



Certificate of Analysis

This a Certificate of Analysis of Opoponax Essential Oil extracted carefully, gradually and to completion by hydrodistillation of the pure resin of *Commiphora guidottii*, growing wildly in the arid and semi-arid bushlands of the Somali Region of Ethiopia. The analysis results are for batch HCGGo002 distilled on August 2024 with a retest date of July 2027.

Part 1: Physical Analysis Results

Physical Characteristic	Results
Appearance	Clear, mobile liquid
Colour	Pale Green to Yellowish-green to Yellow
Odour	Characteristic of the sweet-myrrh resin

Part 2: GCMS Analysis — Assay

The essential oil was analyzed by gas chromatography using a Hewlett-Packard 6890 Gas Chromatograph (Palo Alto, CA, USA) equipped with a Flame Ionization Detector (FID) and an Electronic Pressure Control (EPC) Injector. DP-5 column (30 m × 0.25 mm, 0.25 µm film thicknesses) were used. The carrier gas was N₂ with a flow rate of 1.6 mL/min and the split ratio was 60:1. The analysis was performed using the following temperature program: the oven temperature was kept constant at 35°C for 10 minutes, and then increased from 35°C to 205°C at the rate of 3°C/min, and then again kept constant at 205°C for 10 minutes. The Injector and Detector temperatures were held, respectively, at 250°C and 300°C. The volume injected was 1 µL.

The GC-MS analysis was performed on a Gas Chromatograph HP 5890 (II) interfaced with a HP 5972 Mass Spectrometer with electron impact ionization (70 eV). A HP-5MS capillary column (30 m × 0.25 mm, 0.25 µm film thickness) was used. The column temperature was programmed from 50°C to rise to 240°C at a rate of 5°C/min. The carrier gas was helium with a flow rate of 1.2 mL/min; split ratio was 60:1. Scan time and mass range were 1s and 40–300 respectively. The analysis was performed in triplicate and mean area determined from which the total abundance was determined.

Part 2: GCMS Analysis — Compound Identification

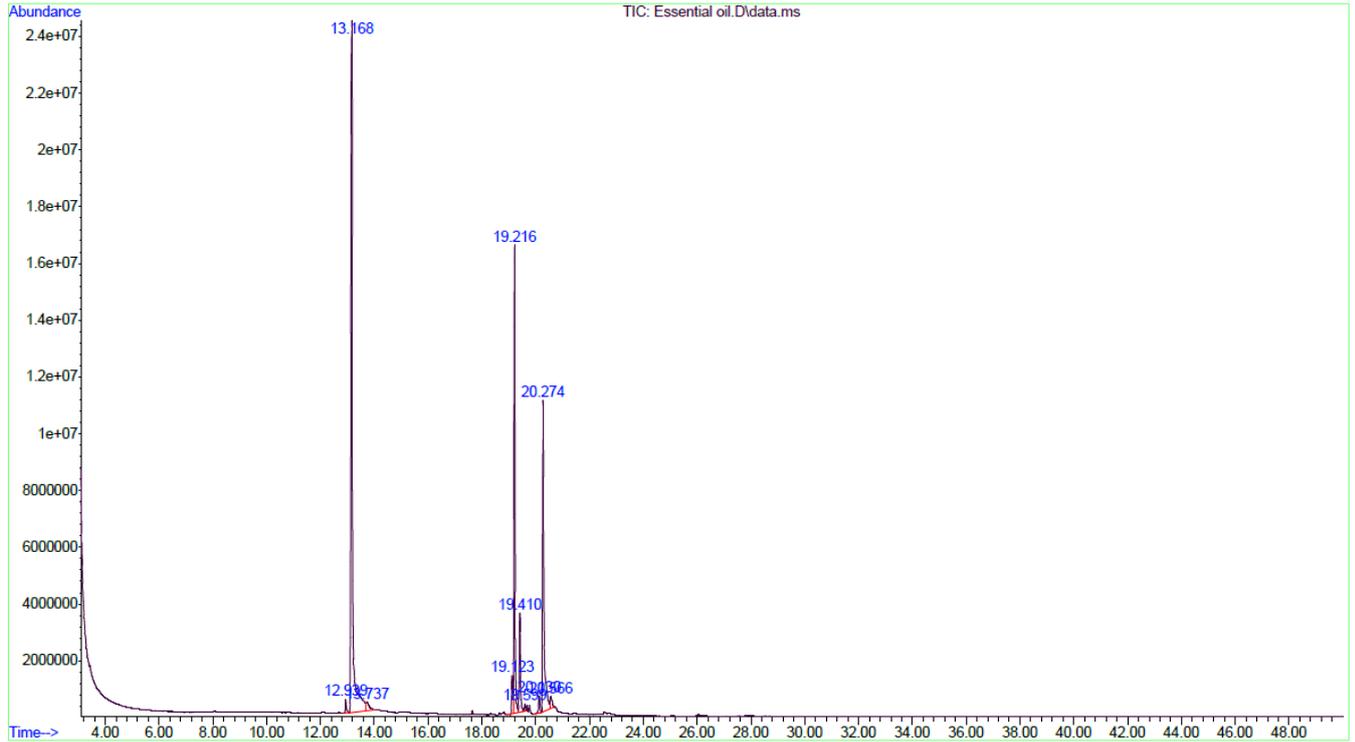
The identification of the essential oil constituents was based on the comparison of their retention indices relative to (C₈–C₂₂) -alkanes with those of literature or with those of authentic compounds available in our laboratory. Further identification was made by matching their recorded mass spectra with those stored in the Wiley/NBS mass spectral library of the GC-MS data system and other published mass spectra



