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Composition of Blueberries

US Highbush Blueberry Council

A one cup serving of blueberries contains 14% DV of fiber. Blueberries are a source of Vitamin A, Vitamin C, potassium and folate. Blueberries are very low in fat and sodium.



Blueberry Classification

All blueberries belong to the genus *Vaccinium*. The family includes the Highbush (*V. corymbosum* and *V. ashei*) and the Native American "wild" low bush (*V. augustifolium*). All blueberries originated from the wilds. Highbush blueberries represent 57% of total North American blueberry production.

Note: Fruit maturity at harvest, growing condition, type of cultivar, and other variables affect levels. Substances and amounts shown are for general information only.

USDA National Nutrient Database

For Standard Reference, Release 17 (2004)

Nutrients		1/2 cup 72.5 g (2.56 oz)	100 g (3.5 oz)	
Proximate	Food energy	41.50	57.00	Kcal
	Protein	0.54	0.74	g
	Total lipid (fat)	0.24	0.33	g
	Carbohydrate, by difference	10.51	14.49	g
Minerals	Dietary fiber	1.75	2.40	g
	Ash	0.18	0.24	g
	Water	61.05	84.21	mg
	Calcium	4.50	6.00	mg
	Copper	0.04	0.06	mg
	Iron	0.20	0.28	mg
	Magnesium	4.50	6.00	mg
	Manganese	0.24	0.34	mg
	Phosphorus	8.50	12.00	mg
	Potassium	56.00	77.00	mg
	Selenium	0.05	0.10	µg
	Sodium	0.50	1.00	mg
	Zinc	0.12	0.16	mg
	Vitamins	Vitamin C	7.05	9.70
Thiamin		0.03	0.04	mg
Riboflavin		0.03	0.04	mg
Niacin		0.30	0.42	mg
Pantothenic acid		0.09	0.12	mg
Vitamin B-6		0.04	0.05	mg
Folate		4.50	6.00	µg
Vitamin A, IU	39.00	54.00	IU	
Vitamin E	0.42	0.57	mg ATE	

g=grams mg=milligrams kcal=kilocalories IU=International Units µg=micrograms ATE=alpha tocopherol equivalent

US Highbush Blueberry Council

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Flavonoid Content

The *USDA Database for Flavonoids* was created in response to interest by the scientific community in types of flavonoid compounds and their varied biological properties including antioxidative, antimicrobial, and potential anticarcinogenic, and/or cardio-protective effects.



Subclass	Flavonoid	Mean mg/100 g. edible portion	Min.	Max.	No. of Samples
Anthocyanidins	Cyanidin	15.02	4.79	28.72	12
	Delphinidin	29.54	20.82	47.37	12
	Malvidin	49.21	32.95	69.44	12
	Peonidin	7.05	1.01	19.37	12
	Petunidin	11.73	7.19	18.25	12
Flavan-3-ols	(-)-Epicatechin	1.11	1.11	1.11	4
Flavonols	Myricetin	0.82	0	2.60	6
	Quercetin	3.11	1.70	7.30	7

Source: USDA Database for the Flavonoid Content of Selected Foods. Nutrient Data Laboratory, Food Composition Laboratory, Beltsville Human Nutrition Research Center, ARS, March 2003.

Proanthocyanidin Content

The free radical scavenging properties of proanthocyanidins including their potential for risk reduction of cardiovascular diseases, cancer, blood clotting and protection against urinary tract infections have been under investigation by scientists. Also referred to as "condensed tannins," proanthocyanidins polymers of flavan-3-ols, contribute astringent flavor to foods. Following is a listing of proanthocyanidin content of raw blueberries from the *USDA Database for the Proanthocyanidin Content of Selected Foods*.

Proanthocyanidin	Mean mg/100 g. edible portion	Min.	Max.	No. of Samples
Monomers	3.46	2.07	5.58	11
Dimers	5.71	1.66	9.48	11
Trimers	4.15	0.73	7.37	11
4-6mers	19.57	15.75	26.04	8
7-10mers	14.55	10.99	17.40	8
Polymers	129.05	58.37	200.62	8

Source: USDA Database for the Proanthocyanidin Content of Selected Foods. Nutrient Data Laboratory, Beltsville Human Nutrition Research Center, ARS, August 2004.

Blueberry Research

Prior RL, Lazarus SA, Cao G, Muccitelli H, Hammerstone JF. "Identification of procyanidins and anthocyanins in blueberries and cranberries (*Vaccinium Spp.*) using high-performance liquid chromatography/mass spectrometry," *Journal of Agricultural and Food Chemistry*, 2001, 49:1270-1276.

Blueberries were analyzed for procyanidins. Monomers, identified as (+)-catechin and (-)-epicatechin and a series of oligomers were detected. The oligomers consisted of epicatechin units singly-linked (B-type). The procyanidin fraction accounts for up to 32% of the total ORAC measured in blueberries.

Skrede G, Wrolstad RE, Durst RW. "Changes in anthocyanins and polyphenolics during juice processing of highbush blueberries (*Vaccinium corymbosum* L.)," *Journal of Food Science*, 2000, 65:357-364.

Investigated changes in blueberry anthocyanins and polyphenolics during processing into juice and concentrate. 32% of the anthocyanins were recovered in single-strength juice while flavonol, procyanidin and chlorogenic acid recoveries in juice were 35%, 43% and 53%, respectively. The proportion of polyphenolics remaining in the press-cake residue ranged from 1% to 18%. Anthocyanin profile changed with processing because of varying stability of individual pigments with malvidin glycosides being most stable and delphinidin glycosides the least.

Hakkinen SH, Karenlampi SO, Heinonen IM, Mykkanen HM, Torronen AR. "Content of the flavanols quercetin, myricetin, and kaempferol in 25 edible berries," *Journal of Agricultural and Food Chemistry*, 1999, 47:2274-2279.

The amounts of quercetin, myricetin, and kaempferol aglycons in 25 edible berries including cultivated blueberries collected in Finland in 1997 were analyzed. One kilogram of fresh blueberries contained 40-50 mg total flavonols, 17-24 mg quercetin, 23-26 mg myricetin, and no detectable kaempferol.