

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

**Chemicals Found in *Brassica oleracea* var. *botrytis* I.**

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	1-METHOXY-GLUCOBRASSICIN	Leaf	--	--		
0	1-METHOXY-INDOLE-3-CARBALDEHYDE	Plant	--	--		
0	1-O-FERULOYL-BETA-D-GLUCOSE	Leaf	--	--		
0	1-O-P-COUMAROYL-BETA-D-GLUCOSE	Leaf	--	--		
0	1-O-SINAPOYL-BETA-D-GLUCOSE	Leaf	--	--		
0	24-METHYLENE-CYCLOARTENOL	Leaf	--	--		
0	3,3'-DIINDOYL-METHANE	Leaf	--	--		
0	3-METHYL-SULFINYL-PROPYL-GLUCOSINOLATE	Flower	--	--		
0	3-METHYLTHIOPROPYL-GLUCOSINOLATE	Flower	--	--		
1	4-HYDROXY-GLUCOBRASSICIN	Flower	7	390		
1	4-HYDROXY-GLUCOBRASSICIN	Leaf	3	325		
0	4-METHOXY-GLUCOBRASSICIN	Flower	15	355		
0	4-METHOXY-GLUCOBRASSICIN	Leaf	8	580		
0	4-METHOXY-INDOL-3-YL-METHYL-GLUCOSINOLATE	Leaf	--	--		
0	4-METHOXY-INDOL-3-YL-METHYL-GLUCOSINOLATE	Flower	--	--		
0	4-METHYL-SULFINYL-BUTYL-GLUCOSINOLATE	Flower	--	--		
0	4-METHYL-THIO-BUTYL-GLUCOSINOLATE	Flower	--	--		
4	4-VINYL-GUAIACOL	Plant	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	5-HYDROXY-GLUCOBRASSICIN	Leaf	--	--		
0	5-HYDROXY-GLUCOBRASSICIN	Tissue Culture	--	--		
0	5-METHOXY-GLUCOBRASSICIN	Leaf	--	--		
0	5-METHOXY-GLUCOBRASSICIN	Tissue Culture	--	--		
0	ABSCISIC-ACID	Flower	--	--		
3	ACETONE	Leaf	--	--		
3	ACETONE	Flower	--	--		
3	ALANINE	Flower	1050	13565		
3	ALANINE	Leaf	1180	12673	0.017867252591863454	
16	ALLYL-ISOTHIOCYANATE	Leaf	--	--		
10	ALPHA-AMYRIN	Flower	--	--		
10	ALPHA-AMYRIN	Bud	--	--		
7	ALPHA-CAROTENE	Plant	--	--		
15	ALPHA-LINOLENIC-ACID	Leaf	1290	13855	1.243183883058032	
32	ALPHA-TOCOPHEROL	Leaf	7	439	0.35927304562664447	
32	ALPHA-TOCOPHEROL	Flower	0.3	4	-1	
5	ALUMINUM	Leaf	1	27	-0.7515974845433717	
5	ALUMINUM	Flower	1	150	0.9080903837793464	
0	AMMONIA(NH3)	Flower	--	6376	-1.2099685441032595	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ANILINE	Flower	--	22		
14	ARGININE	Flower	960	12400		
14	ARGININE	Leaf	1450	15573	-0.25040545078848814	
2	ARSENIC	Flower	--	--		
2	ARSENIC	Leaf	--	--		
112	ASCORBIC-ACID	Flower	660	9300	2.0283569773652044	
112	ASCORBIC-ACID	Leaf	911	10360	0.5173558895778465	
0	ASH	Flower	6600	121250	1.2014906628657485	
0	ASH	Leaf	2800	101708	-0.30205081182588317	
3	ASPARTIC-ACID	Leaf	2130	22876	-0.262328714251028	
0	BENZYL-AMINE	Flower	--	1.4		
9	BETA-AMYRIN	Bud	--	--		
9	BETA-AMYRIN	Flower	--	--		
53	BETA-CAROTENE	Leaf	9	138	-0.5369565297726103	
53	BETA-CAROTENE	Flower	--	4	-0.5606735845287268	
2	BETA-CRYPTOXANTHIN	Plant	--	--		
47	BETA-SITOSTEROL	Plant	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
47	BETA-SITOSTEROL	Flower	120	1200	-0.7745775450534552	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
4	BORON	Leaf	1	85	0.6469238451071857	
4	BORON	Flower	1	76	1.2304541664359345	
4	BORON	Stem	--	21	-0.7419113414039952	
