

# P Boswellia sacra

## Common Name(s)

arbol del incensio (Sp.), Frankincense, Oliban (Sp.), Olibanum, Olibanum Tree, Weihrauchbaum (Ger.), Weihrauchpflanze (Ger.)

## How Used

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Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	(S)-1-ISOPROPYL-4,8,12-TRIMETHYLCYCLOTETRADECA-3E,7,11E-TRIEN-1-OL	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	1,8-CINEOL	Resin Essent. Oil	--	1.6	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0	1-OCTANOL	Resin, Exudate, Sap	3810	12700	
0	1-OCTYL-ACETATE	Resin, Exudate, Sap	18000	60000	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	11-KETO-ALPHA-BOSWELLIC-ACID	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	11-KETO-BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	253.3 -1	Han, B. H., Kim, K. M., Park, J. H., Park, M. H., Kim, T. H., Han, Y. N. 1985. Studies on Triterpenoid Corticomimetics (III). Arch. Pharm. Res. 8 4: 213-220.
0	3-ACETYL-BETA-BOSWELLIC-ACID	Latex Exudate	--	--	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
0	3-ACETYL-BETA-BOSWELLIC-ACID-METHYL-ESTER	Resin, Exudate, Sap	--	--	
0	4,23-DIHYDROROBURIC-ACID	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	4-O-METHYL-GLUCURONIC-ACID	Latex Exudate	--	--	

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	4-O-METHYL-GLUCURONIC-ACID	Resin, Exudate, Sap	--	--	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
4	ACETYL-11-KETO-BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	166.7	Han, B. H., Kim, K. M., Park, J. H., Park, M. H., Kim, T. H., Han, Y. N. 1985. Studies on Triterpenoid Corticomimetics (III). Arch. Pharm. Res. 8 4: 213-220.
0	ACETYL-ALPHA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	2166.7	Han, B. H., Kim, K. M., Park, J. H., Park, M. H., Kim, T. H., Han, Y. N. 1985. Studies on Triterpenoid Corticomimetics (III). Arch. Pharm. Res. 8 4: 213-220.
5	ACETYL-BETA-BOSWELLIC-ACID	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
5 ACETYL-BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	4333	Han, B. H., Kim, K. M., Park, J. H., Park, M. H., Kim, T. H., Han, Y. N. 1985. Studies on Triterpenoid Corticomimetics (III). Arch. Pharm. Res. 8 4: 213-220.
0 ALLO-AROMADENDRENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
10 ALPHA-BOSWELLIC-ACID	Latex Exudate	--	--	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
10 ALPHA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	106.7	Han, B. H., Kim, K. M., Park, J. H., Park, M. H., Kim, T. H., Han, Y. N. 1985. Studies on Triterpenoid Corticomimetics (III). Arch. Pharm. Res. 8 4: 213-220.
0 ALPHA-CALACORENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ALPHA-COPAENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	ALPHA-CUBEBENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	ALPHA-GUAIENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	ALPHA-GURJUNENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
2	ALPHA-HUMULENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	ALPHA-MUUROLENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference	Citation
0	ALPHA-MUUROLENE	Resin, Exudate, Sap	--	66800		Chiavari, G., Gtalletti, G. C., Piccaglia, R., Mohamud, M. A. 1991. Differentiation Between Resins Boswellia carterii and Boswellia frereana (Frankincense) of Somali Origin. J. Essent. Oil Res. 3 (3):185-186.
11	ALPHA-PHELLANDRENE	Essential Oil	--	24000	-0.1285055418541296	
11	ALPHA-PHELLANDRENE	Resin, Exudate, Sap	--	0.6		Chiavari, G., Gtalletti, G. C., Piccaglia, R., Mohamud, M. A. 1991. Differentiation Between Resins Boswellia carterii and Boswellia frereana (Frankincense) of Somali Origin. J. Essent. Oil Res. 3 (3):185-186.
28	ALPHA-PINENE	Essential Oil	--	410000	3.047713203652598	Wang, W., Zhu, Y. X., Liu, L. Z., Ling, D. K., Qin, X. L., Tian, J. G. 1993. Analysis of the Chemical Constitutents of Essential Oil of Boswellia carterii Birdwood from Somali. Yaowu Fenxi Zazhi 13 3: 170-173.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
28	ALPHA-PINENE	Resin, Exudate, Sap	1050	71600	-1.0059071766104755
28	ALPHA-PINENE	Resin Essent. Oil	--	35000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
3	ALPHA-SELINENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
13	ALPHA-TERPINENE	Resin Essent. Oil	--	--	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
23	ALPHA-TERPINEOL	Essential Oil	--	29000	0.5112270450486063 Wang, W., Zhu, Y. X., Liu, L. Z., Ling, D. K., Qin, X. L., Tian, J. G. 1993. Analysis of the Chemical Constitutents of Essential Oil of Boswellia carterii Birdwood from Somali. Yaowu Fenxi Zazhi 13 3: 170-173.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
23	ALPHA-TERPINEOL	Resin Essent. Oil	--	1000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0	ALPHA-TERPINYL-ACETATE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	ALPHA-THUJENE	Resin, Exudate, Sap	--	192300 1	Chiavari, G., Gtalletti, G. C., Piccaglia, R., Mohamud, M. A. 1991. Differentiation Between Resins Boswellia carterii and Boswellia frereana (Frankincense) of Somali Origin. J. Essent. Oil Res. 3 (3):185-186.
0	ALPHA-THUJENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	ALPHA-YLANGENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.



Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
7	ANISALDEHYDE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	ARABIN	Resin, Exudate, Sap	--	--	
0	ARABINOSE	Latex Exudate	--	--	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
3	AROMADENDRENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	BASSORIN	Latex Exudate	50000	80000	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BETA-1-CADINENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
9	BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	426.7	-1.0000000000000002
0	BETA-BOURBONENE	Resin, Exudate, Sap	--	10000	Chiavari, G., Gtalletti, G. C., Piccaglia, R., Mohamud, M. A. 1991. Differentiation Between Resins Boswellia carterii and Boswellia frereana (Frankincense) of Somali Origin. J. Essent. Oil Res. 3 (3):185-186.
0	BETA-BOURBONENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	BETA-CARYOPHYLLENE	Essential Oil	--	--	

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BETA-CARYOPHYLLENE	Resin, Exudate, Sap	--	49100	Chiavari, G., Gtalletti, G. C., Piccaglia, R., Mohamud, M. A. 1991. Differentiation Between Resins Boswellia carterii and Boswellia frereana (Frankincense) of Somali Origin. J. Essent. Oil Res. 3 (3):185-186.
0	BETA-COPAENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
5	BETA-ELEMENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	BETA-GUAIENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	BETA-HUMULENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	BETA-PHELLANDRENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
13	BETA-PINENE	Resin Essent. Oil	--	4000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
3	BETA-SELINENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	BETA-YLANGENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
35	BORNEOL	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BORNEOL-ACETATE	Resin Essent. Oil	--	1.1	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
4	CADINENE	Essential Oil	--	--	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
0	CALAMENENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
9	CAMPHENE	Resin Essent. Oil	--	0.7	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
19	CARVONE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
31	CARYOPHYLLENE	Essential Oil	--	--	

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
8	CARYOPHYLLENE-OXIDE	Resin, Exudate, Sap	--	32900	Chiavari, G., Gtalletti, G. C., Piccaglia, R., Mohamud, M. A. 1991. Differentiation Between Resins Boswellia carterii and Boswellia frereana (Frankincense) of Somali Origin. J. Essent. Oil Res. 3 (3):185-186.
0	CEMBRENE	Resin Essent. Oil	--	14000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0	CIS-BETA-OCIMENE	Resin Essent. Oil	--	2000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0	CITRONELLOL-ACETATE	Resin Essent. Oil	--	--	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4 D-BORNEOL	Essential Oil	--	--	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
0 DECAN-1-OL	Resin Essent. Oil	--	4000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0 DECAN-1-OL-ACETATE	Resin Essent. Oil	--	3000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
9 DELTA-CADINENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0 DELTA-ELEMENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	DELTA-GUAIENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
7	DIPENTENE	Essential Oil	3925	3925	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
0	EO	Latex Exudate	30000	100000	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
1	ETHYL-LAURATE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	FARNESANE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
2	FARNESENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.



Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
17	FARNESOL	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
1	GALACTOSE	Latex Exudate	--	--	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
0	GAMMA-CADINENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	GAMMA-MUUROLENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
11	GAMMA-TERPINENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
11	GAMMA-TERPINENE	Resin Essent. Oil	--	1000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0	GERANIOL-ACETATE	Resin Essent. Oil	--	3000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0	HEXAN-1-OL-ACETATE	Resin Essent. Oil	--	1000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0	HEXAN-1-OL-HEXANOATE	Resin Essent. Oil	--	1000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	HEXYL-OCTANOATE	Resin Essent. Oil	--	2000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0	HOMOMYRCENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	INCENSOLE	Resin Essent. Oil	--	27000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0	INCENSOLE	Essential Oil	--	--	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
0	INCENSOLE	Resin, Exudate, Sap	810	2700	

