

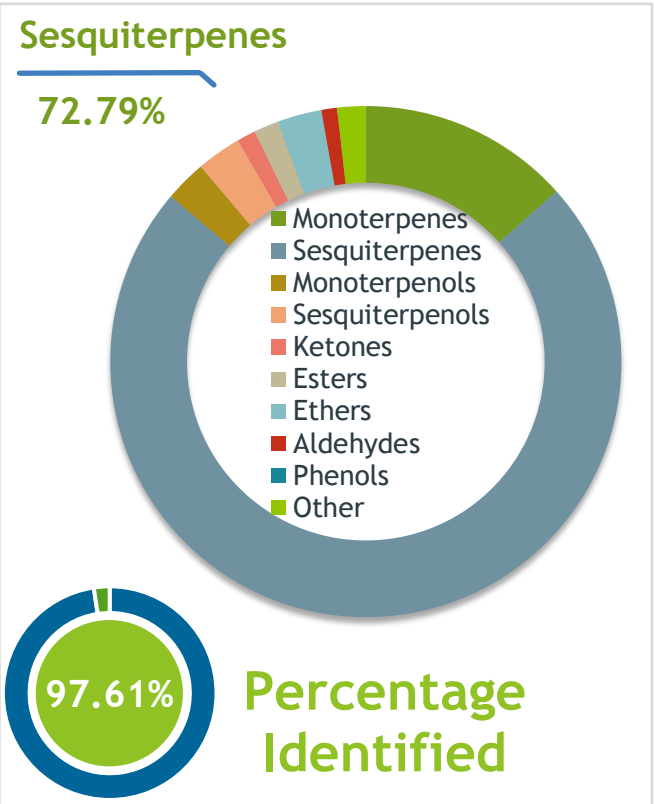
**Client** Nature's FUSIONS ESSENTIAL OILS **Source**



Ginger (*Zingiber officinalis*)  
NF-GING-21-A

**Sample**

Ginger (*Zingiber officinalis*)  
 Batch #:..... NF-GING-21-A  
 Type:..... Essential Oil  
 CAS Number:... 8007-08-7  
 Nature's Fusions



**Client** Nature's FUSIONS ESSENTIAL OILS **Website**



**Primary**

**35.09%** alpha-Zingiberene  
**12.73%** beta-Sesquiphellandrene  
**6.88%** beta-Bisabolene

**Result**



**Conclusion**

No adulterants, diluents, or contaminants were detected via this method. This oil meets the expected profile for genuine Essential Oil of Ginger (*Zingiber officinalis*)

Internal Number: | EVS-4271



**Essential Validation Services**

747 SW 2nd Ave IMB 12 Suite 306  
Gainesville, FL 32601

317.361.5044 |  
<https://essentialvalidationservices.com/>



Monoterpenes	13.4	13.40%
Sesquiterpenes	72.79%	72.79%
Monoterpenols		2.63%
Sesquiterpenols		2.84%
Ketones		1.18%
Esters		1.57%
Ethers		2.80%
Aldehydes		0.99%
Phenols		0.00%
Other		1.80%

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- Essential Oil testing is performed by using qualitative GC-MS. Method: SOP.T.01 Client Method  
 - This report may not be published without the consent of Essential Validation Services.  
 - Chromatograph image may be requested  
 - This report is valid for 1 year from the analyzed date

Client


 Nature's FUSIONS  
ESSENTIAL OILS

Source

Ginger (*Zingiber officinalis*)