0	BROMINE	Leaf	--	--		
0	BROMINE	Flower	--	--		
3	CADMIUM	Leaf	0.01	0.18	-0.7863999904697607	
3	CADMIUM	Flower	0.003	0.25		
102	CAFFEIC-ACID	Leaf	--	8	-0.7148173591555008	
28	CALCIUM	Leaf	360	54247	2.4468006382605774	
28	CALCIUM	Flower	210	4040	-0.4787571488570857	
2	CAMPESTEROL	Flower	30	300		Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
0	CARBOHYDRATES	Leaf	52400	562776	-0.3902639822213213	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CARBOHYDRATES	Flower	49200	635660	-0.14105375622194907	
77	CHLOROGENIC-ACID	Leaf	--	--		
21	CHLOROPHYLL	Leaf	--	--		
24	CHROMIUM	Flower	0.001	0.125	-1.3473800790006203	
24	CHROMIUM	Leaf	0.005	0.18	-0.6314530785674829	
18	CINNAMIC-ACID	Leaf	--	--		
23	CITRIC-ACID	Flower	--	--		
23	CITRIC-ACID	Plant	--	--		
2	COBALT	Flower	0.001	0.125	-0.5425117041971756	
2	COBALT	Leaf	0.02	0.6	-0.29531921745391343	
12	COPPER	Flower	0.3	8	-0.9960623124329469	
12	COPPER	Leaf	0.68	52	0.6699011255650867	
2	CYSTINE	Leaf	200	2148	-0.6472110127615397	
2	CYSTINE	Flower	230	2970		
2	DIMETHYL-AMINE	Flower	--	14	1	
2	DIMETHYL-DISULFIDE	Plant	--	--		
24	ETHANOL	Plant	--	--		
24	ETHANOL	Flower	--	--		
0	FAT	Leaf	3160	41242	-0.30328791009066547	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	FAT	Flower	1800	29400	-0.4465051083149715	
61	FERULIC-ACID	Leaf	--	13	0.08918222301645602	
15	FIBER	Leaf	10760	122866	-0.47818554218157117	
15	FIBER	Flower	8000	132000	0.00499085884442514	
0	FLUORINE	Leaf	0.03	0.9	-1.2049539311662678	
0	FLUORINE	Flower	0.02	2.5		
15	FOLACIN	Leaf	0.64	8.4	-0.15226470429048047	
7	FUMARIC-ACID	Plant	--	--		
7	FUMARIC-ACID	Flower	--	--		
1	GLUCOBRASSICIN	Leaf	30	580		
1	GLUCOBRASSICIN	Flower	60	1670		
0	GLUCOERUCIN	Flower	--	210		
0	GLUCOERUCIN	Leaf	--	15020		
1	GLUCOIBERIN	Flower	--	1600		
1	GLUCOIBERIN	Leaf	--	248		
0	GLUCONAPOLEIFERIN	Leaf	9	135		
0	GLUCONAPOLEIFERIN	Flower	--	80		
1	GLUCONASTURTIN	Leaf	--	145		
1	GLUCONASTURTIN	Flower	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	GLUCORAPHANIN	Leaf	255	8990		
1	GLUCORAPHANIN	Flower	--	990		
0	GLUCOSINOLATES	Flower	20	1140		
0	GLUCOSINOLATES	Leaf	70	2120		
8	GLUTAMIC-ACID	Flower	2650	34240		
8	GLUTAMIC-ACID	Leaf	3750	40275	0.12712766718145815	
12	GLYCINE	Flower	640	8270		
12	GLYCINE	Leaf	950	10203	-0.05657990592554876	
0	HEX-CIS-3-EN-1-OL	Plant	--	--		
0	HEX-CIS-3-ENOL-ACETATE	Plant	--	--		
1	HEXYL-ACETATE	Plant	--	--		
7	HISTIDINE	Flower	400	5165		
7	HISTIDINE	Leaf	500	5370	-0.0031655528062669996	
3	INDOLE-3-ACETONITRILE	Leaf	--	--		
32	INDOLE-3-CARBINOL	Leaf	--	--		
0	INDOLE-3-CARBOXYLIC-ACID	Plant	--	--		
0	INDOYL-3-METHYL-GLUCOSINOLATE	Flower	--	--		
6	IRON	Leaf	8	109	-0.6442917506016965	
6	IRON	Flower	5	122	-0.3012855132197258	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	ISOLEUCINE	Flower	760	9820		
