

**Dr. Duke's Phytochemical and Ethnobotanical Database**

**Chemicals Found in *Angelica archangelica***

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	(+)-ALPHA-COPAENE	Seed Essent. Oil	--	--		
0	(+)-ALPHA-CURCUMENE	Root Essent. Oil	--	--		
0	(+)-CUPARENE	Root	--	--		
0	(+)-LIMONENE	Root	--	--		
0	(+)-OXYPEUCEDANIN	Root	--	--		
0	1,1-DIETHOXYHEXANE	Root	--	--		
0	1,1-DIETHOXYHEXANE	Root Essent. Oil	--	--		
0	1,1-DIETHOXYOCTANE	Root	--	--		
0	1,1-DIETHOXYOCTANE	Root Essent. Oil	--	--		
0	1,8-CINEOL	Fruit Essent. Oil	--	538000	1	
0	1-O-BETA-D-GLUCOPYRANOSYL-(2S,3P)-3-HYDROXY-MARMESINE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	12-METHYL-13-TRIDECANOLIDE	Root	1	12		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	12-METHYL-OMEGA-TRIDECANOLIDE	Root	--	--		
0	12-METHYL-OMEGA-TRIDECANOLIDE	Root Essent. Oil	--	--		
0	13-TRIDECANOLIDE	Root	15	50		
0	15-HYDROXPENTADECANOIC-ACID	Root	--	--		Wealth of India.
0	15-PENTADECANOLIDE	Root	15	75		
0	17-HEPTADECANOLIDE	Root	2	20		
1	2'-ANGELOYL-3'-ISOVALERYL-VAGINATE	Root	--	--		Phytochem. Anal. 3(1):42-48. 1992
0	2'-BETA-D-GLUCOPYRANOSYLOXY-MARMESINE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	2-DECANONE	Root	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	2-NITRO-1,5-P-MENTHADIENE	Plant	--	--		J.S. Glasby Dict.PlS Containing 2ndary Metabolite. 1991.
2	2-NONANONE	Root	1	1		
0	2-PENTYL-FURAN	Root	--	4	1	
0	4,4,6-TRIMETHYLCYCLOHEX-2-EN-1-ONE	Root	--	--		
0	4-ETHOXY-1-P-MENTHENE	Root	3	3		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	4-METHOXY-7-HYDROXYPsorALEN	Seed	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	4-METHOXY-7H-FURO(3,2-G)(1)BENZOPYRAN-7-ONE	Root	1	225		
0	5,7-DIHYDROXY-2-METHYL-CHROMONE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	5-ISOPROPYLBICYCLO-(3,1.0)-HEXAN-2-ONE	Plant	10	30		
0	5-METHOXY-GAMMA-HYDROXYPsorALEN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
10	5-METHOXY-PsorALEN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
10	5-METHOXY-PsorALEN	Fruit	--	--		
0	5-METHYL-ANGELICIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	5-UNDECEN-3-YNE	Root	2	15		
0	7-ISOPROPYL-5-METHYL-BICYCLO(2.2.2)-OCT-5-EN-2-ONE	Root Essent. Oil	--	100		
0	7-METHOXY-8-(3-METHYL-2-BUTENYL)-2H-1-BENZOPYRAN-2-ONE	Root	50	2000		
1	8-(2-(3-METHYLBUTOXY)-3-HYDROXY-3-METHYLBUTOXY)PsorALEN	Root	--	--		Phytochem. Anal. 3(1):42-48. 1992
0	8-HYDROXY-5-METHOXY-PsorALEN	Plant	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	8-HYDROXY-5-METHOXY-PSORALEN	Seed	--	--		