NF-GING-21-A

Total Percentage		97.61%		
Number	RT	Area %	Compound Name	Chemical Family
1	4.20	0.23%	Hexanal	Aliphatic Aldehyde
2	6.65	0.09%	2-Heptanone	Aliphatic Ketone
3	7.07	0.07%	2-Heptanol	Aliphatic Alcohol
4	7.74	0.10%	Tricyclene	Monoterpene
5	8.15	1.61%	alpha-Pinene	Monoterpene
6	8.77	5.24%	Camphene	Monoterpene
7	9.32	0.01%	Verbenene	Monoterpene
8	9.71	0.06%	Sabinene	Monoterpene
9	9.87	0.24%	beta-Pinene	Monoterpene
10	10.02	0.01%	Hexanoic acid	Fatty Acid
11	10.25	0.70%	6-Methyl-5-hepten-2-one	Aliphatic Ketone
12	10.45	0.78%	Myrcene	Monoterpene
13	11.04	0.12%	Octanal	Aliphatic Aldehyde
14	11.10	0.23%	alpha-Phellandrene	Monoterpene
15	11.20	0.02%	delta-3-Carene	Monoterpene
16	11.57	0.01%	alpha-Terpinene	Monoterpene
17	11.90	0.05%	para-Cymene	Monoterpene
18	12.15	4.79%	Limonene	Monoterpene
19	12.21	2.69%	1,8-Cineole	Monoterpene Ether
20	13.22	0.01%	Bergamal	Aliphatic Aldehyde
21	13.42	0.02%	gamma-Terpinene	Monoterpene
22	13.98	0.01%	cis-Linalool oxide (5) (furanoid)	Monoterpenol
23	14.64	0.17%	Terpinolene	Monoterpene
24	14.95	0.05%	2-Nonanone	Monoterpene Ketone
25	15.21	0.07%	alpha-Pinene oxide	Monoterpene Ether
26	15.37	0.22%	Linalool	Monoterpenol
27	15.50	0.04%	2-Nonanol	Monoterpenol
28	16.00	0.04%	Perillene	Monoterpene Ether
29	16.15	0.01%	Fenchol	Monoterpenol
30	17.24	0.01%	trans-para-Menth-2-en-1-ol	Monoterpenol
31	17.35	0.08%	Camphor	Monoterpene Ketone
32	17.75	0.10%	Citronellal	Monoterpene Aldehyde
33	18.15	0.02%	Isoborneol	Monoterpenol
34	18.40	0.01%	trans-beta-Terpineol	Monoterpenol
35	18.55	1.01%	Borneol	Monoterpenol

ESSENTIAL VALIDATION SERVICES | 747 SW 2<sup>ND</sup> AVE GAINESVILLE, FLORIDA 32601 | 317-361-5044

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Client


**Nature's FUSIONS**  
 ESSENTIAL OILS

Source

Ginger (*Zingiber officinalis*)

NF-GING-21-A

Number	RT	Area %	Compound Name	Chemical Family
36	18.971	0.08%	Terpinen-4-ol	Monoterpenol
37	19.30	0.02%	para-Cymen-8-ol	Monoterpenol
38	19.66	0.55%	alpha-Terpineol	Monoterpenol
39	20.26	0.19%	Decanal	Aliphatic Aldehyde
40	21.22	0.14%	Citronellol	Monoterpenol
41	21.65	0.07%	Neral	Monoterpene Aldehyde
42	22.08	0.04%	cis-Carveol	Monoterpenol
43	22.27	0.45%	Geraniol	Monoterpenol
44	23.00	0.12%	Geranial	Monoterpene Aldehyde
45	23.31	0.01%	Phellandral	Monoterpene Aldehyde
46	23.68	0.11%	Bornyl acetate	Monoterpene Ester
47	24.16	0.26%	2-Undecanone	Aliphatic Ketone
48	24.64	0.02%	2-Undecanol	Monoterpenol
49	25.93	0.10%	delta-Elemene	Sesquiterpene
50	26.44	0.03%	alpha-Cubebene	Sesquiterpene
51	26.66	0.07%	Citronellyl acetate	Monoterpene Ester
52	27.26	0.26%	Longicyclene	Sesquiterpene
53	27.52	0.14%	(E)-2-Undecenal	Sesquiterpene Aldehyde
54	27.63	0.45%	alpha-Copaene	Sesquiterpene
55	27.88	0.89%	Geranyl acetate	Monoterpene Ester
56	28.25	0.82%	beta-Elemene	Sesquiterpene
57	28.86	0.27%	7-epi-Sesquithujene	Sesquiterpene
58	29.40	0.15%	beta-Caryophyllene	Sesquiterpene
59	29.92	0.61%	gamma-Elemene	Sesquiterpene
60	30.09	0.14%	trans-alpha-Bergamotene	Sesquiterpene
61	30.40	0.05%	(Z)-beta-Farnesene	Sesquiterpene
62	30.73	0.07%	Geranylacetone	Monoterpene
63	30.98	0.70%	(E)-beta-Farnesene	Sesquiterpene
64	31.08	0.24%	allo-Aromadendrene	Sesquiterpene
65	31.69	0.21%	gamma-Selinene	Sesquiterpene
66	31.77	0.28%	gamma-Murolene	Sesquiterpene
67	31.95	1.46%	Germacrene D	Sesquiterpene
68	32.09	6.67%	ar-Curcumene	Sesquiterpene
69	32.26	0.15%	beta-Selinene	Sesquiterpene
70	32.46	0.08%	Valencene	Sesquiterpene
71	32.75	35.09%	alpha-Zingiberene	Sesquiterpene

Client		Source	
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*Ginger (Zingiber officinalis)*  
NF-GING-21-A

