

OREGON CANEBERRIES:

What research is revealing about black raspberries.

“Based on the inhibition of cancer seen in the animal model, further studies will be conducted to examine the effects of black raspberries on cancer-related markers in human clinical trials. This study and others like it raise the possibility that specific dietary modifications may someday be used as a tool to prevent cancer.”

Dr. Keith Harris
Food and Science Technology
Ohio State University

How we can enhance the health of our bodies through nutritional intervention is a subject researchers are now studying. What we know to be scientific fact is that damage by oxygen free radicals is a contributing factor in many of the problems associated with aging, particularly cardiovascular disease and cancer. Oxygen free radicals attack DNA, causing cell mutation, that in turn prevents natural cell death. Antioxidants, such as ORAC, have an innate ability to seek and destroy oxygen free radicals. That is why foods that have high ORAC values, such as the potent black raspberry, are so essential to a healthy daily diet.

Generally, speaking, dark-colored berries are naturally high in flavonoids and phenolics (such as anthocyanins and ellagic acid), making them strong antioxidants. This is particularly true in the case of black raspberries—they contain almost twice the amount of phenolic content found in other berries.

Studying the natural chemopreventive properties of black raspberries, Dr. Gary Stoner of Ohio State University reported findings that may support a food-based approach to cancer prevention. In the study, freeze-dried black raspberries inhibited colon cancer by about 50 percent when added to the diets of rodents that had been chemically treated with carcinogens. This study is an extension of earlier research in which freeze-dried strawberries and black raspberries prevented carcinogen-induced esophageal cancer in rodents by 50-70 percent.* Stoner’s team is about to embark on human clinical trials, studying particular types of colon and esophageal cancer.

As you review the following table, notice just how potent the black raspberry is in the various aspects of its competition.

“If these findings are borne out in further research, young and middle-aged people may be able to reduce risk of diseases of aging—including senility—simply by adding high-ORAC foods to their diets.”

Floyd P. Horn

Agriculture Research Services Human Nutrition Research Center
Tufts University

BLACK RASPBERRY

This table, provided for product formulation, presents the typical composition of black raspberries and major types of packs. Specific labeling information for each product type is available from Oregon processors. For a list of Oregon processors, see our website: www.oregon-berries.com

	IQF	PUREE+
AMOUNT IN 100g		
Brix (°Brix)	9.8- 11.8	10.5- 18.0
Calories (Kcal)	72.54	60.11
Calories from fat (Kcal)	0.14	0.63
NUTRIENTS:		
Lipids (g)	0.02	0.07
Total Carbohydrates (g)	16.75	14.12
Dietary fiber (g)	1.68	2.17
Sugar (g)	5.15	4.44
Protein (g)	1.35	0.75
Vitamin A (IU)	38.00	<30
Vitamin C (mg)	2.36	1.47
Calcium (mg)	32.00	21.00
Iron (mg)	1.35	0.91
Sodium (mg)	.51	1.30

NUTRACEUTICAL VALUES:

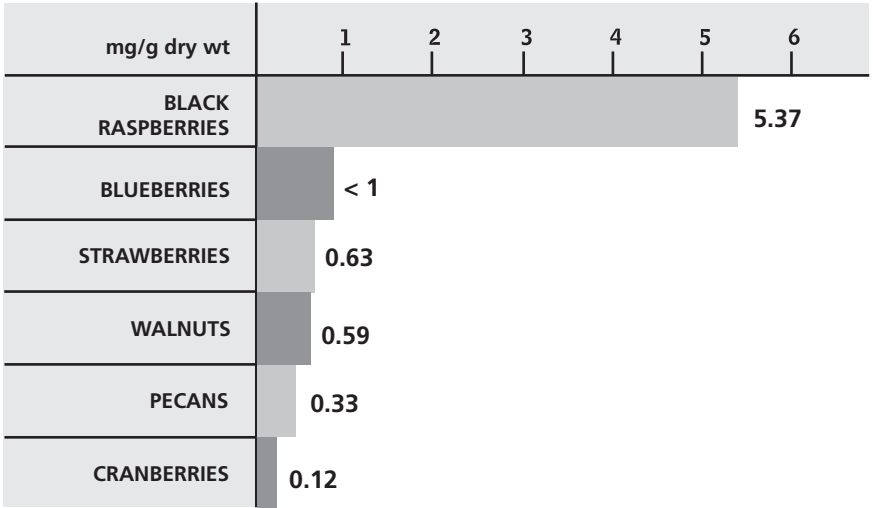
Anthocyanins	.214-589 mg/100 g
Ellagic Acid	.5-3.7 mg/g dry wt.
ORAC	.77 umole TE/g