0	8-HYDROXY-5-METHOXY-PSORALEN	Fruit	--	62		
21	8-METHOXY-PSORALEN	Plant	--	--		
6	ACETALDEHYDE	Seed	--	--		Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
1	ACONITIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
28	ADENOSINE	Root	--	--		Pakistan Encyclopedia Planta Medica. 1986.
28	ADENOSINE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
3	ALANINE	Leaf	--	--		
0	ALPHA-ALKYL-FUROCOUMARIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
10	ALPHA-AMYRIN	Plant	--	--		J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
2	ALPHA-AMYRIN-ACETATE	Fruit	--	26		
20	ALPHA-BISABOLOL	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ALPHA-CARYOPHYLLENE	Root	--	--		
0	ALPHA-COPAEN-11-OL	Root	15	45		
0	ALPHA-COPAEN-8-OL	Root	--	--		
0	ALPHA-COPAENE	Root	10	190		
0	ALPHA-COPAENE	Root Essent. Oil	--	--		
0	ALPHA-COPAENE-11-OL	Root Essent. Oil	--	--		
0	ALPHA-COPAENE-8-OL	Root	6	18		
0	ALPHA-CUBEBENE	Root	--	5		
2	ALPHA-HUMULENE	Root	18	50	1.4138559108869015	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
2	ALPHA-HUMULENE	Root Essent. Oil	--	--		
2	ALPHA-METHYL-BUTYRIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	ALPHA-MUUROLENE	Root	10	120		
0	ALPHA-MUUROLENE	Root Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
11	ALPHA-PHELLANDRENE	Fruit	--	--		
11	ALPHA-PHELLANDRENE	Root Essent. Oil	--	225000		
11	ALPHA-PHELLANDRENE	Leaf Essent. Oil	--	678000	1.751978121762097	
11	ALPHA-PHELLANDRENE	Seed Essent. Oil	--	--		
11	ALPHA-PHELLANDRENE	Root	--	--		
0	ALPHA-PHELLANDRENE-8-OL	Root	15	40		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	ALPHA-PHELLANDRENE-8-OL	Root Essent. Oil	--	--		
28	ALPHA-PINENE	Seed	170	1500	-0.34027084756770226	
28	ALPHA-PINENE	Root	35	5890	2.1989183610646146	
28	ALPHA-PINENE	Root Essent. Oil	--	--		
28	ALPHA-PINENE	Seed Essent. Oil	--	149000	0.28611774259215744	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
28	ALPHA-PINENE	Fruit	--	--		
13	ALPHA-TERPINENE	Root	3	7	-0.6602197185589468	
13	ALPHA-TERPINENE	Fruit	--	--		
13	ALPHA-TERPINENE	Root Essent. Oil	--	--		
23	ALPHA-TERPINEOL	Plant	--	--		
23	ALPHA-TERPINEOL	Root	--	12	-0.5636245828350195	
0	ALPHA-TERPINOLENE	Root	--	--		
0	ALPHA-THUJENE	Root	1	13		
0	ALPHA-THUJENE	Root Essent. Oil	--	--		
0	ANGALCIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
1	ANGELIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	ANGELICAIN	Plant	--	--		
0	ANGELICAIN	Root	--	--		
17	ANGELICIN	Root	--	--		
17	ANGELICIN	Seed	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
17	ANGELICIN	Root Essent. Oil	--	35000		
0	APTERIN	Root	--	--		
0	APTERIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
3	AR-CURCUMENE	Root	2	6	-1	
0	ARACHIDIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	ARACHIDIC-ACID	Fruit	--	--		
0	ARCHANGELENONE	Plant	--	--		
0	ARCHANGELENONE	Root	--	50		
0	ARCHANGELICAIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
2	ARCHANGELICIN	Plant	--	--		
2	ARCHANGELICIN	Root	--	--		
2	ARCHANGELICIN	Fruit	--	--		
2	ARCHANGELICIN	Shoot	--	--		
0	ARCHANGELIN	Root	--	2000		
2	ASPARAGINE	Leaf	--	--		
3	ASPARTIC-ACID	Leaf	--	--		



Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	AZULENOGENIC-HYDROCARBON	Seed	930	5890		Wealth of India.