72	32.94	0.08%	beta-Cadinene	Sesquiterpene
73	33.12	4.33%	(E,E)-alpha-Farnesene	Sesquiterpene
74	33.20	6.88%	beta-Bisabolene	Sesquiterpene
75	33.39	0.08%	epi-Cubebol	Sesquiterpenol
76	33.53	0.60%	gamma-Cadinene	Sesquiterpene
77	33.63	0.02%	trans-Calamenene	Sesquiterpene
78	33.83	12.73%	beta-Sesquiphellandrene	Sesquiterpene
79	33.91	0.36%	trans-gamma-Bisabolene	Sesquiterpene
80	34.07	0.03%	trans-Cadina-1,4-diene	Sesquiterpene
81	34.68	0.41%	Elemol	Sesquiterpenol
82	34.95	0.24%	cis-Sesquisabinene hydrate	Monoterpene Ester
83	35.26	0.43%	(E)-Nerolidol	Sesquiterpenol
84	35.83	0.07%	Turmerol	Sesquiterpenol
85	36.32	0.24%	trans-Sesquisabinene hydrate	Monoterpene Ester
86	36.88	0.05%	Guaiol	Sesquiterpenol
87	37.24	0.44%	Ledol	Sesquiterpenol
88	37.41	0.13%	10-epi-gamma-Eudesmol	Sesquiterpenol
89	37.88	0.27%	1-epi-Cubenol	Sesquiterpenol
90	38.22	0.02%	T-Cadinol	Sesquiterpenol
91	38.28	0.03%	T-Muurolol	Sesquiterpenol
92	38.62	0.26%	beta-Eudesmol	Sesquiterpenol
93	38.69	0.17%	alpha-Muurolol	Sesquiterpenol
94	39.30	0.09%	beta-Bisabolol	Sesquiterpenol
95	39.92	0.37%	alpha-Bisabolol	Sesquiterpenol
96	43.05	0.02%	1-Pentadecanol	Sesquiterpenol
97	45.13	0.02%	(E,E)-Farnesyl acetate	Sesquiterpene Ester

ESSENTIAL VALIDATION SERVICES | /4/ SW 2<sup>ND</sup> AVE GAINESVILLE, FLORIDA 32601 | 31/-361-5044



## *Essential Validation Services*



### Sample:

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Client: | Nature's Fusions  
Sample: | Ginger Root (Zingiber officinalis)  
Batch # | R119865-03  
CAS Number | 8007-08-7  
Type: | Essential Oil

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### Conclusion:

- No adulterants, diluents, or contaminants were detected via this method.



X 

Validated By:

Essential Validation Services

747 SW 2nd Ave, Gainesville, FL 32601

Phone: 317-361-5044 E-mail: Adam@essentialvalidationservices.com

### Summary of Analyses

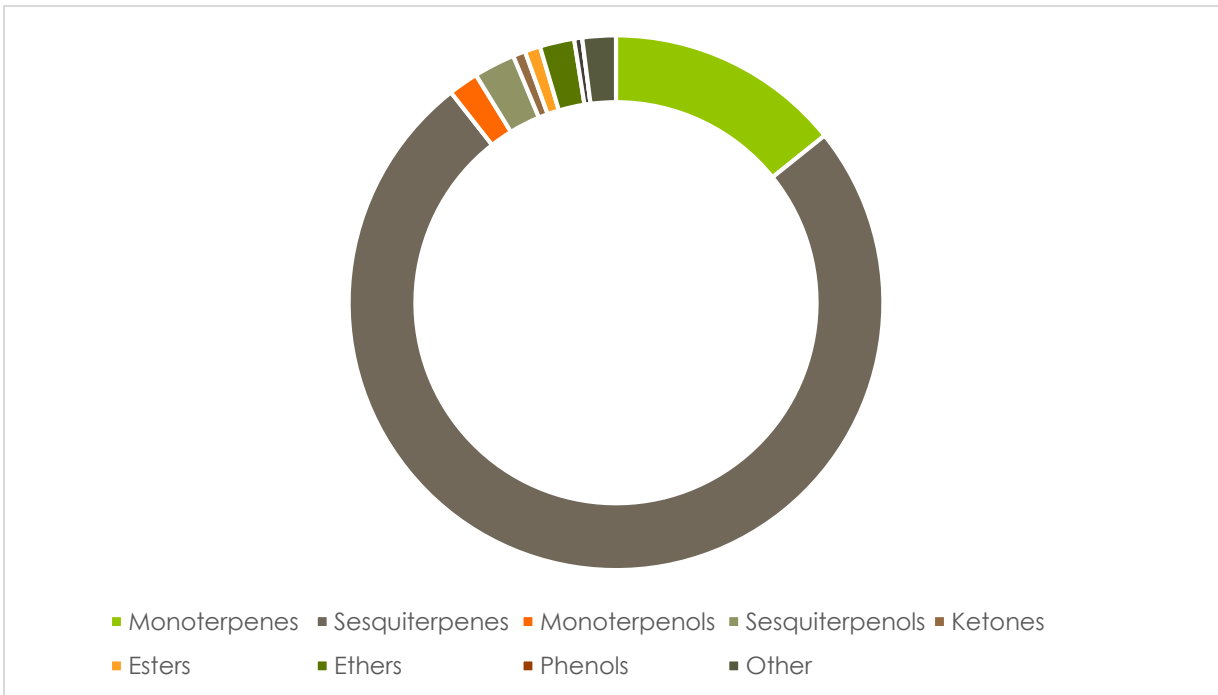
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A fresh sample of Ginger Root (Zingiber officinalis) Essential Oil (10 uL in .5 to .5 mL Hexane + ETOH) was prepared and analyzed via split injection GC/EI-MS.