+Single strength —seedless or with seeds

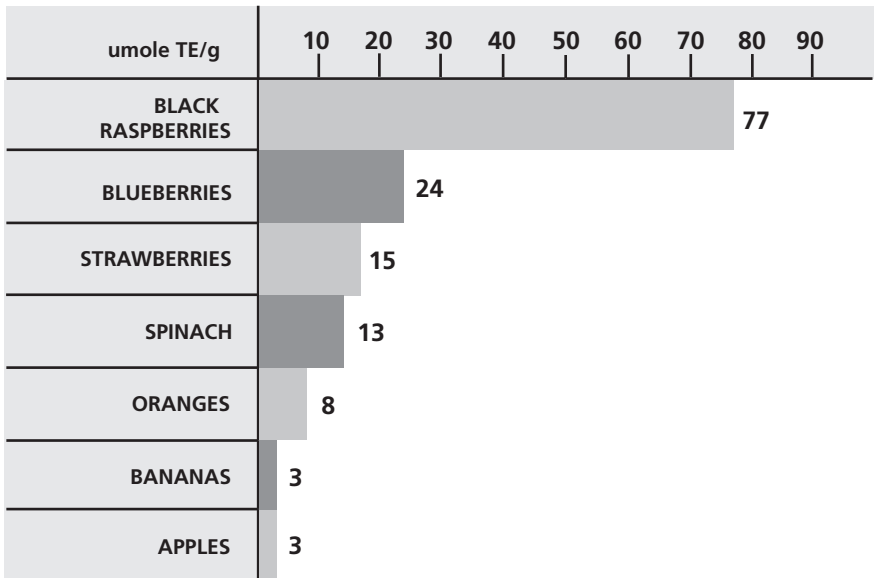
*The effects of dietary ellagic acid on rat hepatic and esophageal mucosal cytochromes P450 and phase II enzymes, Ahn, Putt, Kresty, Stoner et al, Carcinogenesis, 1996 April; 17 (4)821-8

NUTRACEUTICAL VALUES

ELLAGIC ACID VALUES



ORAC VALUES



OREGON CANEBERRIES:

What research is revealing about red raspberries.

“We’re not saying that this is a cure or a treatment for anything. This study is to look at cancer prevention, and our initial study shows some tantalizing results.”

Dr. Daniel Nixon
Medical University of South Carolina

Curative aspects of the red raspberry have been of botanical interest since somewhere around 4 A.D. The leaves were made into teas and various parts of the plant were used for throat gargles, morning sickness remedies, digestive cures and the like. Today, new research suggests that eating red raspberries may prevent cancer by inhibiting the abnormal division of cells and promoting the normal death of healthy cells. Tests conducted at the Hollings Cancer Center at the Medical University of South Carolina have revealed that the human body readily absorbs the ellagic acid from red raspberries. This ellagic acid has been clinically shown to cause apoptosis (cell death) in certain cancer cells.

Among several significant phytochemicals, red raspberries contain ellagic acid, a phenolic compound that has exhibited anti-carcinogenic effects against a wide range of carcinogens in several tissues. Ellagic acid contributes to significant inhibition of colon, esophageal, liver, lung, tongue, and skin cancers in studies with rats and mice, both in vitro and in vivo. By the same token, quercetin, one of the flavonols found in raspberries, has been found to be an effective anticarcinogen against skin, colon, and mammary cancers in rodents. Anthocyanins are also prevalent in red raspberries, working as antioxidants that protect against heart disease and age-related mental decline.