1	BEHENIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
26	BERGAPTEN	Seed	2	6800	1.5453742965682007	
26	BERGAPTEN	Root	--	--		
26	BERGAPTEN	Fruit	48	1300		
26	BERGAPTEN	Plant	--	--		
26	BERGAPTEN	Root Essent. Oil	--	88000		
26	BERGAPTEN	Shoot	--	--		
4	BETA-AMYRIN-ACETATE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
6	BETA-BISABOLENE	Root	8	72	-1.2022170084503725	
6	BETA-BISABOLENE	Root Essent. Oil	--	--		
0	BETA-CARYOPHYLLENE	Seed	--	--		Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BETA-CARYOPHYLLENE	Root Essent. Oil	--	110000	1.0368391024927353	
0	BETA-CEDRENE	Root	--	--		
0	BETA-COPAENE	Root	8	20		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	BETA-COPAENE	Root Essent. Oil	--	--		
0	BETA-CYMOL	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
5	BETA-ELEMENE	Root	30	90	-1	
5	BETA-ELEMENE	Root Essent. Oil	--	--		
13	BETA-EUDESOL	Root	1	21	1	
13	BETA-EUDESOL	Root Essent. Oil	--	--		
0	BETA-FARNESENE	Root	5	15	-0.584230956900959	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BETA-FARNESENE	Root Essent. Oil	--	--		
0	BETA-HIMACHALENE	Root	--	12		
2	BETA-MYRCENE	Root	--	--		
3	BETA-PHELLANDRENE	Root	50	1000	1	
3	BETA-PHELLANDRENE	Fruit	--	--		
3	BETA-PHELLANDRENE	Root Essent. Oil	--	--		
13	BETA-PINENE	Root	2	2400	2.065213478268315	
13	BETA-PINENE	Root Essent. Oil	--	--		
13	BETA-PINENE	Seed Essent. Oil	--	--		
13	BETA-PINENE	Fruit	--	--		
3	BETA-SELINENE	Root	--	--		
5	BETA-SESQUIPELLANDRENE	Root	--	7	-1	
47	BETA-SITOSTEROL	Plant	--	--		
47	BETA-SITOSTEROL	Seed	1.5	9.5	-0.627327401886418	
47	BETA-SITOSTEROL	Fruit	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BETA-SITOSTEROL-PALMITATE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	BETA-SITOSTERYL-ARACHINATE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	BETA-THUJENE	Root	6900	8700		
0	BETA-THUJENE	Seed Essent. Oil	--	870000		
0	BICYCLOGERMACRENE	Root	--	--		
2	BISABOLANGELONE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	BISABOLENE	Root Essent. Oil	--	--		
0	BISABOLOL	Root Essent. Oil	--	--		
35	BORNEOL	Root	--	--		Pakistan Encyclopedia Planta Medica. 1986.
35	BORNEOL	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
35	BORNEOL	Root Essent. Oil	--	--		
0	BORNEOL-ACETATE	Root	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BORNEOL-ACETATE	Root Essent. Oil	--	--		
0	BORNEOL-ISOVALERATE	Root Essent. Oil	--	--		
12	BORNYL-ACETATE	Root	25	75	-0.5747231818271519	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	BORNYL-ISOVALERATE	Root	2	7	-1	
5	BYAKANGELICIN	Root	--	13		
0	BYAKANGELICIN-2'-O-ISOVALERATE	Root	--	2		
1	BYAKANGELICIN-ANGELATE	Root	--	8		
0	BYAKANGELICOL	Root	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
102	CAFFEIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	CAMPESELOL	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	CAMPESENIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CAMPESIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
9	CAMPHENE	Root	2	130	1.4108316199577506	
9	CAMPHENE	Root Essent. Oil	--	--		
9	CAMPHENE	Fruit	--	--		
0	CAR-3-ENE	Root Essent. Oil	--	--		
