



TOPIC: BERRIES

The first human study showing that plant compounds in berries can protect the brain against diseases, such as Parkinson's, was reported in 2012. Some 130,000 men and women participated. More than 800 developed the disease within the 20 year follow-up. A detailed dietary analysis revealed that men eating the most berries were 40 percent less likely to develop the disease than those eating the least. (Oddly, no similar link was found in women.)

— Gao & Cassidy, *Neurology*, April 4, 2012

look good
feel good
be well

nutrition NEWS

Berry

Magic!!!

- Protect Your Brain
- Enhance Your Immunity
- Support Your Heart
- Maintain Healthy Blood Sugar
- Guard Against Cancer
- Invite Healthy Aging

What's So Magical About Berries? *Look Inside...*



Berry Magic!!!

Purple, red, blue, black, and magenta.... Think berries. Strawberries. Blueberries. Raspberries. Blackberries. Chokeberries. Black Currants. Elderberries. Bilberries. Even Cranberries and Gogi Berries. Plus, the surprising Açai Berry. **Populations who consume these deeply colored fruits show less obesity and fewer deaths from heart disease, cancer, and Alzheimer's disease.**

In this *Nutrition News*, we discuss the general health benefits of eating berries, then take a look at the individual berries. **There are 3 major take aways: 1) Berries are good for you; 2) Eat at least 3-4 servings weekly of fresh, frozen, or freeze-dried berries, organic when possible; 3) In most cases, the darker the berries, the greater the benefits.**

Berry Power

Many people are familiar with the connection between berries and brain power. However, berries have additional health benefits. They can guard your eyesight, enhance your immunity, support your heart (and promote healthy blood pressure), protect against cancer, regulate blood sugar (defending against diabetes or increasing control), and safeguard DNA. In addition, evidence suggests that they may help to manage obesity and slow the aging process.

How is this possible? Within their pigmentation, berries contain a myriad of *phytonutrients* (plant biochemicals). These are primarily antioxidant and anti-inflammatory compounds. Plus, research reveals that some are also antibacterial, antiviral, anti-allergenic, and anti-cancer.¹

A special field of research has focused on the health benefits of brightly colored foods.² That is the source material for this



newsletter. One way of measuring antioxidant capacity of produce is by its

ORAC or Oxygen Radical Absorbance Capacity.³ **Together with good nutrient content, ORAC distinguishes several berries within a new category of functional foods called “superfruits”, a rapidly growing multibillion dollar industry.**

Berries deliver whole body antioxidant protection. Plants with these colors have the unique ability to recycle *glutathione*, a powerful internal antioxidant.⁴ Possibly because it protects DNA, high glutathione levels are a longevity marker. The liver also requires large amounts to detoxify toxins our bodies confront daily. Here's a closer look at how eating berries benefits us.

• **Protect Your Brain:** Strong evidence exists that berries not only improve memory, but slow or postpone the onset of other age-related brain functions. Recent exciting news comes from an [overview of studies](#) completed by Shukitt-Hale and Miller. Berries may help the brain stay healthy by changing how neurons communicate. Such changes can prevent inflammation, improving both motor control and thought processing. (*Journal of Agriculture and Food Chemistry*, March 7, 2012) They also deter brain disease. (See cover.)

• **Save Your Sight:** With the nearly universal use of electronic devices (including texting), it's no wonder millions of us have

eyestrain, eye fatigue, and progressive nearsightedness. Our eyes are programmed to focus on the infinite distance. (Think “hunters and gatherers”.) Hours focusing on a near point causes the eye muscles to “lock up”. Ultimately, this becomes true nearsightedness.

Berries can help. [Studies show](#) that a combination of berry extracts produced 73 to 97 percent improvement of the eyesight in 8,000 patients with damaged blood vessels.

• **Build Your Immunity:** Research has partially solved how berries influence the immune system. At Germany's [National Center for Food Research](#), [investigators found](#) that certain berry chemicals boost the production of cytokines. These unique proteins help regulate immune response. [Dr. Gerhard Rechkemmer](#), center director, voiced a common complaint of berry researchers when he noted the difficulty of tracking the specific compounds in the bloodstream.