What is interesting to note is the superior efficacy of eating red raspberries as opposed to taking the individual phytochemicals in the form of dietary supplements. Though we do not yet fully comprehend why this is so, it is clear the nutraceutical whole is greater than the sum of its parts.

RED RASPBERRY

This table, provided for product formulation, presents the typical composition of red raspberries and major types of packs. Specific labeling information for each product type is available from Oregon processors. For a list of Oregon processors, see our website: www.oregon-berries.com

	BLOCK FROZEN	IQF	PUREE+	JUICE CONCENTRATE
AMOUNT IN 100g				
Brix (°Brix)	10.6- 13.0	10.8- 13.4	8.0- 15.0	45,65, 68
Calories (Kcal)	40.60	44.62	40.43	242.40
Calories from fat (Kcal)	0.36	0.54	0.54	0.90
NUTRIENTS:				
Lipids (g)	0.04	0.06	0.06	0.10
Total Carbohydrates (g)	9.18	9.71	8.89	57.90
Dietary fiber (g)	1.35	2.60	3.05	0.16
Sugar (g)	4.97	5.10	4.89	46.85
Protein (g)	0.88	1.31	1.09	3.34
Vitamin A (IU)	50.00	90.00	68.00	n/a
Vitamin C (mg)	17.54	15.29	4.26	2.40
Calcium (mg)	4.99	13.00	15.00	83.00
Iron (mg)	0.38	0.86	1.06	1.50
Sodium (mg)	0.54	1.50	1.91	65.00

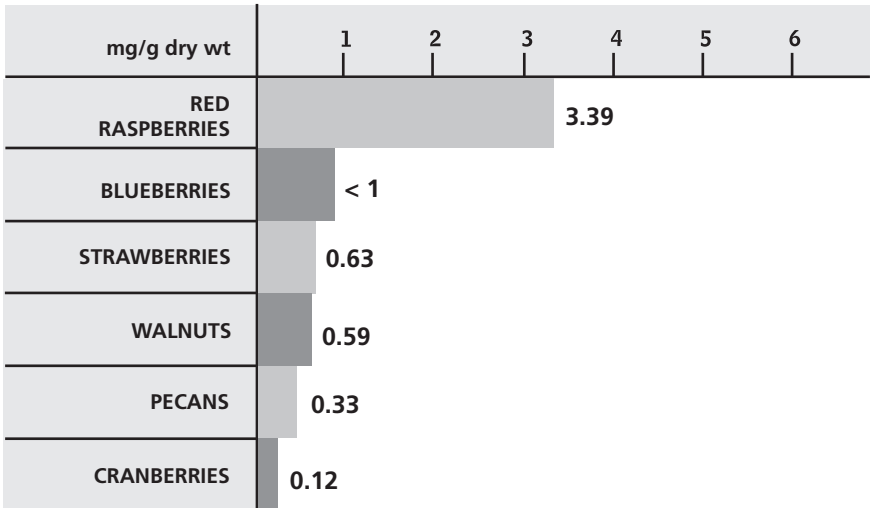
NUTRACEUTICAL VALUES:

Anthocyanins	.20-65 mg/100 g
Ellagic Acid	.3.39 mg/g dry wt.
ORAC	.24 umole TE/g
Salicylic Acid	.5 mg/100 mg
Quercetin	.12 mg/100 mg
Catechins	.83 mg/100 g