0	CAR-3-ENE	Root	--	--		
19	CARVONE	Root	--	2	-0.7714223871650727	
31	CARYOPHYLLENE	Root	8	20	-0.6816330830044597	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
31	CARYOPHYLLENE	Root Essent. Oil	--	--		
3	CEDROL	Root	--	--		
77	CHLOROGENIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	CHRYSANTHENOL-ACETATE	Root	--	--		
0	CHRYSANTHENYL-ACETATE-I	Root	--	7		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CHRYSANTHENYL-ACETATE-II	Root	1	95		
0	CIS-1-ETHOXY-2-P-MENTHENE	Root	16	16		
0	CIS-3-ETHOXY-1-P-MENTHENE	Root	8	8		
0	CIS-4-ETHOXY-2-PINENE	Root	5	5		
0	CIS-4-ETHOXY-PIN-2-ENE	Root Essent. Oil	--	--		
0	CIS-4-ETHOXY-THUJANE	Root	6	6		
0	CIS-4-ETHOXY-THUJANE	Root Essent. Oil	--	--		
0	CIS-6-NITRO-1(7),2-P-MENTHADIENE	Plant	--	--		J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	CIS-ALPHA-COPAENE-8-OL	Plant	--	--		
0	CIS-BETA-FARNESENE	Root	--	--		
0	CIS-CARVEOL-ACETATE	Root Essent. Oil	--	--		
0	CIS-CARVYL-ACETATE	Root	2	2		
3	CIS-OCIMENE	Root	4	125		
3	CIS-OCIMENE	Root Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CIS-P-MENTH-2-EN-1-OL	Root	20	62		
0	CIS-PIPERITOL	Root	2	5		
0	CIS-PIPERITOL	Root Essent. Oil	--	--		
0	CIS-SABINENE-HYDRATE	Root	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	CIS-SABINENE-HYDRATE	Root Essent. Oil	--	--		
0	CIS-THUJENOL	Root	--	--		
0	CIS-VERBENOL	Root	3	10		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	CIS-VERBENOL	Root Essent. Oil	--	--		
2	CONIFERIN	Root	--	--		Pakistan Encyclopedia Planta Medica. 1986.
2	CONIFERIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.



Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CRYPTONE	Root	16	50		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	CRYPTONE	Root Essent. Oil	--	--		
0	CUMINYL-ALCOHOL	Root	2	2		
0	CUMINYL-ALCOHOL	Root Essent. Oil	--	--		
0	CUMINYL-ALDEHYDE	Root Essent. Oil	--	--		
1	CUPARENE	Root	3	10	1	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
1	CUPARENE	Root Essent. Oil	--	--		
0	CYMEN-8-OL	Root	6	18		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	CYMENE	Root	--	--		
0	D-ALPHA-PHELLANDRENE	Root	15	380		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	D-ALPHA-PHELLANDRENE	Seed	1140	7220	-1	Wealth of India.
0	DECA-TRANS-2,TRANS-4-DIEN-1-AL	Root	--	--		
0	DECAN-2-ONE	Root Essent. Oil	--	--		
0	DEHYDROASCORBIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	DEHYDRODEOXYANGELICAN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
8	DELTA-3-CARENE	Root	30	505	1.4140772728836788	
9	DELTA-CADINENE	Root	1	101	1.4139785716108804	
9	DELTA-CADINENE	Root Essent. Oil	--	--		
0	DELTA-ELEMENE	Root	--	--		
0	DELTOIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
2	DIACETYL	Root	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	DIHYDROCARVONE	Plant	--	--		
0	DIHYDROCARVONE	Seed	160	1025	0.004692483254163068	
0	DIHYDROEUDESMOL	Root	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	DIHYDROFURANOCOUMARIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	DIHYDROFUROCOUMARIN-GLYCOSIDE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	DIPRENYL-NARINGENIN	Root	--	--		Wealth of India.
