

Sample Information

Analyzed by : Dr. Robert S. Pappas
 Analyzed : 6/5/2019 5:45:38 PM
 Sample Type : Essential Oil
 Sample Name : Black Pepper - Barefut
 Sample ID : 0104
 Injection Volume : 0.10
 Instrument ID : GC-3

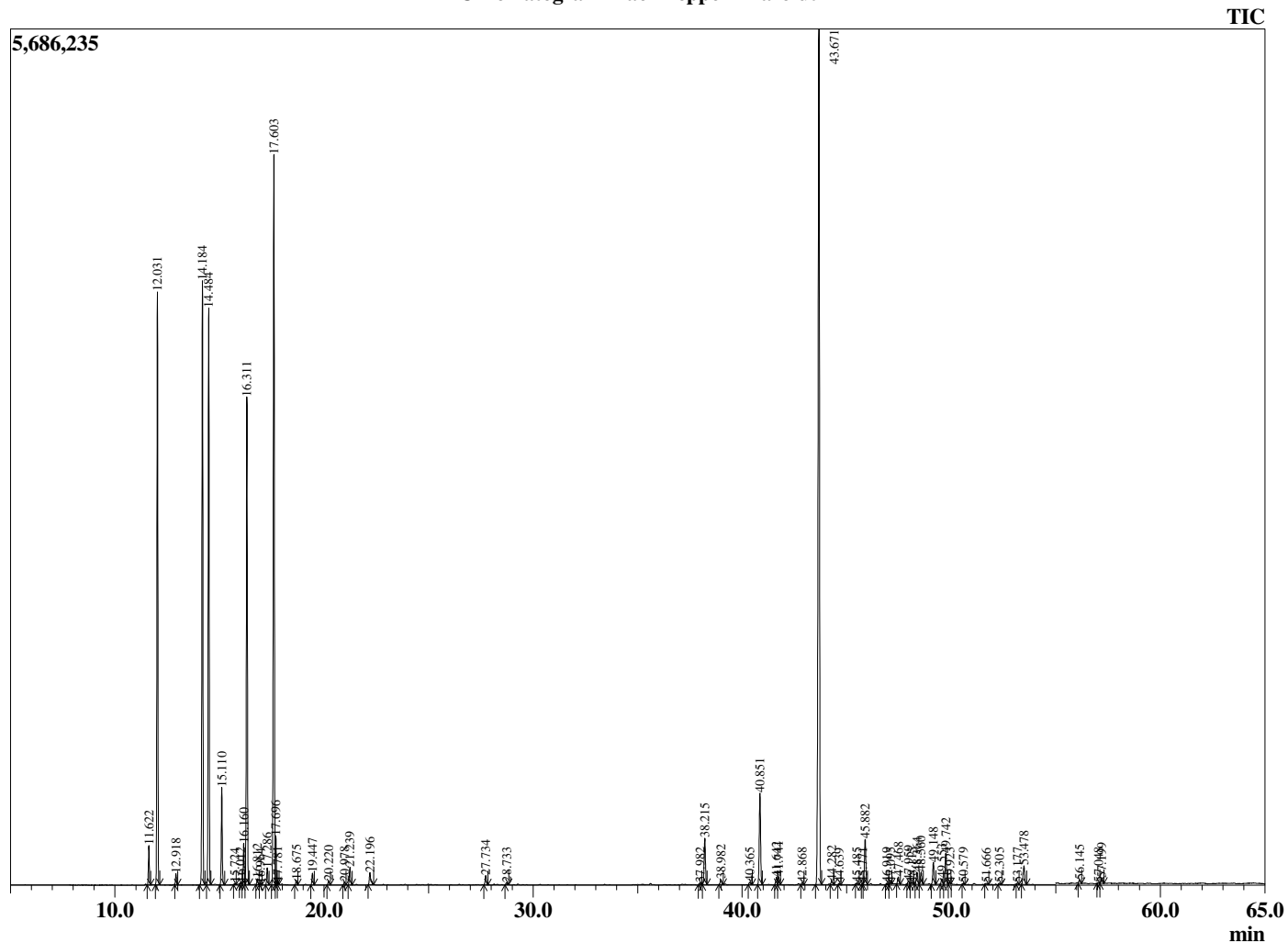


Peak Report TIC

R.Time	Name	Area%
11.622	alpha-Thujene	0.72
12.031	alpha-Pinene	10.79
12.918	Camphene	0.22
14.184	Sabinene	11.77
14.484	beta-Pinene	11.40
15.110	Myrcene	1.89
15.724	alpha-Terpinene	0.02
16.012	Pseudolimonene	0.03
16.160	alpha-Phellandrene	0.83
16.311	delta-3-Carene	9.90
16.812	alpha-Terpinene	0.12
16.964	ortho-Cymene	0.02
17.286	para-Cymene	0.36
17.603	Limonene	15.53
17.696	beta-Phellandrene	0.90
17.781	1,8-Cineole	0.04
18.675	trans-beta-Ocimene	0.10
19.447	gamma-Terpinene	0.25
20.220	trans-beta-Sabinene hydrate	0.09
20.978	Isoterpinolene	0.07
21.239	Terpinolene	0.41
22.196	Linalool	0.34
27.734	Terpinen-4-ol	0.23
28.733	alpha-Terpineol	0.06
37.982	delta-Elemene isomer	0.05
38.215	delta-Elemene	1.21
38.982	alpha-Cubebene	0.14
40.365	Isoledene	0.07
40.851	alpha-Copaene	2.42
41.642	beta-Cubebene	0.20
41.741	beta-Elemene	0.21
42.868	alpha-Gurjunene	0.05
43.671	beta-Caryophyllene	24.32
44.282	beta-Copaene	0.11
44.639	alpha-Guaiene	0.03
45.485	trans-Murrola-3,5-diene	0.04
45.771	trans-beta-Farnesene	0.04
45.882	alpha-Humulene	1.26
46.919	10-beta-H-Cadina-1(6),4-diene	0.04
47.095	trans-Cadina-1(6),4-diene	0.04
47.468	Germacrene D	0.19
47.959	beta-Selinene	0.09
48.115	trans-Muuroala-4(14),5-diene	0.05
48.364	Bicyclogermacrene	0.36
48.560	alpha-Muurolole	0.34
49.148	beta-Bisabolene	0.59
49.553	Cubebol	0.15
49.742	delta-Cadinene	0.85
49.923	cis-Calamenene	0.04
50.579	trans-Cadine-1,4-diene	0.03
51.666	Unidentified	0.04
52.305	trans-Nerolidol	0.05
53.177	Spathulenol	0.04
53.478	Caryophyllene oxide	0.59
56.145	Unidentified	0.10
57.048	epi-alpha-Cadinol	0.03
57.199	delta-Cadinol	0.15
		100.00

This report is valid for 1 year from the analyzed date.

Chromatogram Black Pepper - Barefut



Comments:

The analysis of this Black Pepper batch sample meets the expected chemical profile for authentic essential oil of *Piper nigrum*. No contamination or adulteration was detected.