Main Compounds	Percentages
Zingiberene	27.64%
ar-Curcumene	10.31%
Camphene	5.61%
Limonene	5.36%
1,8-Cineole	2.07%
alpha-Pinene	1.60%
9-epi-β-Caryophyllene	1.11%
Germacrene D	1.02%
Borneol	0.89%
Borneol	0.89%
Myrcene	0.59%
Myrcene	0.59%
alpha-Bourbonene	0.52%

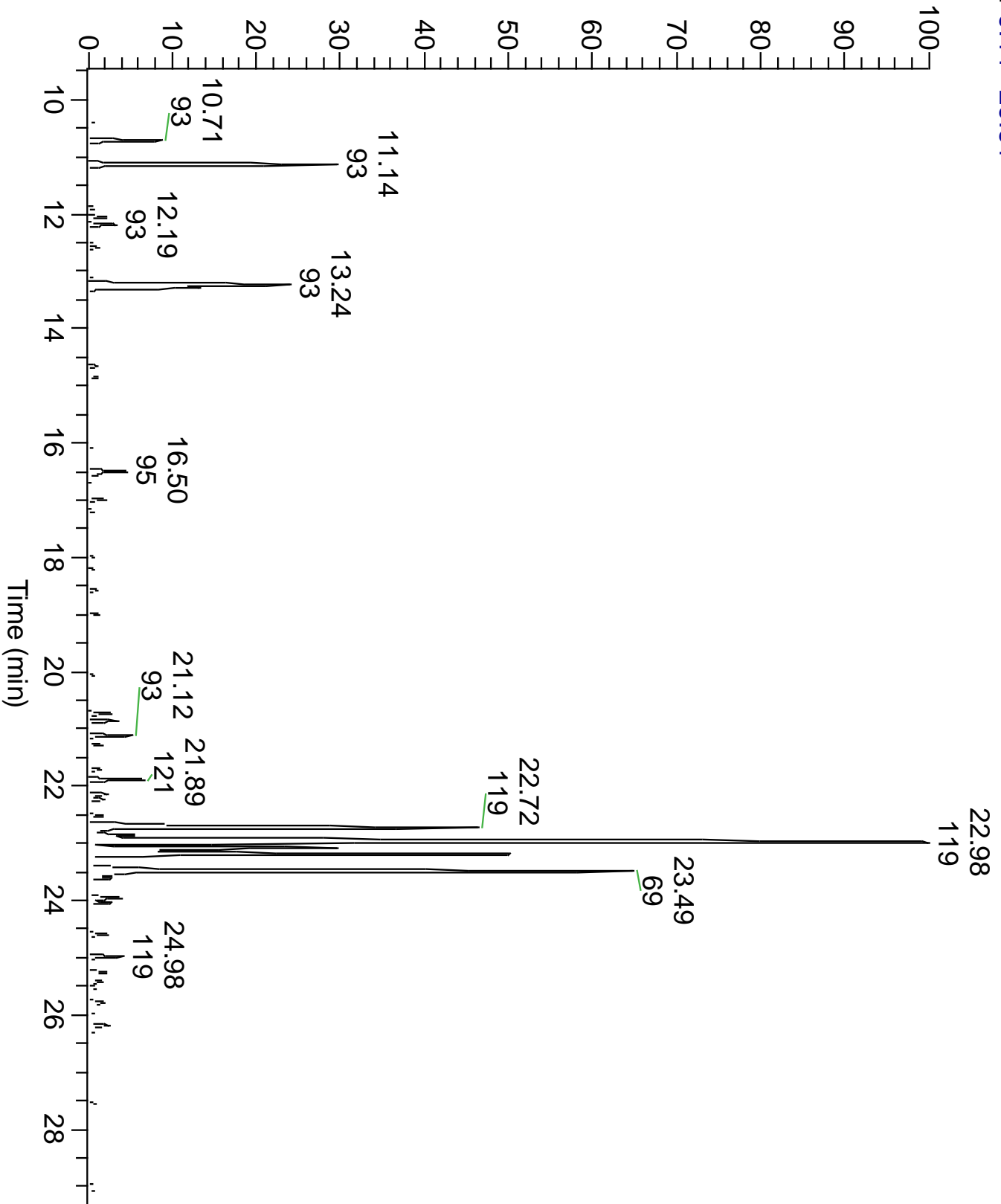
Monoterpenes	Sesquiterpenes	Monoterpenols	Sesquiterpenols	Ketones
14.14%	74.60%	1.80%	2.48%	0.74%
Esters	Ethers	Aldehydes	Phenols	Other
0.93%	2.07%	0.48%	0.21%	2.01%