0	EICOSANE	Root	--	5	-1	
0	EICOSENOIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	EICOSENOIC-ACID	Fruit	--	--		
2	ELEMOL	Root	6	18		
2	ELEMOL	Root Essent. Oil	--	--		
0	EO	Root	1000	10000	0.24015740661431922	
0	EO	Seed	2000	15000	-0.07010761007370915	
5	ERGOSTEROL	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
5	ERGOSTEROL	Fruit	--	--		
24	ETHANOL	Root	--	--		
0	ETHYL-CAPRATE	Root	--	--		
0	ETHYL-CAPRATE	Root Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	ETHYL-LAURATE	Root	--	--		
0	ETHYL-LINOLEATE	Root	8	8		
0	ETHYL-LINOLENATE	Root	--	--		
1	ETHYL-MYRISTATE	Root	--	--		
1	ETHYL-MYRISTATE	Root Essent. Oil	--	--		
1	ETHYL-OLEATE	Root	--	--		
1	ETHYL-PALMITATE	Root	10	10		
0	ETHYL-PENTADECANOATE	Root	--	--		
0	ETHYL-PENTADECANOATE	Root Essent. Oil	--	--		
0	ETHYL-STEARATE	Root	--	--		
0	FAT	Seed	189000	203000	-0.3286177590566424	
6	FENCHONE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
6	FENCHONE	Root Essent. Oil	--	--		
8	FRUCTOSE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	FUMARIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	FURANCHROMONE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	FURANOCOUMARIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
6	FURFURAL	Root	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	GAMMA-CADINENE	Plant	--	--		
0	GAMMA-CADINENE	Root	2	14	1	
0	GAMMA-CARYOPHYLLENE	Root	--	6		
0	GAMMA-MUUROLENE	Root	1	4	-1	
0	GAMMA-MUUROLENE	Root Essent. Oil	--	--		
11	GAMMA-TERPINENE	Root	1	11	-0.802453903453894	
11	GAMMA-TERPINENE	Root Essent. Oil	--	--		
0	GAMMA-TERPINEOL	Root	--	--		
2	GERMACRENE-D	Root	2	26	1	
2	GERMACRENE-D	Root Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	GERMANIUM	Root	--	146	-1	
7	GLUCOSE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
5	GLUTAMINE	Leaf	--	--		
0	HEPTADECADIENOLIDE	Root Essent. Oil	--	10000		
0	HEPTADECAN-1-OL-ACETATE	Root	--	--		
0	HEPTADECANE	Root	--	7		
0	HEPTADECANOLIDE	Root	--	--		
0	HEPTADECANOLIDE	Root Essent. Oil	--	--		
0	HEPTYL-ISOVALERATE	Root	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	HEPTYL-ISOVALERATE	Root Essent. Oil	--	--		
0	HERACLENOL-2'-O-ISOVALERATE	Root	--	13		
0	HERACLENOL-2'-O-SENECIOATE	Root	--	1		
0	HEXADECAN-1-OL	Root	--	--		
0	HEXADECANE	Root	--	7	0.9999999999999999	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	HEXYL-METHYL-PHTHALATE	Seed	3600	13680		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	HUMULENE-MONOXIDE	Root	13	40		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	HUMULENE-MONOXIDE	Root Essent. Oil	--	--		
0	HYDROXYMYRISTIC-ACID	Seed	--	--		
0	HYDROXPENTADECANOIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
25	IMPERATORIN	Seed	50	5000	0.20180777184913837	
25	IMPERATORIN	Root	--	--		
25	IMPERATORIN	Fruit	--	66	1.940524885628408	
25	IMPERATORIN	Plant	--	--		
25	IMPERATORIN	Shoot	--	--		
0	ISELIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	ISOAMYL-ISOVALERATE	Root	2	2		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ISOAMYL-ISOVALERATE	Root Essent. Oil	--	--		
0	ISOBERGAPTEN	Root Essent. Oil	--	88000		
0	ISOBERGAPTEN	Fruit	--	--		
0	ISOBERGAPTIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	ISOBERGAPTOL	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	ISOCOUMARIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
