cubenol	36.91	1627	0.20	[0.30]	1945	29.14*	Sesquiterp. alcohol
$\gamma$ -Cadinol	37.48	1640	0.61	0.62	2072	35.97	Sesquiterp. alcohol
$\gamma$ -Muurofene	37.63	1644	1.05	1.01	2089	36.54	Sesquiterp. alcohol
$\alpha$ -Muurofene	37.73	1647	0.42	0.45	2104	37.05*	Sesquiterp. alcohol
Himachalol	37.88	1650	0.33	0.31	2093	36.68	Sesquiterp. alcohol
$\alpha$ -Cadinol	38.12	1656	2.10	2.07	2129	37.90	Sesquiterp. alcohol
(2Z,6Z)-Farnesol	38.60	1668	0.23	2.81	2205	40.04*	Sesquiterp. alcohol
(2E,6Z)-Farnesol	39.27	1683	0.05	0.04	2255	41.33	Sesquiterp. alcohol
(2E,6E)-Farnesol	40.78	1727	2.66	2.93	2291	42.15	Sesquiterp. alcohol
Benzyl benzoate	42.48	1781	10.79	10.93	2483	46.18	Phenolic ester
(2E,6E)-Farnesyl acetate	44.17	1840	2.62	[2.81]	2205	40.04*	Sesquiterp. ester
Benzyl salicylate	45.26	1879	3.96*	4.01	2631	48.92	Phenolic ester
Geranyl benzoate	47.46	1966	0.30	0.32	2490	46.33	Phenolic ester
<b>Total Identified</b>			<b>97.17%</b>	<b>97.70%</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

Essential oil, *Cananga odorata*  
Internal Code: 16L05-FSE11-1-DM

Customer Identification:  
Yang Yang Complete - Lot#MP15L78

Report prepared for  
Flowers Shining Everywhere Inc.

#### OTHER DATA

**Physical aspect:** light yellow liquid

**Refractive Index:**  $1.5030 \pm 0.0003$  (20 °C)

#### CONCLUSION

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

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