



Product Name Valerian Root Essential Oil

Botanical Name	Valeriana wallichii
Country of Origin	India
Product Code	VRI/NE/01-213
Document No	GCMS-01/213

Ingredients	Strength (%)
ISOVALERIC ACID	14.8-19.2
MAALIOL	18.3
β -GURJUNENE	9.4
3-METHYLVALERIC ACID	4.6-8.2
PATCHOULOL	4.3-9.5
β -CARYOPHYLLENE	2.6
SEYCHELLENE	2.0
α -GUAIENE	2.0
ALLO-AROMADENDRENE	1.3
7 epi- α -SELINENE	1.1

Analysis Method	SOP/VRI/QC-001-15, "Analysis of the composition of a liquid essential oil by GC" and Record maintained as per R/SOP/VRI/QA-076
Analysts	Mr. Saurav Shukla, Mr. Ajay Mishra
Analysis date	17-01-2021
Responsibility	Head QA & General Manager

*The Result and stats in the document is confidential and shared with only after approval of Head QA and General Manager.

*The report is not a direct evidence about the product quality. The quality of the product is determined and validated at the time of Batch production.

*The report is an estimation of the ingredients found in the Oils manufactured at Venkatraman Industries hence can not be marked as Label Claim. Claims are provided separately after identifying minimum threshold value of each ingredient.



IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Acetic acid	0.43	533	0.04	0.04	1411	6.45	Aliphatic acid
Isovaleral	0.51	566	0.02	0.02	866	0.60	Aliphatic aldehyde
2-Methylbutyral	0.53	575	0.02	0.02	859	0.59	Aliphatic aldehyde
Methyl isovalerate	1.07	767	0.74	0.70	983	1.06	Aliphatic ester
Furfural	1.72	840	0.51	0.51	1415	6.53	Furan
Ethyl isovalerate	1.85	852	0.04	0.04	1035	1.45	Aliphatic ester
Methyl 3-methylvalerate	2.24	886	0.10	0.11	1100	2.02	Aliphatic ester
Tricyclene	2.60	913	0.01	0.01	965	0.97	Monoterpene
α -Thujene	2.73	921	0.02	0.02	997	1.12	Monoterpene
α -Pinene	2.79	925	0.34	0.38	986	1.07	Monoterpene
α -Fenchene	3.03	940	0.28	0.32	1019	1.30	Monoterpene
Camphene	3.05	941	0.56	0.47	1025	1.36	Monoterpene
Isovaleric acid	3.41	964	19.18	20.01	1618	12.43*	Aliphatic acid
5-Methylfurfural	3.50	970	0.08				Furan
β -Pinene	3.59	976	0.10	0.08	1064	1.70	Monoterpene
para-Cymene	4.44*	1027	0.07	0.04	1228	3.67	Monoterpene
Limonene	4.44*	1027	[0.07]	0.06	1158	2.74	Monoterpene
3-Methylvaleric acid	4.58	1035	4.55	4.74	1739	18.70	Aliphatic acid
γ -Terpinene	4.98	1058	0.02	0.02	1207	3.37	Monoterpene
Isoamyl isovalerate	5.91*	1109	0.15	0.04	1269	4.26	Aliphatic ester
Unknown (m/z = 93, 41 (51), 71 (41), 69 (40)... 136 (14))	5.91*	1109	[0.15]				Oxygenated monoterp.
Borneol	7.37	1175	0.11	0.19	1638	13.35*	Monoterp. alcohol
Thymol methyl ether	8.83	1225	0.05	0.22	1543	9.70	Monoterp. ether
Carvacrol methyl ether	9.53	1244	0.03	0.05	1551	9.97	Monoterp. ether
Bornyl acetate	10.80	1278	0.79	0.69	1521	9.00	Monoterp. ester
Cycloisositivene	14.20	1345	0.01	0.61	1430	6.85*	Sesquiterpene
α -Copaene	14.73	1355	0.04	0.05	1444	7.13	Sesquiterpene
β -Patchoulene	14.91	1358	0.67	[0.61]	1430	6.85*	Sesquiterpene
β -Elemene	15.85	1374	0.39	0.40	1536	9.47	Sesquiterpene
α -Gurjunene	16.40	1384	0.32	0.35	1478	7.85	Sesquiterpene
Isocaryophyllene	16.57	1387	0.14	0.13	1509	8.60	Sesquiterpene
β -Maaliene?	16.74	1390	0.07				Sesquiterpene
α -Santalene	16.99	1394	0.24	0.23	1515	8.79	Sesquiterpene
γ -Maaliene	17.20	1398	0.20				Sesquiterpene
β -Gurjunene	17.92*	1408	12.56	9.44	1532	9.34	Sesquiterpene
β -Caryophyllene	17.92*	1408	[12.56]	2.55	1528	9.21	Sesquiterpene
trans- α -Bergamotene	17.92*	1408	[12.56]	0.73	1540	9.62	Sesquiterpene