• **Support Your Heart:** Animal studies show that berry phytonutrients may strengthen blood vessels, improve circulation, decrease levels of circulating fats, prevent the oxidation of LDL (“bad”) cholesterol, and more. Berries also decrease the activity of an enzyme (ACE) that can otherwise increase the risk of high blood pressure. In addition, berries lower C-reactive protein (CRP) levels and other inflammatory markers.⁵ Excessive inflammation is a heart disease risk.

• **Maintain Healthy Blood Sugar Levels:** Several [recent studies](#) have found regular intake of berries to be associated with decreased risk of type 2 diabetes. Because of their low glycemic index (GI), berries have little impact on blood sugar levels. Better, evidence shows that **eating berries regulates blood sugar**. Studies have revealed that berries decrease the breakdown of starches into sugars, lowering amounts released into the blood. Hence, lower blood sugar levels. Over three months, persons with type 2 diabetes saw significant improvement in blood sugar levels by eating at least 3 servings of berries *per day*.

• **Guard Against Cancer:** Anti-cancer benefits of berries come from their antioxidant and anti-inflammatory properties. **In animal studies, breast, cervical, colon, esophageal, and prostate cancers have been affected.** By quenching free radicals and reducing inflammation, the development of cancer cells is altered. [New research](#) shows that some berry compounds supercharge the action. Existing cancer cells may be driven to suicide (*apoptosis*) while potentially cancerous cells may receive

¹ Reported as *chemopreventive* in studies.

² For more information about the benefits of brightly colored foods, read *Eat Your Colors* by Marcia Zimmerman, or, for the short version, read *Nutrition News*, “Whole, Fresh, and Lively”.

³ ORAC values as reported by the Agricultural Research Service of the USDA are used here.

⁴ Besides berries, this includes grapes, and raisins, plums and prunes, black cherries, figs, tea, red wine, and chocolate. Also purple cabbage and dark Swiss chard, eggplant and radicchio. Vanilla and black pepper too.

⁵ Results come with 1 c berries eaten 3-4 days per week over 1-3 months, and needs to be ongoing.

signals that keep them cancer-free.

Exciting news from [Ohio State University](#) reveals “All Berries May Have Anticancer Properties”. [Gary Stoner, PhD](#), and his team looked at seven readily available berries, including strawberries, blueberries, and red raspberries as well as Açai (pronounced ah-sye-EE) and gogi. **Long time investigator of berries and cancer, Gary Stoner, PhD, concluded, “What’s emerging from studies in cancer chemoprevention is that single compounds alone are not enough. And berries are not enough. We never get 100 percent tumor inhibition with berries. So we need to think about another food that we can add to them that will boost the ... berries.”** ([Pharmaceutical Research](#), June 2, 2010)

Ahhhh, Berries

We discuss these wonderful fruits in order of popularity, along with research unique to each. **Two caveats: 1) All the berries in this issue have the health benefits discussed above; 2) It’s possible that no benefits are unique to any individual berry.** Researchers haven’t sorted out whether benefits are a result of compounds shared among berries or if combina-



tions of chemicals in each berry have similar effects. ([Journal of Agricultural and Food Chemistry](#), March 7, 2012) **ORAC numbers follow each berry name.**

STRAWBERRIES (4,302).⁶ Fragrant, sweet strawberries are the world’s most popular berry. Besides blood sugar effects, strawberry research was first to show an amazing relationship between [berries, table sugar, and blood sugar](#). **A couple of tablespoons of sugar typically result in a blood sugar spike. Amazingly, eating a cup of berries simultaneously reduces the spike!**

Perhaps unique, strawberries contain relatively small amounts of salicylic acid, an anti-inflammatory similar to acetylsalicylic acid in aspirin. Some researchers have suggested that this might partly explain decreased inflammation in the digestive tracts of individuals with **inflammatory bowel diseases**.

BLUEBERRIES (4,669).⁷ One of the highest antioxidant foods in the US diet, the big news is that **blueberries improve memory in humans.** [Robert Krikorian](#) and colleagues at the [University of Cincinnati](#) conducted a **12 week study**. Older adults (average age 76) drank 2 to 2.5 cups of blueberry juice daily. The result was higher scores on two different cognitive tests. Researchers suggested the berries might also postpone the onset of other age-related cognitive problems. ([Journal of Agricultural and Food Chemistry](#), April 14, 2010)

FYI: Blueberries are among a small number of foods that **contain measurable amounts of oxalates**, naturally-occurring substances also found in spinach and chard. When crystallized, they can cause health problems. Individuals with already existing and untreated kidney or gallbladder problems may want to avoid eating blueberries. (Alone among the berries, blueberries don’t contain tannins, known to have their own health benefits.)

