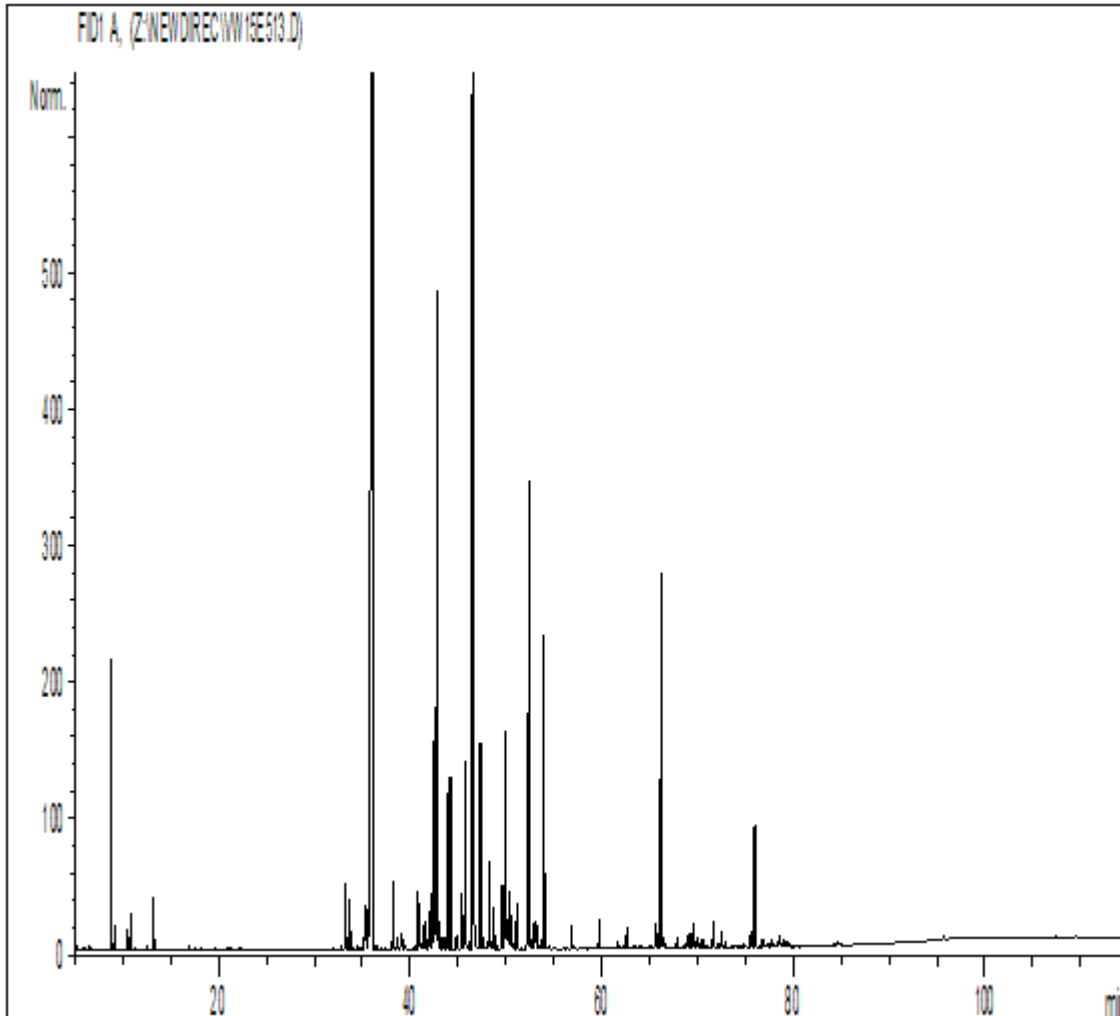




GCMS ANALYSIS

PRODUCT NAME: Valerian Root Essential Oil
DATE: July 20, 2016



Due to volume turnover, this report is not lot specific. It is representative of the quality of this oil produced by the manufacturer of this product. Specific lots may vary slightly as is the case in natural products.





NEW DIRECTIONS AROMATICS

Peak	RT (min)	COMPONENT name	%
1	5,1	ACETONE	0,02
2	6,0	NEOBUTANOL	0,02
3	6,5	BUTANAL, 2-METHYL	0,02
4	6,6	ISOVALERALDEHYDE	0,02
5	8,8	TRICYCLENE	0,01
6	8,9	METHYL ISOVALERATE	1,48
7	9,2	α -PINENE	0,14
8	10,5	α -FENCHENE	0,14
9	10,9	CAMPHENE	0,24
10	12,6	β -PINENE	0,03
11	13,3	METHYL, 3-METHYLPENTANOATE	0,34
12	17,0	LIMONENE	0,04
13	17,6	1,8-CINEOLE	0,01
14	18,2	2-HEXENAL	0,01
15	19,7	γ -TERPINENE	0,02
16	20,8	FURANONE, DIHYDRO-2-METHYL	0,02
17	21,2	p-CYMENE	0,02
18	22,3	ISOAMYL ISOVALERATE	0,03
19	32,0	α ,p-DIMETHYLSTYRENE	0,01
20	32,8	ACETIC ACID	0,03
21	33,3	FURFURAL	0,76
22	33,7	α -CUBEBENE	0,49
23	34,4	SESQUITERPENE	0,06
24	34,8	β -ELEMENE	0,04
25	35,4	β -PATCHOULENE	0,88
26	36,0	α -COPAENE	28,38
27	36,5	SESQUITERPENE	0,05
28	37,3	SESQUITERPENE	0,03
29	38,2	α -GURJUNENE	0,75
30	38,6	HIMACHALENE ISOMER	0,16
31	39,0	β 1-CUBEBENE	0,16
32	39,2	MAALIENE ISOMER	0,12
33	39,5	SESQUITERPENE	0,05
34	40,5	FURFURAL METHYL	0,05
35	40,8	α -SANTALENE	0,89
36	41,2	SESQUITERPENE	0,11
37	41,4	BORNYL ACETATE	0,24
38	41,6	α ,trans-BERGAMOTENE	0,32
39	42,0	β -ELEMENE	0,48
40	42,2	α -GUAIENE	0,61
41	42,5	CALARENE	3,37
42	42,9	β -CARYOPHYLLENE	11,06
43	43,1	GURJUNENE ISOMER	0,28
44	43,3	AROMADENDRENE	0,16
45	43,9	CARYOPHYLLENE ISOMER	1,54