8	ISOIMPERATORIN	Plant	--	--		
8	ISOIMPERATORIN	Seed	12	75	1	Wealth of India.
8	ISOIMPERATORIN	Root	--	--		
8	ISOIMPERATORIN	Fruit	--	4	-0.9645619455667129	
8	ISOIMPERATORIN	Shoot	--	--		
3	ISOLEUCINE	Leaf	--	--		
15	ISOPIMPINELLIN	Plant	--	--		
15	ISOPIMPINELLIN	Root	--	--		
15	ISOPIMPINELLIN	Fruit	--	18	1	



Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
15	ISOPIMPINELLIN	Root Essent. Oil	--	--		
0	KVANNIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
7	LAURIC-ACID	Fruit	--	--		
1	LAURIC-ACID-ETHYL-ESTER	Root Essent. Oil	--	--		
7	LIGUSTILIDE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
7	LIGUSTILIDE	Root	--	--		
60	LIMONENE	Root	440	1320	1.7252265137628358	
60	LIMONENE	Root Essent. Oil	--	227000	1.5228275750660336	
0	LIMONENE-1,2-OXIDE	Plant	--	15		
0	LINALOL	Root	--	1	-0.7415836394549143	
53	LINALOOL	Root	1	10	-0.41637162119267096	
53	LINALOOL	Root Essent. Oil	--	--		
27	LINOLEIC-ACID	Fruit	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	LINOLEIC-ACID-ETHYL-ESTER	Root Essent. Oil	--	--		
0	LINOLENIC-ACID-ETHYL-ESTER	Root Essent. Oil	--	--		
2	LUPEOL-ACETATE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
2	LUPEOL-ACETATE	Fruit	--	40		
15	LUTEIN	Leaf	--	--		
0	M-CYMEN-8-OL	Root	9	9		
0	M-CYMENE-8-OL	Root Essent. Oil	--	--		
15	MALIC-ACID	Plant	--	--		
15	MALIC-ACID	Root	--	--		
1	MALONIC-ACID	Root	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	MARMESIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	MARMESININE	Plant	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	MARMEZIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
2	METHANOL	Root	--	--		
0	METHYL-ETHYL-ACETIC-ACID	Seed	--	--		
0	METHYL-ETHYL-ACETIC-ACID	Root	--	--		
22	MYRCENE	Root	7	380	1.4075966148229513	
22	MYRCENE	Root Essent. Oil	--	--		
22	MYRCENE	Seed Essent. Oil	--	--		
22	MYRCENE	Fruit	--	--		
6	MYRISTIC-ACID	Fruit	--	--		
0	NONADECANE	Root	--	5	1	
0	NONAN-1-AL	Root Essent. Oil	--	--		
0	NONAN-2-ONE	Root Essent. Oil	--	--		
0	NONANAL	Root	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	O-CYMENE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	O-CYMENE	Root Essent. Oil	--	--		
0	OCTADEC-9-EN-18-OLIDE	Root Essent. Oil	--	20000		
0	OCTADECAN-1-OL	Root	--	--		
0	OCTADECANE	Root	--	5		
0	OCTAN-1-AL	Root Essent. Oil	--	--		
0	OCTANAL	Root	1	1		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
2	OCTYL-ISOVALERATE	Root	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
2	OCTYL-ISOVALERATE	Root Essent. Oil	--	--		
18	OLEIC-ACID	Seed	--	133000	0.11423787911448594	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	OLEIC-ACID-ETHYL-ESTER	Root Essent. Oil	--	--		