3	ISOLEUCINE	Leaf	1090	11707	-0.09196747371544084	
75	KAEMPFEROL	Flower	--	30	-1.0760015465680726	
75	KAEMPFEROL	Leaf	--	--		
0	KILOCALORIES	Plant	240	3100	-0.18505812231826163	
0	KILOCALORIES	Leaf	280	3007	-0.017863523924990066	
0	LEAD	Flower	--	--		
0	LEAD	Leaf	0.01	1	-0.6352496573639428	
2	LEUCINE	Flower	1160	15000		
2	LEUCINE	Leaf	1310	14069	-0.3764770761728601	
27	LINOLEIC-ACID	Flower	190	2455	0.4542076634572454	
27	LINOLEIC-ACID	Leaf	380	4081	-0.6928297779549968	
0	LINOLENIC-ACID	Flower	640	8270	1	
4	LYSINE	Flower	1070	13825		
4	LYSINE	Leaf	1410	15143	0.5181729835111131	
65	MAGNESIUM	Flower	115	2250	-0.4063280335551449	
65	MAGNESIUM	Leaf	214	3072	-0.406886321355332	
15	MALIC-ACID	Flower	--	--		
15	MALIC-ACID	Plant	--	--		



Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
14	MANGANESE	Flower	1.5	48	-0.2230146829051698	
14	MANGANESE	Leaf	2	80	-0.32688920745367256	
1	MERCURY	Leaf	0.002	0.09	1.1722789664445759	
1	MERCURY	Flower	--	0.025	-0.9374693023756843	
2	METHANOL	Flower	--	--		
2	METHANOL	Plant	--	--		
15	METHIONINE	Leaf	340	3652	0.46965125289987986	
15	METHIONINE	Flower	280	3615		
1	METHYL-AMINE	Flower	--	65	1.0000000000000002	
2	MOLYBDENUM	Leaf	0.1	3.76	0.6801012829363977	
2	MOLYBDENUM	Stem	--	1.76	-0.13934558811150258	
2	MOLYBDENUM	Flower	--	0.1		
13	MUFA	Flower	120	1550	0.46291004988627577	
0	N-METHYL-BETA-PHENETHYLAMINE	Flower	--	1.6		
0	N-METHYL-BETA-PHENETHYLAMINE	Plant	--	1.6		
0	N-METHYL-PHENETHYLAMINE	Flower	--	1.6		
0	N-PENTYL-AMINE	Flower	--	3.3		
1	NEOGLUCOBRASSICIN	Flower	8	450		
1	NEOGLUCOBRASSICIN	Tissue Culture	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	NEOGLUCOBRASSICIN	Leaf	10	900		
39	NIACIN	Flower	5	85	-0.09352864336463278	
39	NIACIN	Leaf	--	--		
3	NICKEL	Flower	0.03	12	1	
3	NICKEL	Leaf	0.3	7	-0.28467312579555515	
0	NITROGEN	Flower	3100	47500	1	
0	NITROGEN	Leaf	7000	71800	1.400721017239793	
18	OLEIC-ACID	Flower	120	1550	0.47798392866277417	
18	OLEIC-ACID	Leaf	240	2578	-0.3066324749217592	
0	OXALATE	Leaf	1900	20406	-0.28520935704631206	
9	OXALIC-ACID	Plant	--	68	-0.5351320075910592	
25	P-COUMARIC-ACID	Leaf	--	13	-0.3465642412720655	
25	P-COUMARIC-ACID	Flower	--	35		
13	P-HYDROXY-BENZOIC-ACID	Leaf	--	--		
13	PALMITIC-ACID	Flower	240	3100	0.13966281921675727	
13	PALMITIC-ACID	Leaf	470	5048	-0.2927982427753776	
11	PANTOTHENIC-ACID	Leaf	5.35	63	0.8524389937224381	
11	PANTOTHENIC-ACID	Flower	1.4	18	-1	
0	PENTAN-3-ONE	Plant	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	PENTEN-1-OL	Plant	--	--		
3	PHENETHYL-ISOTHIOCYANATE	Leaf	--	--		
3	PHENETHYLAMINE	Flower	--	1.8		
7	PHENYLALANINE	Flower	710	9175		
7	PHENYLALANINE	Leaf	840	9022	-0.32366072893862124	
4	PHOSPHORUS	Flower	385	7375	1.5411143666705196	
4	PHOSPHORUS	Leaf	644	9090	0.7577587277969241	