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0 INCENSOLE-ACETATE	Essential Oil	--	--	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
0 INCENSOLE-OXIDE	Resin, Exudate, Sap	--	--	
0 INCENSOLE-OXIDE	Essential Oil	--	--	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
0 ISOCEMBRENE	Resin, Essent. Oil	--	18000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	ISOINCENSOLE	Resin Essent. Oil	--	8000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0	ISOINCENSOLE	Essential Oil	--	--	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
0	ISOINCENSOLE-OXIDE	Resin, Exudate, Sap	--	--	Forcellese, M. L., Nicoletti, R., Petrossi, U. 1972. The Structure of Isoincensole-Oxide. Tetrahedron 28: 325-.
0	ISOINCENSOLE-OXIDE	Essential Oil	--	--	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
0	L-ALPHA-PINENE	Essential Oil	--	--	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
60	LIMONENE	Essential Oil	--	128000	-0.00031356999051470447
60	LIMONENE	Resin Essent. Oil	--	1.7	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
60	LIMONENE	Resin, Exudate, Sap	--	78200	Chiavari, G., Gtalletti, G. C., Piccaglia, R., Mohamud, M. A. 1991. Differentiation Between Resins Boswellia carterii and Boswellia frereana (Frankincense) of Somali Origin. J. Essent. Oil Res. 3 (3):185-186.
53	LINALOOL	Resin Essent. Oil	--	20000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
3	MUCILAGE	Resin, Exudate, Sap		120000	200000
3	MUCILAGE	Latex Exudate	--	120000	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
22	MYRCENE	Resin Essent. Oil	--	2000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
22	MYRCENE	Essential Oil	--	36000	0.02796719068873602
0	NEROL-ACETATE	Resin Essent. Oil	--	--	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0	O-ACETYL-BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	--	Hairfield, E. M., Hairfield Jr., H. H., McNair, H. M. 1989. GC, GC/MS, and TLC of Beta-Boswellic Acid and O-Acetyl-Beta-Boswellic Acid from <i>B. serrata</i> , <i>B. carteii</i> , and <i>B. papyrifera</i> . J. Chromatogr. Sci. 27 3: 127-133.

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0 O-METHYL-ANISOLE	Resin Essent. Oil	--	--	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0 OCTAN-1-OL	Resin Essent. Oil	--	127000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0 OCTAN-1-OL-ACETATE	Resin Essent. Oil	--	600000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
0 OCTANOL	Essential Oil	--	--	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.



Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference	Citation
0	OCTYL-ACETATE	Essential Oil	--	--		Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
16	P-CYMENE	Essential Oil	3925	87000	0.08487859835357342	
16	P-CYMENE	Resin, Exudate, Sap	--	35300	1	Chiavari, G., Gtalletti, G. C., Piccaglia, R., Mohamud, M. A. 1991. Differentiation Between Resins <i>Boswellia carterii</i> and <i>Boswellia frereana</i> (Frankincense) of Somali Origin. J. Essent. Oil Res. 3 (3):185-186.
16	P-CYMENE	Resin, Essent. Oil	--	0.5		Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of <i>Olibanum</i> . Plant Med. 53 (4): 382-384.
0	P-MENTHA-1,4-DIEN-8-OL	Resin, Exudate, Sap	--	--		Maupetit, P. 1985. New Constituents in <i>Olibanum</i> Resinoid and Essential Oil. Perfum Flavor 9 6: 19-37.

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference	Citation
0	P-MENTHA-1,5-DIEN-7-OL	Essential Oil	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
4	PHELLANDRENE	Essential Oil	--	--		Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
0	RESIN	Latex Exudate	600000	700000	0.898643077437173	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
5	SABINENE	Resin Essent. Oil	--	3000		Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
5	SABINENE	Essential Oil	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
5	SABINENE	Resin, Exudate, Sap	--	94400	Chiavari, G., Gtalletti, G. C., Piccaglia, R., Mohamud, M. A. 1991. Differentiation Between Resins <i>Boswellia carterii</i> and <i>Boswellia frereana</i> (Frankincense) of Somali Origin. <i>J. Essent. Oil Res.</i> 3 (3):185-186.
0	SELINA-4,11-DIENE	Essential Oil	--	--	Lawrence, B.M., <i>Essential Oils</i> 1976-1977, <i>Essential Oils</i> 1978, <i>Essential Oils</i> 1979-1980.
0	SELINA-5,7(11)-DIENE	Resin, Exudate, Sap	--	--	Maupetit, P. 1985. New Constituents in <i>Olibanum Resinoid</i> and <i>Essential Oil</i> . <i>Perfum Flavor</i> 9 6: 19-37.
0	TERPENES	Essential Oil	785000	785000	Guenther, E., <i>The Essential Oils</i> , 6 volumes, D. van Nostrand, New York, 1948-1952.
23	TERPINEN-4-OL	Essential Oil	--	--	Lawrence, B.M., <i>Essential Oils</i> 1976-1977, <i>Essential Oils</i> 1978, <i>Essential Oils</i> 1979-1980.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
23	TERPINEN-4-OL	Resin Essent. Oil	--	2000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
9	TERPINOLENE	Resin Essent. Oil	--	1000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
9	TERPINOLENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
2	THUJOPSENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	TRANS-ALPHA-BERGAMOTENE	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	TRANS-BETA-OCIMENE	Resin Essent. Oil	--	13000	Abdel Wahab, S. M., Aboutabl, E. A., El-Zalabani, S. M., Fouad, H. A., De Pooter, H. L., El-Fallaha, B. 1987. The Essential Oil of Olibanum. Plant Med. 53 (4): 382-384.
2	TRANS-PINOCARVEOL	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	TRANS-VERBENOL	Essential Oil	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	VERBENOL	Essential Oil	--	--	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
5	VERBENONE	Essential Oil	--	--	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.