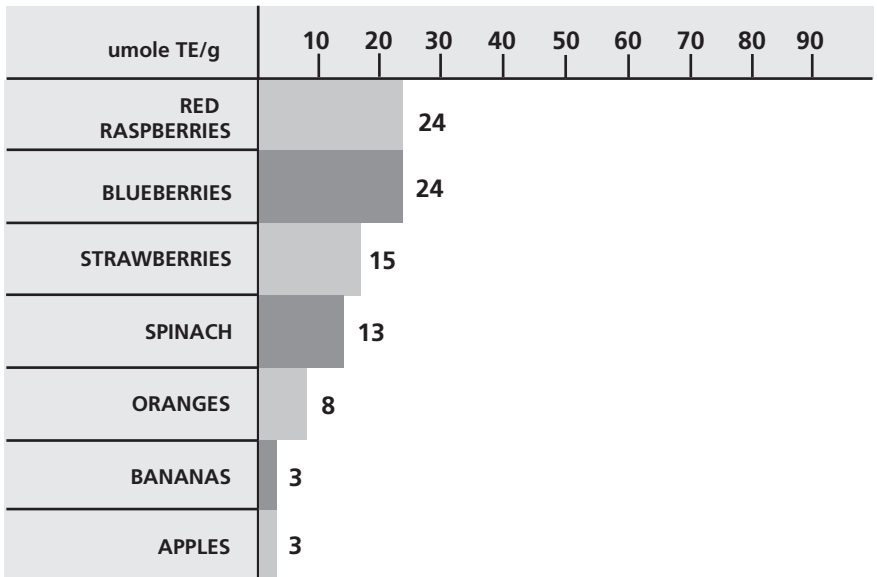
+Single strength —seedless or with seeds

NUTRACEUTICAL VALUES

ELLAGIC ACID VALUES



ORAC VALUES



MARIONBERRIES: THE “CABERNET OF BLACKBERRIES”

The Marionberry is the pride and prize of Oregon berry growers. With its uniquely distinctive complex flavor, the Marionberry is esteemed as a premium processing berry and ingredient in the repertoires of gourmet chefs and specialty food manufacturers.

The Marionberry's appeal, however, derives from more than just its gourmet attributes. It is also a potent nutraceutical, providing both nutritional and medical benefits in one powerful package. Many of these benefits derive from its strength as an antioxidant. Different antioxidants have been shown to inhibit various cancers and contribute to cardiovascular health. The measure of antioxidant effectiveness is the oxygen radical absorption capacity (ORAC), and the Marionberry has an ORAC rating that is slightly higher than that of the blueberry, which is renowned for its exceptional health-promoting antioxidant properties.

Phenolic compounds such as ellagic acid, gallic acid, and rutin, which are abundant in caneberries, have anti-carcinogenic and antioxidant qualities. The Marionberry is notably rich in ellagic acid. And like all caneberries, the Marionberry is an excellent source of fiber, potassium, and nutrients, including vitamin C and folic acid. Ongoing research continues to strengthen the hypothesis that the combined presence of these substances in various fruits, vegetables, and nuts serves to heighten their total effectiveness.

Marionberries maintain their flavor and nutrients when quick-frozen, with little or no compromise in texture and shape. They add prestige to any product, making them desirable for any number of baked, processed, or manufactured foods, such as value-added beverages, yogurts, nutrition bars, and ice creams.

ELLAGIC ACID

A phenolic compound, ellagic acid has potential as an anti-carcinogenic and anti-mutagenic with anti-viral and anti-bacterial properties. It has been shown to inhibit the growth of a variety of cancer cells, including liver, colon, esophageal, and pancreatic cancers.

Ellagic acid may also impede the development of cancer cells, and cervical cancer cells exposed to ellagic acid experienced normal cell death (apoptosis). It has also demonstrated an ability to prevent the binding of carcinogens to DNA.

Ellagic acid is found in especially high concentrations in many Oregon caneberries.

MARIONBERRY

This table, provided for product formulation, presents the typical composition of Marionberries and major types of packs. Specific labeling information for each product type is available from Oregon processors. For a list of Oregon processors, see our website: www.oregon-berries.com

	BLOCK FROZEN	IQF	PUREE+
AMOUNT IN 100g			
Brix (°Brix)	10.4-	11.2-	9.0-
	12.7	13.4	16.0
Calories (Kcal)	63.64	54.72	41.43
Calories from fat (Kcal)	1.08	0.77	0.59
NUTRIENTS:			
Lipids (g)	0.12	0.09	0.07
Total Carbohydrates (g)	14.46	11.99	8.65
Dietary fiber (g)	4.83	3.10	0.94
Sugar (g)	8.72	5.65	3.60
Protein (g)	1.18	1.50	1.56
Vitamin A (IU)	60.00	67.75	40.50
Vitamin C (mg)	1.99	1.99	1.87
Calcium (mg)	34.00	25.50	26.00
Iron (mg)	2.00	0.85	0.46
Sodium (mg)	0.56	4.88	1.88