RASPBERRIES (5,065). Compounds in raspberries **increase fat cell metabolism!** The compounds are raspberry ketone (also called *rheosmin*) and tiliroside.⁸ The ketones increase enzyme activity, oxygen consumption, and heat production in certain fat cells, **possibly decreasing obesity risk along with the risk of**

fatty liver. They also **decrease the activity of pancreatic lipase**, a fat-digesting enzyme. This decrease may result in less absorption of fat. Further, by improving fat cell metabolism, overall inflammation may be reduced.

Tiliroside activates adiponectin, a hormone produced by fat cells. Obese persons with type 2 diabetes either don’t produce adequate adiponectin or it isn’t sufficiently active. **When activated, adiponectin reduces insulin, blood sugar, and blood fat.** Tiliroside doesn’t appear to stop weight gain or prevent fat accumulation.

BLACKBERRIES (5,347). [Research](#) using blackberry wine confirms that **blackberries also inhibit sugar absorption and assimilation.** Compared with acarbose (Precose, a diabetes drug), blackberry compounds inhibit two of the body’s carb-degrading enzymes by 91.8 and 103.2 percent respectively. ([De Mejia, Journal of Agricultural and Food Chemistry](#), August 15, 2012)

Not mentioned with other berry research, blackberries **contain phytoestrogens.** These plant hormones help ease PMS symptoms, such as bloating and hunger, and relieve menopausal symptoms, like hot flashes. Phytoestrogens also help with immunity, brain function, and heart health.

Oh-My-Gosh-Berries!

Destined to become the SuperBerries, the ORAC of Açai berries is 102,700! This wonderful reddish purple berry comes from a palm tree native to South America (*Euterpe oleracea*). Obviously, Açai has significant antioxidant and anti-inflammatory actions. It also contains fiber and heart-healthy fats. Researchers are just beginning to uncover the potential health benefit of this amazing fruit.

A successful pilot study investigated the effects of Açai on risk factors for metabolic disorders in overweight adults. The 10 participants ate about ½ cup of Açai pulp 2x/d for 30 days. Significant markers included reduced total cholesterol (LDL down; HDL up), lowered blood sugar levels after meals, and reduced fasting glucose and insulin levels. Surprisingly, there was no effect on lowering blood pressure or C-reactive protein (the inflammation marker).

Another wonder of Açai is its oil, also a powerhouse of antioxidants. Currently, it is being used in beauty products. Açai oil retains its high antioxidant levels even after processing and long-term storage.

Black chokeberries (*Aronia melanocarpa*) have an exceptional ORAC value of 16,062, demonstrating the high concentration of biologically active compounds in Aronia. Until the revelation of Açai, it was considered “the most powerful antioxidant among all known fruits”. Aronia contain *catechins*, the healthful compounds found in green tea, making them especially good for the heart. [Researchers](#) at the [Medical University of Warsaw](#) have demonstrated the berries’ blood pressure lowering ability. **They suggest that daily use of the extract could have an immense effect on preventing heart attack and stroke.** The supplement extract and the fresh juice are available.

⁶ Buy organic strawberries. Always on the “The Dirty Dozen™” list, nearly 60 different pesticides have been found on strawberries. (Fewer on frozen strawberries.) The current dirty list in order: apples, celery, sweet bell peppers, peaches, strawberries, nectarines (imported), grapes, spinach, lettuce, cucumbers, blueberries, and potatoes. Take a closer look at the Environmental Working Group site: [www.ewg.org](#).

⁷ Buy organic blueberries! Because more than 50 pesticide residues have been detected on them, they are on the Dirty Dozen list. Frozen blueberries are somewhat less contaminated.

⁸ Neither of these substances is exclusive to raspberries. Raspberry ketone is found in lesser amounts in other plants, including Turkish rhubarb, larch, yew, maple, and pine. Tiliroside is found in many plants of the rose family, including rose hips, strawberries, and raspberries.

True Berries: Berry Confusing!

None of our favorites are botanically defined as berries. A true berry is a fruit that is entirely produced from one ovary of the plant. True berries include black and red currants and gooseberries. Other examples of true berries are the tomato, grape, loquat, avocado, persimmon, eggplant, guava, and chile pepper.