α-Maaliene	18.08	1410	0.38				Sesquiterpene
α-Guaiene	18.65	1417	2.02	2.16	1539	9.58	Sesquiterpene
Seychellene	18.89	1421	1.97	3.13	1558	10.19*	Sesquiterpene
α-Patchoulene	19.50*	1429	3.50	[3.13]	1558	10.19*	Sesquiterpene
γ-Patchoulene	19.50*	1429	[3.50]	3.28	1571	10.60*	Sesquiterpene
allo-Aromadendrene	19.72*	1432	1.97	[3.28]	1571	10.60*	Sesquiterpene
α-Humulene	19.72*	1432	[1.97]	0.61	1602	11.65	Sesquiterpene
δ-Patchoulene	19.91	1434	0.64	0.35	1561	10.30	Sesquiterpene
Unknown, not seen in MS	20.17	1438	3.83	3.64	1582	10.96	Sesquiterpene
γ-Gurjunene	21.27	1452	0.35	[20.01]	1618	12.43*	Sesquiterpene
δ-Selinene	22.21	1464	0.26				Sesquiterpene
β-Selinene	22.42	1467	0.69	[0.19]	1638	13.35*	Sesquiterpene
Viridiflorene	22.81	1472	0.88	0.66	1625	12.74	Sesquiterpene
Aciphyllene	23.22	1478	0.42	0.20	1635	13.24	Sesquiterpene
δ-Guaiene	23.65	1483	9.15	9.54	1649	13.89	Sesquiterpene
7-epi-α-Selinene	24.50	1494	0.77	1.49	1679	15.32*	Sesquiterpene
γ-Cadinene	24.74	1498	0.09	0.15	1673	15.02	Sesquiterpene
δ-Cadinene	25.27*	1504	1.10	0.34	1683	15.49	Sesquiterpene
Kessane	25.27*	1504	[1.10]	[1.49]	1679	15.32*	Sesquiterp. ether
Maaliol isomer?	27.87	1535	0.31				Sesquiterp. alcohol
Maaliol?	29.33	1552	18.32	17.77	1909	30.27	Sesquiterp. alcohol
γ-Asarone	32.28	1588	0.04	0.06	2202	41.87	Phenylpropanoid
Selin-11-en-4-α-ol	35.23	1640	0.59	0.28	2152	40.49	Sesquiterp. alcohol
Patchoulol	35.55*	1646	5.26	4.31	2047	37.19	Sesquiterp. alcohol
Pogostol	35.55*	1646	[5.26]	0.43	2112	39.39	Sesquiterp. alcohol
Kessanyl acetate?	44.07	1889	0.35				Sesquiterp. ester
Unknown (m/z = 68, 93 (96), 67 (80), 81 (70)... 257 (17), 272 (5))	44.88	1920	0.23				
Unknown (m/z = 125, 96 (46), 43 (37), 159 (22)...)	46.94	2001	0.47				
Total identified			91.51%	88.03%			

*: Two or more compounds are coeluting on this column.

[xx]: Duplicate percentage due to coelutions, not taken account in the identified total.

