

BLACK RASPBERRIES

SUPERIOR NUTRACEUTICAL PROPERTIES

Wanted: All natural food - high in antioxidants, phenolic compounds and vitamin C. Must have ability to prevent the onset of some cancers as well as inhibit precancerous growths already initiated. Needs to exhibit very high levels of anthocyanins - plant nutrients which give a dark intense color. Prefer ability to maintain phytochemical capabilities even when processed by freezing, freeze drying and other assorted preservation methods. The preferred applicant must maintain rich deep color and possess a distinctive, exceptional flavor. Apply only if available year round in IQF, puree or concentrate forms. Must be prepared to work worldwide in a variety of food applications. Applications now being accepted.

Not many foods would have the abilities that are required in this job description. Here in the Northwest we have a candidate whom we would recommend highly, the Oregon black raspberry.

You might like to know a bit more about this exceptional berry which has delighted consumers and manufacturers alike for many years. Long prized for distinctive taste and unrivaled application as a colorant, the Oregon black raspberry is now being studied for its superior nutraceutical properties

In our previous messages we have outlined the properties of Oregon caneberries and touched briefly on the benefits of black raspberries. Now we would like to update you on current research into the health benefits of black raspberries as well as outline some of the many applications of this nutritional standout.

We welcome any questions you may have on the properties and availability of Oregon black raspberries. For information call our office at 1-800-859-0355 or visit our website at www.oregon-berries.com

We then decided to take a food-based approach to cancer prevention and began testing the berries' ability to inhibit chemically induced esophageal and colon cancer. Sure enough we found that freeze-dried berries were highly protective in the esophagus and colon."

Dr. Gary Stoner, Ohio State University

THE LATEST BLACK RASPBERRY RESEARCH

In the last 10 years, evidence has begun to mount that eating an abundance of deeply colored fruits and vegetables can help prevent cancer. Scientists worldwide initiated what is now termed a "food based approach" to preventing and limiting cancers in humans. This nutritional approach has been confirmed in a number of past studies, such as the 1992 study at Johns Hopkins linking sulforaphane in broccoli to reduced risk of stomach and breast cancer. In 1995 a Harvard Medical school review of 75 studies showed the link between lycopene in tomatoes and reduced risk of prostate cancer. In 1999, scientists at Ohio State University (OSU) found that a substance called ellagic acid inhibited carcinogen induced esophageal and colon cancers. When they tested a series of fruits to determine their ellagic acid content, black raspberries had the highest levels among fruits tested for the study.

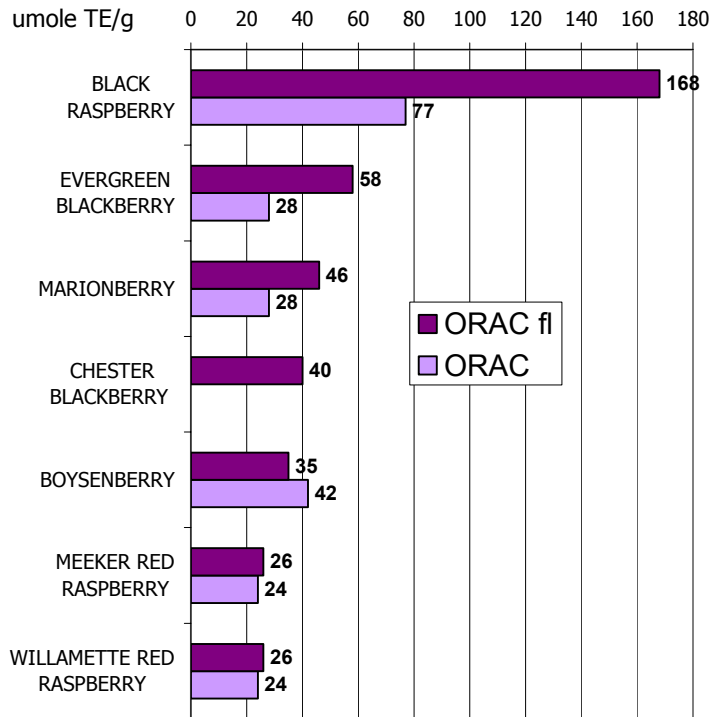
Further studies at OSU focused on the ability of black raspberries to halt the onset of cancer, as well as inhibit the progression of precancerous cells to actual cancer in laboratory animals. The studies focused on esophageal and colon cancers, two of the most widely spread cancers in humans. Esophageal cancer is among the ten most common cancers and the fifth leading cause of death worldwide. This hard to treat cancer affects 13,300 US residents annually, the great majority of them men. Esophageal cancer has been linked to cigarette smoking and alcohol abuse, but recent studies showed connections to low fruit and vegetable consumption and environmental carcinogens in the air. Colon cancer is the second leading cause of total cancer deaths in the US, accounting for 48,000 deaths each year. Most cases of colon cancer progress slowly making it an ideal subject for a study using a food based approach.

