

## GC/MS BATCH NUMBER: T40104

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**ESSENTIAL OIL:** THYME  
**BOTANICAL NAME:** THYMUS VULGARIS  
**ORIGIN:** USA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF THYME OIL	%
THYMOL	49.8
p-CYMENE	19.7
γ-TERPINENE	7.1
LINALOOL	5.1
CARVACROL	3.5
BORNEOL	1.9
MYRCENE	1.5
β-CARYOPHYLLENE	1.3
TERPINEN-4-OL	1.3
α-TERPINENE	1.2
α-PINENE	1.0
α-THUJENE	0.7
CARVACROL METHYL ETHER	0.4
cis-SABINENE HYDRATE	0.2

Comments from Robert Tisserand: Very good odor profile and all 13 key constituents conform to the ISO standard.

**Date :** September 2, 2016

*SAMPLE IDENTIFICATION*

**Internal code :** 16H23-PTH2-1-DM

**Customer identification :** Thyme - T4010458R

**Type :** Essential oil

**Source :** *Thymus vulgaris*

**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 :** 2016-09-02

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.	
<i>cis</i> -Hex-3-en-1-ol	2.51	866	0.01	0.01	1339	4.87	Aliphatic alcohol
Tricyclene	3.16	913	0.03	0.02	928	0.79	Monoterpene
$\alpha$ -Thujene	3.25	918	0.66	0.71	954	0.90	Monoterpene
$\alpha$ -Pinene	3.35	924	1.02	0.92	947	0.86	Monoterpene
Camphene	3.64*	941	0.94	0.89	999	1.08	Monoterpene
$\alpha$ -Fenchene	3.64*	941	[0.94]	0.01	987	1.03	Monoterpene
Thuja-2,4(10)-diene	3.73	947	0.01	0.02	1064	1.56*	Monoterpene
Sabinene	4.07	968	0.01	[0.02]	1064	1.56*	Monoterpene
$\beta$ -Pinene	4.13	971	0.23	0.21	1039	1.36	Monoterpene
Myrcene	4.42	989	1.50	1.37	1116	1.99	Monoterpene
Octen-3-ol	4.51	994	0.07	0.06	1406	5.85	Aliphatic alcohol
$\alpha$ -Phellandrene	4.68*	1004	0.15	0.11	1108	1.92	Monoterpene
$\Delta$ 3-Carene	4.68*	1004	[0.15]	0.05	1089	1.76	Monoterpene
Octan-3-ol	4.78	1009	0.02	0.03	1347	5.00	Aliphatic alcohol
$\alpha$ -Terpinene	4.87	1015	1.19	1.22	1123	2.07	Monoterpene
para-Cymene	5.12	1028	19.71	19.59	1213	3.12*	Monoterpene
Limonene	5.13	1029	0.25	0.35	1140	2.27	Monoterpene
$\beta$ -Phellandrene	5.15	1030	0.10	0.41	1145	2.33*	Monoterpene
1,8-Cineole	5.17	1031	0.26	[0.41]	1145	2.33*	Monoterp. ether
<i>cis</i> - $\beta$ -Ocimene	5.29	1038	0.01	6.93	1191	2.87*	Monoterpene
<i>trans</i> - $\beta$ -Ocimene	5.47	1048	0.03	[19.59]	1213	3.12*	Monoterpene
$\gamma$ -Terpinene	5.67	1059	7.06	[6.93]	1191	2.87*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.94	1073	0.06	0.05	1377	5.43	Monoterp. alcohol
<i>cis</i> -Sabinene hydrate	6.00	1076	0.18	0.27	1408	5.87*	Monoterp. alcohol
Terpinolene	6.12	1083	0.09	0.20	1224	3.27	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	6.25	1090	0.12	[0.27]	1408	5.87*	Monoterp. alcohol
para-Cymenene	6.33	1095	0.07	0.05	1368	5.30	Monoterpene
Linalool	6.69	1109	5.14	5.07	1495	7.46	Monoterp. alcohol
Hotrienol	6.76	1111	0.06	0.67	1534	8.32*	Monoterp. alcohol
Unknown (m/z = 81, 79 (21), 41 (11), 43 (7)... 152 (1))	7.04	1121	0.05				
<i>trans</i> -Pinocarveol	7.56	1141	0.01	0.02	1582	9.76	Monoterp. alcohol
Unknown (m/z = 81, 70 (88), 67 (62), 41 (49), 69 (46), 82 (39), 109 (39)... 152 (1))	7.65	1144	0.14				
Camphor	7.72	1147	0.10	0.10	1427	6.19	Monoterp. ketone
Borneol	8.61	1180	1.89	2.00	1620	10.89	Monoterp. alcohol
Terpinen-4-ol	8.70	1184	1.31	1.49	1532	8.25	Monoterp. alcohol
$\alpha$ -Terpineol	9.36	1203	0.36	0.60	1629	11.19*	Monoterp. alcohol

γ-Terpineol	9.53	1207	0.30	[0.60]	1629	11.19*	Monoterp. alcohol
Carvacrol methyl ether	10.81	1236	0.42	[0.67]	1534	8.32*	Monoterp. ether
trans-Myrtanol	12.30	1269	0.03	0.03	1784	18.74	Monoterp. alcohol
Bornyl acetate	12.94	1283	0.13	0.91	1527	8.14*	Monoterp. ester
Thymol	15.93	1333	49.77	50.53	2117	37.48	Monoterp. alcohol
Carvacrol	16.12	1336	3.51	3.59	2133	38.00	Monoterp. alcohol
β-Caryophyllene	20.32	1399	1.33	[0.91]	1527	8.14*	Sesquiterpene
Aromadendrene	21.64	1415	0.08	[0.67]	1534	8.32*	Sesquiterpene
α-Humulene	23.04	1432	0.03	0.04	1588	9.92	Sesquiterpene
γ-Cadinene	28.25	1494	0.03	0.03	1674	13.17	Sesquiterpene
δ-Cadinene	28.89*	1503	0.20	0.08	1679	13.43	Sesquiterpene
Thymohydroquinone?	28.89*	1503	[0.20]				Monoterp. alcohol
Caryophyllene oxide	33.49	1566	0.18	0.11	1856	23.16	Sesquiterp. ether
<b>Total identified</b>			<b>98.66%</b>	<b>98.75%</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 :** Clear liquid

**Refractive index :** 1.5008 ± 0.0003 (20 °C)

#### CONCLUSION

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



