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This report describes the GCMS and GC-FID analysis of one sample of Essential Oil Labs Premium Select Rosemary oil as of October 7, 2016.

Experimental:

The sample was shaken and then a 50 milligram aliquot was transferred to a 2ml sample vial and dissolved in 1 ml of reagent grade acetone. The sample was then analyzed by GCMS and also by GC-FID.

The GC-MS is an HP5890 GC connected to an HP5972 mass selective detector. The GC column was a 30 meter ZB-5 with an ID of 0.32mm and a phase thickness of 1.0 microns. The temperature program was an initial isothermal hold for 2 minutes at 50°C followed by a linear ramp at 5°C/min to 250°C. The injector temperature was 250°C and the injection mode was split with a 1 microliter injection volume. The interface to the MSD was open split and the interface temperature was 280°C. Library search was carried out using the Wiley-NIST mass spectral database. GC-FID used the same column and other conditions but with a temperature program rate of 3°C/min.

Results and Discussion:

The GC-FID chromatogram is shown in Figure 1. This was used for calculation of peak area % for the components. The components were identified from the GCMS trace and this is shown in Figure 2. The use of peak area % values is standard in the industry since the GCMS can have widely different response factors for different chemical classes and is thus less useful for determination of composition of these complex mixtures. The results are summarized in Table 1. Components with a ? next to the name indicate a lower quality match with the library spectrum. This occurs commonly with low peak intensities. We find no obvious foreign components or additives in this sample.

TABLE 1. Summary of Gas Chromatography of Rosemary Oil

Retention Time (min)	Peak Area %	Peak ID	Rosemary Oil
14.989	0.60	tricycline	
15.180	0.66	thujene	
15.640	25.61	alpha pinene	
16.461	3.30	camphene	
18.004	1.22	beta pinene	
18.300	0.02	sabinene	
18.552	0.94	beta myrcene	
19.243	0.03	delta-3-carene	
19.429	0.07	o-cymene	
19.797	1.25	p-cymene	
20.541	2.56	limonene	
21.017	30.44	1,8-cineole (eucalyptol)	
22.431	1.14	gamma terpinene	
24.095	0.05	terpinolene	
24.506	1.09	linalool	
25.077	0.29	cis-verbenol ??	
27.357	18.44	camphor	
27.975	5.34	borneol	
28.416	0.33	camphol	
28.967	1.08	4-terpineol	
29.193	0.03	p-cymene-8-ol ?	
29.618	2.55	alpha terpineol	
29.959	0.67	camphene ?	
32.657	0.90	linalyl acetate	
33.544	0.02	dihydrolinalool ?	
35.136	0.01	3,8-terpineol hydrate	
35.367	0.01	car-3-en-2-one	
38.320	0.01	geranyl acetate	
39.144	0.01	alpha copaene	
39.652	0.03	beta bourbonene	
40.833	0.01	junipene	
41.343	1.22	beta caryophyllene	
41.697	0.01	unid. 120,161	
42.324	0.01	trans beta farnesene ?	
42.903	0.01	alpha humulene	
44.091	0.01	germacrene	
45.678	0.01	delta cadinene	

FIGURE 1. GC-FID of Essential Oil Labs Premium Select Rosemary Oil

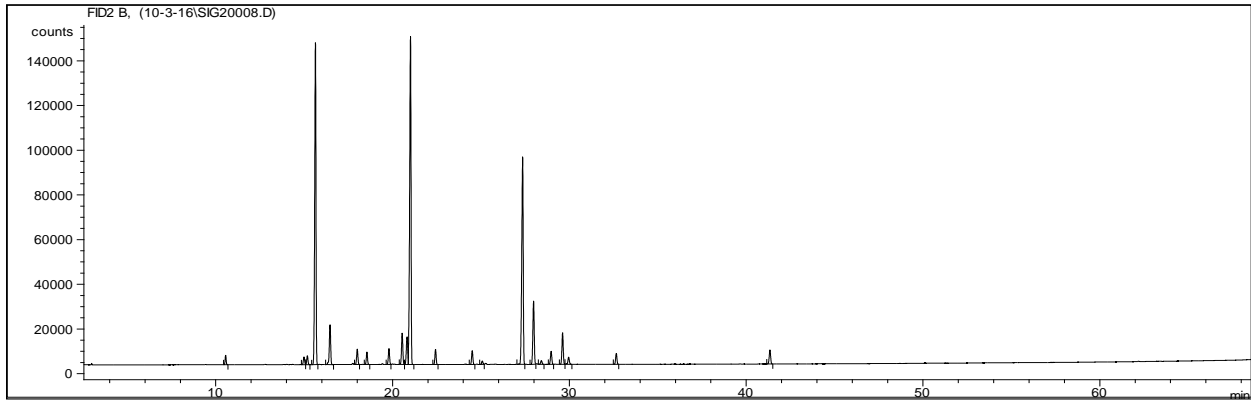


FIGURE 2. GC-MS of Essential Oil Labs Premium Select Rosemary Oil