Dr. Gary Stoner, Director of the Laboratory of Cancer Chemoprevention and Etiology, conducted the studies at Ohio State University. Rats in the study were injected with NMBA a chemical carcinogen that induces esophageal cancer. NMBA is one of a group of chemicals called nitrosamines, compounds that have been linked to cancer. Rats in the study were put on a diet of either 5 or 10 percent freeze dried black raspberries. Some were fed this diet after receiving NMBA, while others were fed this diet prior to and during NMBA application. Compared to animals not fed black raspberries the rats had either a 39 or 49 percent reduction in tumor occurrence depending on the amount of black raspberries they received. At week 25 of the study a diet of 5 percent black raspberries had reduced the number of tumors per animal by an average of 62 percent. Due to these promising numbers in the animal studies at Ohio State, human clinical studies are now underway for specific types of colon and esophageal cancers.

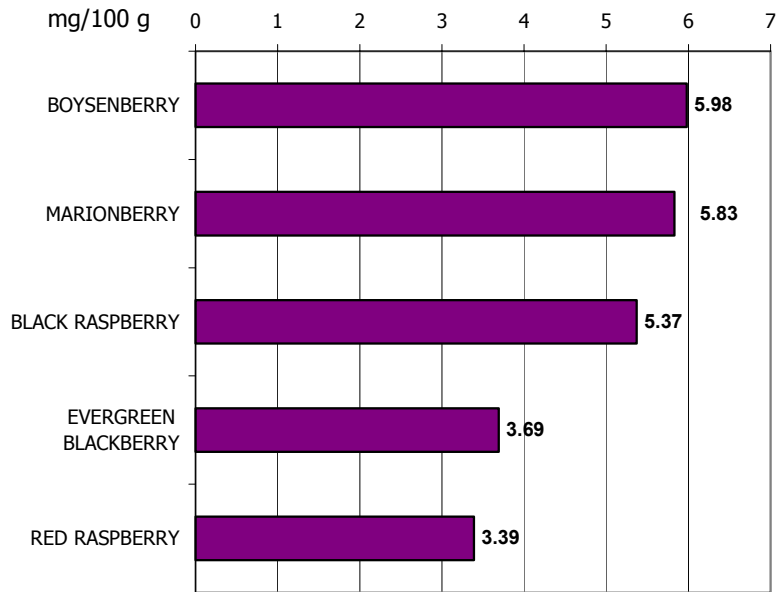
WHAT ELSE CAN BLACK RASPBERRIES DO FOR YOUR HEALTH?

Recent testing has confirmed that Oregon black raspberries have astonishingly high antioxidant levels. Antioxidant levels, shown in terms of their oxygen radical absorption capacity (ORAC), are a measure of a substance's ability to absorb oxygen free radicals. Oxygen free radicals can damage DNA, cause cellular change, oxidize LDL cholesterol, and cause premature mental aging. Consuming foods high in antioxidants helps prevent cancer, heart disease, stroke, and possibly Alzheimer's Disease. When compared to other foods, black raspberries have extremely high ORAC values. They are also among the highest foods in anthocyanins. Anthocyanins give foods like black raspberries their deep, dark color and have been shown to have anti-inflammatory and vasoprotective properties. Research has linked anthocyanins with improved vision, cardiovascular health, memory retention in old age and reduced risk of hypertension.

ORAC VALUES



ELAGIC ACID VALUES



WHOLE FOODS VS EXTRACTS

The studies at Ohio State University focused on ellagic acid and its effectiveness in cancer prevention. Data from the studies showed an unexpected result: inhibition of the colon and esophageal cancer cells was greater when the whole berry was used rather than ellagic acid alone. Scientists believe that a combination of the compounds in black raspberries, not a single element, helps fight cancer cells. Eating berries in their natural state offers the best protection against disease. Eating $\frac{1}{2}$ cup of black raspberries a day will give a person the protective substances such as ellagic acid, antioxidants, anthocyanins, vitamin C, and fiber that are found in black raspberries.

BLACK RASPBERRIES AND YOUR CONSUMERS

Human studies take years to complete, but consumers are reading the news about black raspberries today and they are seeking products that contain them. Recent news reports from Reuters, CNN and Yahoo have sparked consumer interest. Currently applications for black raspberries are jams, jellies, syrups and ice creams, but their exceptional taste can add flavor to a multitude of products including beverages, smoothies, cereals, baked goods and yogurts. The taste of black raspberries is unique and delicious either used individually or in blends.

Black raspberries are also well known as a food colorant. Due to their deep, rich color manufacturers may use one-third the amount of black raspberries compared to other colorants, at considerable cost savings. When black raspberries are used as a colorant for all natural foods they

eliminate the need for chemical colorants and add significant nutritional benefits as well.

Oregon is the United States largest producer of black raspberries, producing 3-5 million pounds per year. Western Oregon's mild, wet springs and warm summer days with cool nights allow our fruit to stay on the vine longer, developing its flavors and size. Our farmers take pride in producing a berry that is sweet, juicy and full of nutrition. Our berries are not genetically modified and unlike berries grown abroad are grown following strict USDA guidelines. If you are looking for a premium black raspberry to add nutrition and value to your product it makes sense to choose the finest available - Oregon black raspberries.