We do discuss **black currants (7,957)**⁹. Research shows that they contain a greater concentration of vitamins and minerals than any other fruit, containing four times more vitamin C than oranges. Their deep blue-black color reflects a high level of healthy compounds. **Studies report that black currant can rescue the eyes from overexposure to light (“dark adaptation”).** In one study, participants using the computer and taking black currant did not experience eye fatigue nor the back and neck stiffness often associated with desk work. **One researcher called for further study, commenting that perhaps this antioxidant effect might also prevent retinal diseases such as cataract and age-related macular degeneration.**

FYI: Taking black currant extract can remove undesirable dark circles from the eyes.

Medicinal Berries

There are two berries used primarily for their medicinal benefit: Elderberries and bilberries.

Elderberry, *Sambucus nigra*, (14,697) is best known as an antiviral ingredient in natural cold and flu remedies.



An [Israeli study](#) revealed three antiviral properties of elderberry: 1) reduces the propensity of red blood cells to clump as is usual in the presence of some viruses; 2) inhibits the replication of a number of strains of influenza A and B; 3) shortens the duration of flu symptoms. These results

were confirmed by a [Norwegian study](#). ([Journal of International Medical Research](#), 2004)

[Further work](#) has shown that an elderberry mixture inhibited the replication of 11 strains of influenza virus and increased cytokine production as well as being effective against the herpes virus.

Bilberries, European blueberries, (7,570) are known for their sight-saving ability. The extract is recommended for night vision, retinopathy (damage to the retina), and the prevention of cataracts. Another use is for [chronic venous insufficiency](#). CVI occurs when the veins cannot pump sufficient blood back to the heart. Speaking about bilberries, [David Kiefer, MD, University of Wisconsin](#), says “**There’s oxidative damage in so many illnesses. Whether in eye vessels or leg vessels, we can get a positive effect.**” Patients with macular degeneration [retinal

deterioration leading to blindness] have reported mild relief using bilberry extract.

Traditionally, bilberries have been used to treat diarrhea. The berry’s tannin content accounts for this success. (American blueberries don’t contain tannins.) Bilberry extract supplements are standardized to 25% active compounds and are widely available.

Siri Says: A few words about cranberries and goji berries.

Cranberries (9,090) seem to meet all the criteria of the other superberries discussed here. **Their claim to fame is their ability to treat and heal urinary tract infections (UTIs).** The downside to cranberries is their sourness. They need a lot of sweetener to be palatable. Plus, according to an [article](#) in the online [Medical News Today](#), the juice is too dilute to have a healing effect. **The research shows only cranberry supplements deliver the desired effect.** Personally, I would imagine that you could use cranberry concentrate sweetened with stevia if you object to capsules. No comment was made about raw or cooked cranberry relish. The problem with that is the amount one might need to eat.

Goji berries ought to be called Chinese raisins. Their **ORAC of 3,290** is nearly the same as **regular raisins at 3,206**. In a recent [article](#) published by the UK National Health Service in collaboration with the British Dietetic Association, the BDA spokesperson concludes, “...the evidence of their [goji berries] health benefits *so far* [*It.*, ed.] comes from purified extracts...at much higher concentrations than the [berries] contain.”

Incidentally, when I researched the [ORAC of raisins](#), I discovered that **golden raisins**, with their **ORAC of 10,450** (contrary to expectations), actually carry a much larger health wallop than their more common cousins. (ORAC 3,206.)

Related Resources

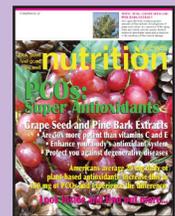
Each month, Nutrition News features three additional titles to support our main topic. This month’s selections are “Plant-Based Antioxidants” (“Whole, fresh, and lively!”), “Powerful Antioxidant Supplements” (“Dancing With Antioxidants”), and “OPCs: Super Antioxidants”.



Plant Based Antioxidants



Powerful Antioxidant Supplements



OPCs: Super Antioxidants

⁹ Familiar to us for their essential fatty acid content of GLA, gamma linolenic acid.

Throughout this issue, you see underlined blue words. These indicate hyperlinks.

When you subscribe online, one click on the underline takes you to the web and further information about the underlined topic.



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