0	OROSELONE	Plant	--	--		
0	OROSELONE	Root Essent. Oil	--	25000		
0	OSTHENOL	Root	--	115		
0	OSTHENOL	Fruit	--	--		
0	OSTHENOL	Shoot	--	--		
0	OSTHENOLE	Root	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
15	OSTHOL	Root	--	2000		
15	OSTHOL	Root Essent. Oil	--	530000		
15	OSTHOL	Fruit	--	--		
4	OSTHOLE	Root	--	--		
1	OSTRUTHOL	Seed	9	57		Wealth of India.
1	OSTRUTHOL	Root	--	2000		
0	OSTRUTOL	Plant	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
9	OXALIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
6	OXYPEUCEDANIN	Plant	--	--		
6	OXYPEUCEDANIN	Root	--	385	-1	
6	OXYPEUCEDANIN	Fruit	--	--		
6	OXYPEUCEDANIN	Shoot	--	--		
2	OXYPEUCEDANIN-HYDRATE	Plant	--	--		
2	OXYPEUCEDANIN-HYDRATE	Root	--	1500		
2	OXYPEUCEDANIN-HYDRATE	Seed	0.6	3.8	-1	Wealth of India.
2	OXYPEUCEDANIN-HYDRATE	Fruit	--	--		
2	OXYPEUCEDANIN-HYDRATE	Shoot	--	--		
0	OXYPEUCIDANIN	Root	--	--		
0	OXYPEUCIDANIN-HYDRATE	Root	--	--		
0	OXYPEUCIDANIN-METHANOLATE	Root	--	--		
0	P-CYMEN-8-OL	Root	1	31		
16	P-CYMENE	Root	40	980	1.731986088156794	
16	P-CYMENE	Seed	800	5050	0.5834563158237798	Wealth of India.
16	P-CYMENE	Root Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	P-CYMENE-8-OL	Root Essent. Oil	--	--		
0	P-MENTH-CIS-2-EN-1-OL	Root Essent. Oil	--	--		
0	P-MENTH-TRANS-2-EN-1-OL	Root Essent. Oil	--	--		
13	PALMITIC-ACID	Seed	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
13	PALMITIC-ACID	Root Essent. Oil	--	60000	-0.14585513924522536	
13	PALMITIC-ACID	Fruit	--	--		
1	PALMITIC-ACID-ETHYL-ESTER	Root Essent. Oil	--	--		
2	PALMITOLEIC-ACID	Seed	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
2	PALMITOLEIC-ACID	Fruit	--	--		
0	PENTADECAN-1-AL	Root	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	PENTADECAN-1-AL	Root Essent. Oil	--	--		
0	PENTADECANAL	Root	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
1	PENTADECANOIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	PENTADECANOLIDE	Root	15	37		
0	PENTADECANOLIDE	Root Essent. Oil	--	60000		
0	PETROSELINIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	PETROSELINIC-ACID	Fruit	--	--		
0	PETROSELINIC-ACID	Seed	--	427000	-0.4900561802158002	
0	PEUCENIN-7-METHYL-ETHER	Root	--	--		Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
0	PELLANDRAL	Root	--	4		
2	PHELLOPTERIN	Plant	--	--		
2	PHELLOPTERIN	Root	--	--		Phytochem. Anal. 3(1):42-48. 1992



Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	PHENYLALANINE	Leaf	--	--		
7	PIMPINELLIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
7	PIMPINELLIN	Fruit	--	--		
7	PIPERITONE	Root	--	3		
0	PRANGOLARIN	Plant	--	--		
0	PRANGOLARIN	Root	--	--		
0	PRANGOLARIN	Seed	12	75		Wealth of India.
0	PROTEIN	Seed	319000	325000	0.8113062118868037	
31	PSORALEN	Plant	--	--		
31	PSORALEN	Root	2	140	1.2840756412696184	
31	PSORALEN	Fruit	--	310	-0.3807181031466607	
31	PSORALEN	Seed	--	100	-0.6857885534361138	
0	QUERCETIN-GLYCOSIDE	Fruit	--	--		
1	QUINIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	ROSIFOLIOL	Root	--	--		
4	RUTAMARIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
5	SABINENE	Root	2	76	0.0843149140979014	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
5	SABINENE	Root Essent. Oil	--	--		
5	SABINOL	Root	--	34		
0	SABINYL-ACETATE	Root	--	5		
44	SCOPOLETIN	Tissue Culture	--	--		
44	SCOPOLETIN	Root	--	--		
0	SEC-O-BETA-D-GLUCOPYRANOSYL-(R)-BYAKANGELICIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	SPATHULENOL	Root	--	--		
1	SPHONDIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
8	STEARIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
8	STEARIC-ACID	Fruit	--	--		
0	STEARIC-ACID-ETHYL-ESTER	Root Essent. Oil	--	--		
12	STIGMASTEROL	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
12	STIGMASTEROL	Fruit	--	--		
7	SUCCINIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
14	SUCROSE	Root	--	--		Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
0	TANNINS	Root	--	--		Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