Disclaimer & Caution

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NEW DIRECTIONS AROMATICS

Peak	RT (min)	COMPONENT name	%
46	44,2	GURJUNENE ISOMER	1,78
47	44,8	CADINA-3,5-DIENE	0,16
48	45,4	α -PATCHOULENE	0,64
49	45,6	γ -GURJUNENE	0,22
50	45,8	SEYCHELLENE + ALLO-AROMADENDRENE	2,09
51	46,3	SESQUITERPENE	0,09
52	46,5	ISOVALERIANIC ACID	10,30
53	46,7	ZONARENE	0,35
54	47,3	α -HUMULENE	2,41
55	47,5	γ -SELINENE	0,18
56	47,9	SESQUITERPENE	0,03
57	48,3	γ -MUUROLENE	0,93
58	48,4	CALARENE ISOMER	0,09
59	48,7	LEDENE	0,49
60	49,0	ACIPHYLLENE (GUAJ-4,11-DIENE)	0,04
61	49,6	GERMACRENE D	0,70
62	49,9	α -BULNESENE	2,58
63	50,2	SESQUITERPENE	0,33
64	50,3	β -SELINENE	0,35
65	50,4	α -MUUROLENE	0,32
66	50,6	α -SELINENE	0,33
67	50,8	SESQUITERPENE	0,06
68	51,2	BICYCLOGERMACRENE	0,47
69	52,4	δ -CADINENE	6,56
70	52,6	γ -CADINENE	0,11
71	53,0	SELINADIENE ISOMER	0,34
72	53,2	SESQUITERPENE Mw=202	0,28
73	53,4	COMPONENT Mw=222	0,04
74	53,7	ETHANONE, TRIMETHYLPHENYL	0,11
75	54,0	METHYLVALERIANIC ACID	3,17
76	55,5	CADINA-1,4-DIENE	0,05
77	56,1	SESQUITERPENE Mw=202	0,03
78	56,9	CALAMENENE	0,24
79	57,1	SESQUITERPENE Mw=202	0,03
80	58,4	BENZENE, DIMETHYLETHYL DIMETHOXY	0,01
81	58,6	BORNYL ESTER	0,02
82	59,7	Epi-CUBEBOL	0,29
83	61,7	α -CALACORENE	0,07
84	62,2	HUMELENE EPOXIDE	0,03
85	62,6	CUBEBOL	0,20
86	63,4	VALERANONE ISOMER	0,04
87	65,0	SESQUITERPENOL	0,02
88	65,7	CARYOPHYLLENE EPOXIDE	0,28
89	66,2	Epi-GLOBULOL	4,47
90	66,5	SESQUITERPENOL	0,12

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NEW DIRECTIONS AROMATICS

Peak	RT (min)	COMPONENT name	%
91	67,6	GERMACADIENOL ISOMER	0,03
92	67,8	LEDOL	0,11
93	68,7	Epoxy- δ ,7-HUMULENE	0,05
94	69,0	CARYOPHYLLENOL + GLEENOL	0,12
95	69,3	Epi-CUBENOL	0,14
96	69,6	CUBENOL	0,24
97	69,9	AROMATIC COMPONENT Mw=262	0,07
98	70,1	GLOBULOL	0,07
99	70,6	VIRIDIFLOROL	0,13
100	71,0	SESQUITERPENOL	0,05
101	71,7	10-epi- γ -EUDESMOL	0,29
102	72,1	ROSIFOLIOL	0,06
103	72,5	SPATHULENOL	0,20
104	73,0	SESQUITERPENOL	0,06
105	74,0	BULNESOL ISOMER	0,02
106	74,8	SESQUITERPENOL	0,06
107	75,6	T-CADINOL	0,16
108	76,0	PATCHOULOL	1,40
109	76,1	SESQUITERPENOL	0,08
110	76,8	SESQUITERPENOL + POGOSTOL	0,15
111	77,4	SESQUITERPENOL	0,09
112	77,8	α -CADINOL	0,10
113	78,4	ISOSPATHULENOL	0,07
114	78,7	SESQUITERPENOL Mw=220	0,14
115	79,1	EUDESMA-7-EN-4-OL	0,11
116	79,5	β -NOOTKATOL	0,08
117	80,5	OXYGENED COMPONENT	0,02
118	82,9	AROMATIC COMPONENT	0,03
119	84,3	SESQUITERPENOL Mw=220	0,03
120	84,7	AROMATIC COMPONENT	0,04
121	86,8	SESQUITERPENIC EPOXIDE	0,03
122	95,7	SESQUITERPENOL Mw=220	0,05
123	107,5	AROMATIC COMPONENT	0,03
124	109,5	PALMITIC ACID	0,03
		TOTAL	99,48

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