NUTRACEUTICAL VALUES:

Anthocyanins	.109-155 mg/100 g
Ellagic Acid	.5.83 mg/g dry wt.
ORAC	.28 umole TE/g
Gallic Acid	.3 mg/100 mg
Rutin	.11 mg/100 mg

+Single strength —seedless or with seeds

THE LATEST ON BOYSENBERRIES AND EVERGREEN BLACKBERRIES

The Evergreen blackberry and the Boysenberry thrive in Oregon's fertile Willamette Valley, where reliable spring rains, warm summer days and cool summer nights combine to create an ideal climate for growing caneberries. Due to its delicious sweetness, the Evergreen blackberry is used extensively in beverage products and baked goods. The Boysenberry is a famous ingredient in jams, preserves, syrups, and jellies.

Boysenberries and blackberries share many of the nutraceutical values of their caneberry cousins, including an abundance of health-promoting phenols, flavonoids, fiber, and nutrients.

The Boysenberry has an exceptional **ORAC** rating, which is beginning to merit intense interest from food researchers, processors, and manufacturers. This notable ORAC value derive in large part from the extremely high levels of both gallic acid and ellagic acid possessed by Boysenberries. While the Marionberry and black raspberry have higher levels of ellagic acid, Boysenberries have a uniquely high ratio of free ellagic acid to the total available ellagitannins.

The Evergreen blackberry is a good source of vitamin C, and boasts a notably high level of fiber, which has been shown to help reduce the risk of certain cancers. It is high in ellagic acid, but is also a uniquely robust source of rutin, isoquercitrin, and vitamin A.

Consistent with findings in the caneberry family, the Evergreen blackberry has a high ORAC value, one equal to that of the Marionberry. Currently, there is work being done to show the relationship between high ORAC numbers and increased free radical scavenging enzyme activity in blackberries - preliminary results indicate a high rate of activity.

OXYGEN RADICAL ABSORPTION CAPACITY (ORAC)

ORAC is a measure of total hydrophilic antioxidant capacity. Free oxygen radicals can damage DNA, damage cells, initiate carcinogenesis, and oxidize LDL cholesterol — a step in the development of heart disease. Various antioxidants have been shown to bind, inhibit, or otherwise disarm oxygen radicals, providing protection against their harmful effects. Studies show that eating high-ORAC foods can significantly raise the antioxidant power of human blood. Lab research suggests that antioxidants may also help prevent memory loss and promote cognitive functioning.

Phenols, phenolic acids, flavonoids, and certain nutrients such as vitamin C are considered antioxidants. All are found in abundance in various caneberries, which have some of the highest ORAC values among all the natural foods researched to date.

EVERGREEN BLACKBERRY

This table, provided for product formulation, presents the typical composition of Evergreen blackberries and major types of packs. Specific labeling information for each product type is available from Oregon processors. For a list of Oregon processors, see our website: www.oregonberries.com

	BLOCK FROZEN	IQF	PUREE+
AMOUNT IN 100g			
Brix (°Brix)	10.2- 11.8	10.8- 12.4	10.5- 18.0
Calories (Kcal)	57.97	45.67	58.66
Calories from fat (Kcal)	1.53	0.63	0.54
NUTRIENTS:			
Lipids (g)	0.17	0.07	0.06
Total Carbohydrates (g)	12.76	9.72	12.22
Dietary fiber (g)	5.75	5.62	1.17
Sugar (g)	3.09	5.40	8.89
Protein (g)	1.35	1.54	2.31
Vitamin A (IU)	372.00	379.00	105.00
Vitamin C (mg)	0.29	2.33	1.44
Calcium (mg)	29.00	19.00	16.43
Iron (mg)	0.69	0.44	0.70
Sodium (mg)	4.40	4.10	1.22