23	TERPINEN-4-OL	Root	--	10	-0.5731321285364237	
23	TERPINEN-4-OL	Root Essent. Oil	--	--		
0	TERPINENOL	Root Essent. Oil	--	--		
9	TERPINOLENE	Root	6	16	-1	
9	TERPINOLENE	Root Essent. Oil	--	--		
0	TERT-O-BETA-D-GLUCOPYRANOSYL-(R)-BYAKANGELICIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	TERT-O-BETA-D-GLUCOPYRANOSYL-(R)-HERACLENOL	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	TERT-O-BETA-D-GLUCOPYRANOSYL-(R)-ISOBYAKANGELICIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	TETRADECAN-1-AL	Root	--	--		
0	TETRADECAN-1-OL-ACETATE	Root	--	--		
0	TETRADECANAL	Root	2	2		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	TETRADECANE	Root	--	2		
2	THUJOPSENE	Root	--	--		
1	TIGLIC-ACID	Plant	--	--		Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	TRANS-1(7),5-P-MENTHADIEN-2-YL-ACETATE	Plant	--	--		J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	TRANS-1-ETHOXY-2-P-MENTHENE	Root	6	6		
0	TRANS-3-ETHOXY-1-P-MENTHANE	Root	4	4		
0	TRANS-4-ETHOXY-2-PINENE	Root	79	79		
0	TRANS-4-ETHOXY-PIN-2-ENE	Root Essent. Oil	--	--		
0	TRANS-4-ETHOXY-THUJANE	Root	10	10		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	TRANS-4-ETHOXY-THUJANE	Root Essent. Oil	--	--		
0	TRANS-6-NITRO-1(7),2-P-MENTHADIENE	Plant	--	--		J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
8	TRANS-ANETHOLE	Root	2	13		
2	TRANS-BETA-FARNESENE	Root	2	10		
1	TRANS-CARVEOL	Root	4	11		
1	TRANS-CARVEOL	Root Essent. Oil	--	--		
0	TRANS-CARVEOL-ACETATE	Root Essent. Oil	--	--		
0	TRANS-CARVYL-ACETATE	Root	2	5		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	TRANS-OCIMENE	Root	10	268		
0	TRANS-OCIMENE	Root Essent. Oil	--	--		
0	TRANS-P-MENTH-2-EN-1-OL	Root	8	24		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	TRANS-PINOCARVEOL-ACETATE	Root Essent. Oil	--	--		
0	TRANS-PINOCARVYL-ACETATE	Root	5	17		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	TRANS-PIPERITOL	Root	--	30		
0	TRANS-PIPERITOL	Root Essent. Oil	--	--		
0	TRANS-SABINENE-HYDRATE	Root	1	1		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	TRANS-SABINENE-HYDRATE	Root Essent. Oil	--	--		
0	TRANS-VERBENOL	Root	20	64		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	TRANS-VERBENOL	Root Essent. Oil	--	--		
0	TRANS-VERBENOL-ACETATE	Root Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	TRANS-VERBENOL-ISOVALERATE	Root Essent. Oil	--	--		
0	TRANS-VERBENYL-2-METHYL-BUTYRATE	Root	1	4		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	TRANS-VERBENYL-ACETATE	Root	15	46		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	TRANS-VERBENYL-ISOVALERATE	Root	6	17		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	TRIDECAN-1-OL	Root	--	--		
2	TRIDECANOIC-ACID	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
0	TRIDECANOLIDE	Root	15	45		
0	TRIDECANOLIDE	Root Essent. Oil	--	--		
29	TRYPTOPHAN	Leaf	--	--		
8	TYROSINE	Leaf	--	--		
0	UMBELLIFEREN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
22	UMBELLIFERONE	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
22	UMBELLIFERONE	Root	--	200		
22	UMBELLIFERONE	Fruit	--	--		
0	UMBELLIFEROSE	Root	--	--		Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	UMBELLIPRENIN	Seed	4	57		
0	UMBELLIPRENIN	Fruit	--	--		
0	UMBELLIPRENIN	Root	--	--		
0	UNDEC-5-EN-3-YNE	Root	--	--		
3	VALINE	Leaf	--	--		
2	VIOLAXANTHIN	Leaf	--	--		
1	VISNAGIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
43	XANTHOTOXIN	Seed	2	1900	-1	
43	XANTHOTOXIN	Root	--	--		
43	XANTHOTOXIN	Fruit	--	42	1	
43	XANTHOTOXIN	Plant	--	--		



Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
43	XANTHOTOXIN	Shoot	--	--		
5	XANTHOTOXOL	Seed	--	--		Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
5	XANTHOTOXOL	Plant	--	--		
5	XANTHOTOXOL	Fruit	--	--		
1	XANTHOXYLETIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
5	ZEAXANTHIN	Leaf	--	--		
6	ZINGIBERENE	Root	--	5	-1	
0	ZOZYMIN	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.