9	PHYTIC-ACID	Leaf	--	--		
2	PHYTOSTEROLS	Flower	180	1800		Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
2	PHYTOSTEROLS	Plant	--	--		
14	POTASSIUM	Flower	3300	49080	3.0578856743972493	
14	POTASSIUM	Leaf	3178	37270	0.3058332790917791	
1	PROGOITRIN	Flower	--	60		
1	PROGOITRIN	Leaf	--	--		
0	PROLINE	Flower	860	11110		
0	PROLINE	Leaf	1140	12244	0.14474263630065312	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	PROP-2-ENYL-GLUCOSINOLATE	Flower	--	--		
0	PROTEIN	Leaf	28710	331159	1.1902719416088388	
0	PROTEIN	Flower	18680	300000	1.8233202818155771	
4	PUFA	Flower	830	10725	1.333147880984072	
176	QUERCETIN	Flower	--	6	-1.4106513565908647	
176	QUERCETIN	Leaf	--	--		
44	QUERCITRIN	Leaf	--	--		
1	QUINIC-ACID	Leaf	--	--		
1	QUINIC-ACID	Flower	--	--		
15	RIBOFLAVIN	Flower	0.3	11	1.1243491725579133	
15	RIBOFLAVIN	Leaf	1.1	21	-0.07942432526480918	
0	RUBIDIUM	Flower	0.43	11		
0	RUBIDIUM	Leaf	1	23	-0.6707091074151935	
87	RUTIN	Leaf	--	--		
34	SALICYLIC-ACID	Leaf	--	--		
0	SEC-BUTYL-ISOTHIOCYANATE	Seed	--	--		
60	SELENIUM	Flower	--	--		
60	SELENIUM	Leaf	--	0.024	-0.3807027917986485	
60	SELENIUM	Stem	--	0.015	-0.42886426089167784	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	SERINE	Flower	1040	13440		
1	SERINE	Leaf	1000	10740	-0.003085924608790074	
0	SFA	Flower	270	3490	-0.423152594485768	
4	SILICON	Flower	2	125	2.1795902118292325	
4	SILICON	Leaf	1	90	-0.14550202645318341	
9	SINAPIC-ACID	Leaf	--	40	-0.5050096614914733	
7	SINIGRIN	Flower	--	325		
7	SINIGRIN	Plant	--	--		
1	SODIUM	Flower	120	2300	0.7325478785988843	
1	SODIUM	Leaf	252	3091	-0.09830203577402047	
10	SQUALENE	Plant	--	--		
8	STEARIC-ACID	Leaf	70	752	-0.13186141525885503	
8	STEARIC-ACID	Flower	30	390	0.6447612226140537	
12	STIGMASTEROL	Plant	--	--		
12	STIGMASTEROL	Flower	20	200		Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
7	SUCCINIC-ACID	Plant	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	SUCCINIC-ACID	Flower	--	--		
14	SULFUR	Leaf	1200	11800	1.6302603378370644	
31	THIAMIN	Flower	0.6	12	1.9586178131455851	
31	THIAMIN	Leaf	0.6	8	-0.06349209547044472	
4	THREONINE	Flower	720	9300		
4	THREONINE	Leaf	910	9773	-0.005488458413534491	
2	TRANS-FERULIC-ACID	Leaf	--	--		
29	TRYPTOPHAN	Flower	260	3360		
29	TRYPTOPHAN	Leaf	290	3115	0.10979300838520059	
8	TYROSINE	Flower	430	5555		
8	TYROSINE	Leaf	630	6766	-0.34477094479123366	
3	VALINE	Flower	1000	12920		
3	VALINE	Leaf	1280	13747	0.29552238675671566	
24	VANILLIC-ACID	Plant	--	--		
0	VIT-B-6	Leaf	1.6	18	0.24648148618924984	
0	VIT-B-6	Flower	2	30	1	
0	WATER	Plant	894000	926000	0.6638590552985428	
0	WATER	Leaf	890000	910230	0.5118312318849885	
77	ZINC	Flower	3	97	3.0606347490514247	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
77	ZINC	Leaf	4	118	0.19739995136190341	