NUTRACEUTICAL VALUES:

Anthocyanins	.83-326 mg/100 g
Ellagic Acid	.369 mg/g dry wt.
ORAC	.28 umole TE/g
Catechins	.14 mg/100 g
Quercetin	.05-3.5 mg/100 g
Gallic Acid	.2 mg/100 mg
Rutin	.24 mg/100 mg
Isoquercitrin	.6 mg/100 g

+Single strength —seedless or with seeds

ADDITIONAL NUTRACEUTICAL COMPOUNDS IN CANEBERRIES

- Anthocyanins have antioxidant, anti-inflammatory, and vasoprotective properties; they also give berries their color.
- Catechins are flavanols that help support the action of antioxidants.
- Gallic acid is an antioxidant, an anti-mutagen, and an anti-inflammatory agent.
- Isoquercitrin is an antioxidant that can inhibit vasoconstriction; it has been shown to help inhibit LDL oxidation.
- Quercetrin is a flavonol shown to counteract allergies.
- Rutin is a strong antioxidant with vasoprotective effects; it has been shown to help inhibit LDL oxidation.

BOYSENBERRY

This table, provided for product formulation, presents the typical composition of Boysenberries and major types of packs. Specific labeling information for each product type is available from Oregon processors. For a list of Oregon processors, see our website: www.oregon-berries.com

	BLOCK FROZEN	IQF	PUREE+
AMOUNT IN 100g			
Brix (°Brix)	10.8- 12.6	11.6- 13.4	8.5- 14.5
Calories (Kcal)	37.22	50.66	28.62
Calories from fat (Kcal)	1.26	0.31	0.99
NUTRIENTS:			
Lipids (g)	0.14	0.03	0.11
Total Carbohydrates (g)	7.81	11.26	6.22
Dietary fiber (g)	2.11	1.75	1.49
Sugar (g)	3.38	4.63	3.52
Protein (g)	1.18	1.33	0.68
Vitamin C (mg)	6.43	6.06	3.10
Calcium (mg)	19.00	22.67	15.63
Iron (mg)	0.50	0.56	0.62
Sodium (mg)	0.28	2.16	3.36

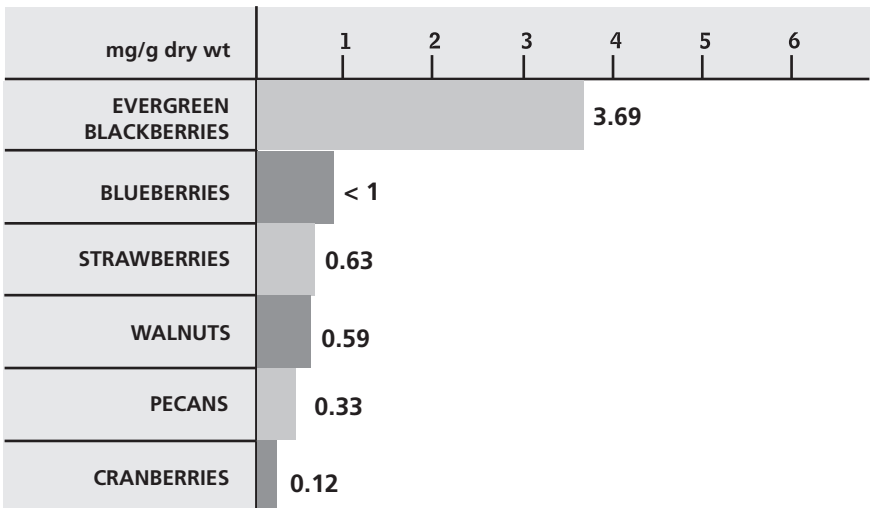
NUTRACEUTICAL VALUES:

Anthocyanins	.120-160 mg/100 g
Ellagic Acid	.5-98 mg/g dry wt.
ORAC	.42 umole TE/g
Gallic Acid	.9 mg/100 g

+Single strength —seedless or with seeds

NUTRACEUTICAL VALUES

ELLAGIC ACID VALUES



ORAC VALUES