†: Peaks apexes were resolved, but peaks overlapped and were summed for analysis

The Detailed Examination of the Oil Can be found in the Product Specification Sheet of COA. (Issued by QA and Verified by General Manager)



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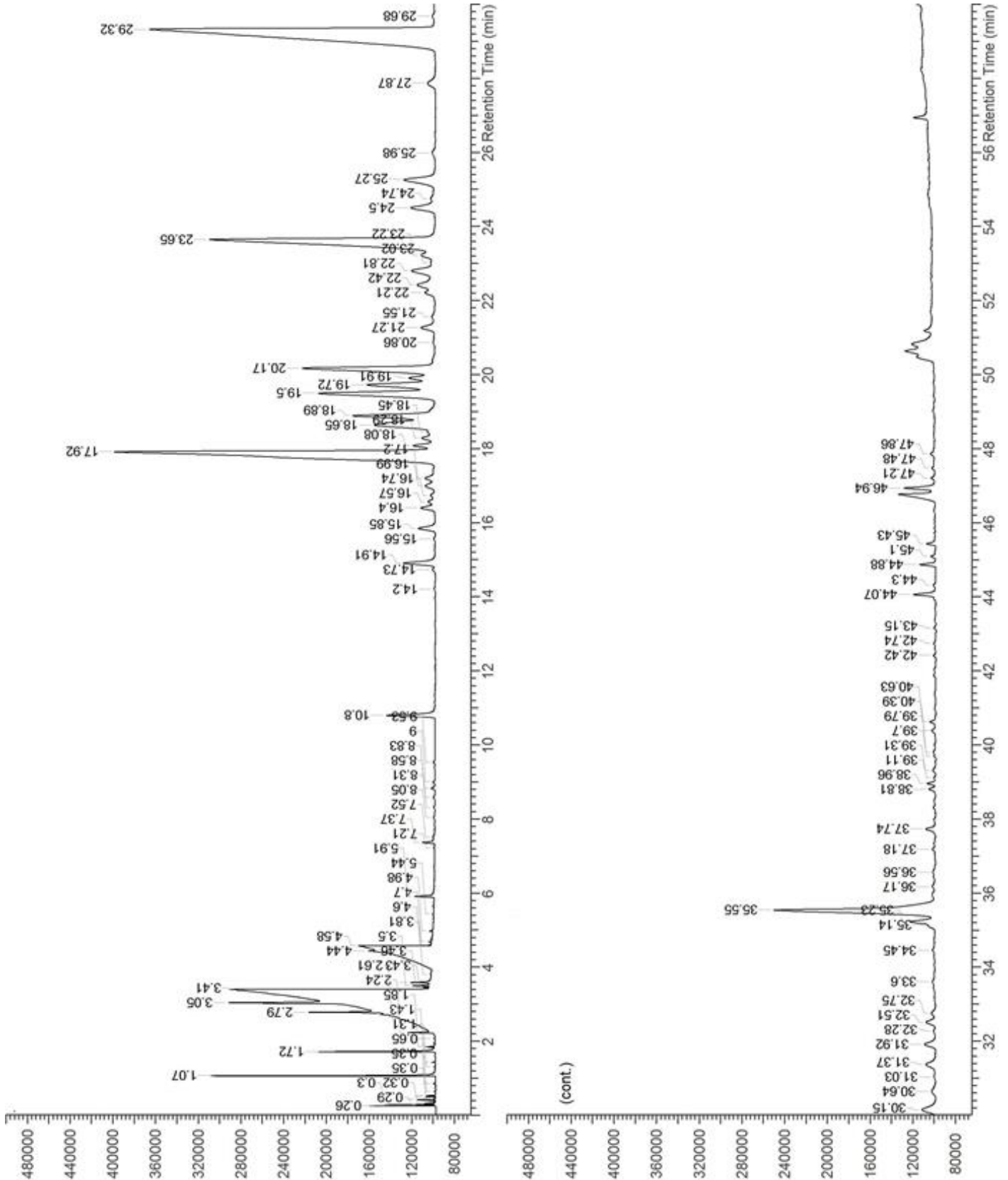
IEC No.: 0611008513

GST No.: 09AVOPS2676K1ZN

Manufacturing Plant.: Talaya Chauki, Kannauj-209725, India

Corporate Office.: C1-310, MIG Indira Nagar, Kanpur-208026, India

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