Certificate of Analysis

Part 2: GCMS Analysis — Chromatogram Results

The following is the chromatogram showing Abundance of the constituents against their retention times:





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Part 2: GCMS Analysis — Compositional Analysis Results

RT	Natural Organic Components	CAS	Mean Area	Abundance (%)
10.77	α -Pinene	80-56-8	473441	0.02
12.05	Myrcene	123-35-3	883106.6667	0.05
12.34	α -Thujene	2867-05-2	343484.6667	0.02
12.70	(2Z,4E)-3,7-Dimethyl-2,4-octadiene	1000374-08-4	1157201	0.06
12.79	I-Limonene	5989-54-8	705608.6667	0.04
12.94	(Z)- β -Ocimene	3338-55-4	14264619	2.26
13.17	(E)- β -Ocimene	3779-61-1	849287638	44.72
14.93	allo-Ocimene	673-84-7	333222.6667	0.02
18.33	α -Longipinene	5989-08-2	1960093	0.10
18.65	Zonarene	41929-05-9	2530970.333	0.13
18.82	γ -Muurolene	30021-74-0	5892373.667	0.31
19.12	(Z)- α -Bergamotene	18252-46-5	32444143.67	1.71
19.22	α -Santalene	512-61-8	399386114.3	21.63
19.41	(Z)- β -Bergamotene	18252-46-5	109145448.7	5.75
19.60	β -Santalene	511-59-1	12965204.67	0.68
19.68	β -Sesquiphellandrene	20307-83-9	9796514	0.52
20.13	Germacrene D	23986-74-5	24456250	1.29
20.27	(Z)- α -Bisabolene	70332-15-9	370326617.7	19.50
22.43	allo-Aromadendrene	25246-27-9	2108318.667	0.11
22.56	4,7-Methano-1H-indene, octahydro-	6004-38-2	6722547	0.35
22.71	(E)- α -Bergamotene	17699-05-7	7427583.333	0.39
26.07	Ethyl hexadecanoate	628-97-7	5114583.667	0.27
27.96	Ethyl octadecanoate	111-61-5	167712.3333	0.01

The Operations Manager,

Abass

Abass Ali, RSc.