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RT: 9.44 - 29.61







Total Percentage		99.46%			
Peak Number	RT	Area %	Compound Name	RI	Chemical Family
1	9.47	0.05%	2-Heptanone	891.70	Ketones
2	10.39	0.11%	Tricyclene	923.20	Monoterpenes
3	10.71	1.60%	alpha-Pinene	936.10	Monoterpenes
4	11.14	5.61%	Camphene	953.30	Monoterpenes
5	11.78	0.07%	Sabinene	973.00	Monoterpenes
6	11.89	0.18%	beta-Pinene	977.70	Monoterpenes
7	12.05	0.42%	6-Methyl-5-hepten-2-one	985.90	Ketones
8	12.19	0.59%	Myrcene	989.20	Monoterpenes
9	12.47	0.11%	Octanal	1002.43	Aldehydes
10	12.58	0.24%	alpha-Phellandrene	1004.10	Monoterpenes
11	13.09	0.06%	para-Cymene	1024.30	Monoterpenes
12	13.24	5.36%	Limonene	1029.50	Monoterpenes
13	13.24	Co-Eluting	beta-Phellandrene	1030.00	Monoterpenes
14	13.29	2.07%	1,8-Cineole	1031.80	Ethers
15	14.66	0.19%	Terpinolene	1089.43	Monoterpenes
16	14.78	0.12%	2-Nonanone	1091.86	Ketones
17	14.85	0.25%	Linalool	1099.00	Monoterpenols
18	16.05	0.15%	Camphor	1153.86	Ketones
19	16.50	0.89%	Borneol	1168.71	Monoterpenols
20	16.56	0.16%	UK (Mass 166)	#N/A	#N/A
21	16.72	0.08%	Terpinen-4-ol	1180.57	Monoterpenols
22	16.99	0.38%	alpha-Terpineol	1191.71	Monoterpenols
23	17.19	0.17%	Decanal	1206.57	Aldehydes
24	17.65	0.09%	Citronellol	1230.10	Monoterpenols
25	17.99	0.13%	Citral	1244.12	Monoterpenes
26	18.21	0.11%	Geraniol	1258.29	Monoterpenols
27	18.57	0.20%	Geranial	1275.57	Aldehydes
28	19.00	0.23%	UK (Mass 170)	#N/A	#N/A
29	20.06	0.11%	delta-Elemene	1335.83	Sesquiterpenes
30	20.73	0.52%	alpha-Bourbonene	1375.20	Sesquiterpenes
31	20.86	0.59%	alpha-Copaene	1379.00	Sesquiterpenes
32	21.12	0.89%	beta-Elemene	1388.30	Sesquiterpenes
33	21.28	0.26%	trans-alpha-Bergamotene	1435.00	Sesquiterpenes
34	21.70	0.35%	beta-Caryophyllene	1427.14	Sesquiterpenes
35	21.89	1.11%	9-epi-B-Caryophyllene	1449.00	Sesquiterpenes
36	22.02	0.07%	(Z)-beta-Farnesene	1453.40	Sesquiterpenes
37	22.14	0.42%	(E)-beta-Farnesene	1456.29	Sesquiterpenes
38	22.23	0.38%	UK	#N/A	#N/A
39	22.36	0.11%	alpha-Humulene	1461.43	Sesquiterpenes
40	22.52	0.32%	allo-Aromadendrene	1471.00	Sesquiterpenes
41	22.72	10.31%	ar-Curcumene	1482.71	Sesquiterpenes
42	22.86	1.02%	Germacrene D	1484.71	Sesquiterpenes

