

OPTIMAL HEALTH UNIVERSITY™

Presented by Family First Chiropractic

Berries Are Brain Food

This season, your doctor at Family First Chiropractic is encouraging patients to eat more berries. These gems of the fruit world are the perfect summertime snack. Toss them on a green salad, pop them like candy or blend them into a yogurt smoothie. However you serve them, berries are rich in disease-fighting nutrients. What's more, a growing wealth of scientific research indicates that feasting on berries can make you smarter, as well as ward off neurodegenerative disorders such as Alzheimer's disease.



A Crucial Note

While incorporating more berries into your diet can boost your health and well-being, your doctor at Family First Chiropractic emphasizes that it is essential to choose organically grown berries. This is because traditionally farmed berries contain some of the highest pesticide levels of all fruits. High consumption of many of these pesticides is linked with increased risks for the very same mind-robbing diseases that berries may prevent. Pesticide exposure may also amplify the risk of cancer.

While it is often difficult to find fresh organically grown berries during cooler months, they are widely available during the summer. Look for sales at health food stores, Farmers' markets and pick-your-own farms. Wrap up and freeze some of the berries. Properly frozen berries will last

for several months.

The Awesome News

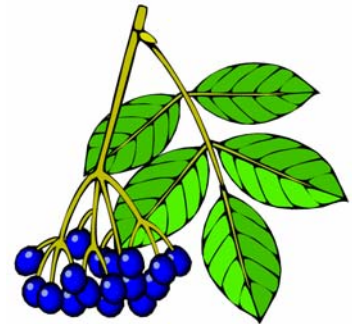
Strong scientific evidence exists that eating blueberries, blackberries, strawberries and other berry fruits has beneficial effects on the brain and may help prevent age-related memory loss and other changes. These findings are from a large review published in the American Chemical Society's *Journal of Agricultural and Food Chemistry*.

In the article, Barbara Shukitt-Hale, PhD, and Marshall G. Miller extensively review cellular, animal and human studies on the topic. Their review concludes that berries help the brain stay healthy in several ways. Berry fruits contain high levels of antioxidants, compounds that protect cells from damage by harmful free radicals.

Because chiropractic focuses on facilitating the nervous system, your doctor at Family First Chiropractic is interested in research showing that berries change the way neurons in the brain communicate. These changes in signaling can prevent inflammation in the brain that contributes to neuronal damage and improve both motor control and cognition (*J Agric Food Chem* 2012; Epub).

Awesome Anthocyanins

Monoamine oxidases (MAOs) are enzymes in the brain that trigger neu-



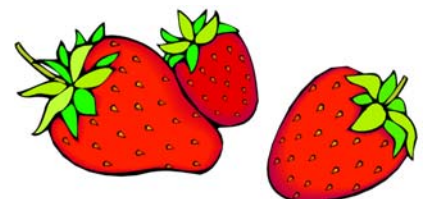
ron reactions. High MAO activity is associated with cognitive problems including depression and memory loss.

Laboratory studies show that antioxidants called anthocyanins inhibit the activity of MAO in the brain. Berries are an excellent source of anthocyanins.

Researchers explain that "increased consumption of certain berry fruits containing anthocyanins, in addition to other phenolic compounds known to inhibit MAOs, may be useful in combating neurological disorders stemming from reduced levels of amines in the brain by blocking the enzymes that break them down." (*J Agric Food Chem* 2012; Epub.)

Resveratrol to the Rescue!

Resveratrol is a powerful antioxidant chemical, typically associated with grapes. However, what many people don't know is that this disease-busting nutrient is also abundant in many berries.



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Evidence reveals that resveratrol may be useful in the prevention and treatment of cardiovascular disease, cancer, pain, inflammation, tissue injury and neurodegenerative disorders, especially Alzheimer's disease (AD).

How does resveratrol keep AD at bay? Exciting new research indicates that the antioxidant may prevent plaque formation in the brain associated with AD (*Curr Pharm Des* 2012;18:27-33).

Avoid Alzheimer's

Eating berries may thwart Alzheimer's even in people with a strong genetic predisposition to the disease, according to research conducted at Tufts University in Boston, Mass.

As part of the experiment, scientists bred rats to have a genetic risk for AD. Some of the rats were fed blueberry supplementation from 4 months of age. At 12 months of age (old-age for rats) the rats that ate blueberries showed no deficit in navigating a maze. In addition, their brains showed no evidence of the plaque formations associated with AD.

"Thus, our data indicate for the first time that it may be possible to overcome genetic predispositions to Alzheimer disease through diet." (*Nutr Neurosci* 2003;6:153-62.)

Slow Cognitive Decline

Mild cognitive impairment (MCI) is a clinical designation that describes a degree of mental decline. MCI is more severe than memory loss from normal aging, while it is less severe than dementia. A diagnosis of MCI is a strong risk factor for future dementia.

Studies show that berry consumption may prevent — and perhaps even reverse — MCI.

For instance, one study followed older adults with early memory changes indicative of MCI. The patients were given a standard memory test, which

measured word recall. For 12 weeks some of the patients drank blueberry juice every day. Other subjects consumed a placebo drink that was artificially flavored to taste like berries.

After 12 weeks, the patients re-took the memory test. Results revealed that those in the blueberry group had a significant delay in decline — or in some cases an increased performance in memory — compared with their initial test results. On the other hand, those in the placebo group showed a higher rate of memory decline.

The scientists explain that "blueberries contain compounds called anthocyanins, which have antioxidant and anti-inflammatory effects. In addition, anthocyanins have been associated with increased neuronal signaling in brain centers, mediating memory function as well as improved glucose disposal, benefits that would be expected to mitigate neurodegeneration." (*J Agric Food Chem* 2010;58:3996-4000.)

In another experiment, rats aged 6 months to 14 months consumed a diet including strawberry extract. Investigators observed the rats navigate mazes, and evaluated several blood markers of cognitive function. Compared with rats on a control diet, rats who consumed strawberry extract showed a significantly slower rate of mental decline with advancing age (*J Neurosci* 1998;18:8047-55).

Blueberries may also stave off the mental degeneration associated with aging, say researchers. Scientists divided 40 elderly rats into four feeding groups: (1) plain rat chow, (2) rat chow supplemented with blueberry, (3) rat chow supplemented with strawberry and (4) rat chow supplemented with spinach.

After eight weeks, the rats were tested for memory, cognitive function and coordination using rod walking and maze tests. The rats in all three supplement cohorts showed improved performance, compared with controls. The rats fed blueberry extract demon-

strated the most profound headway. When scientists looked at the brains of the animals in the blueberry group, they found biochemical evidence supporting the positive results of the physical tests (*J Neurosci* 1999;19:8114-21).

Prevent Parkinson's

Parkinson's disease (PD) is one of the most common neurodegenerative disorders. Now research indicates that berries may stave off PD.

In the laboratory, scientists treated brain neurons with an extract of mulberry fruit. They then used toxins to induce cell changes associated with PD. Specifically, these changes involve the death of neurons associated with the hormone dopamine.

Findings showed that mulberry extract "significantly protected the cells from neurotoxicity in a dose-dependent manner." (*Br J Nutr* 2010;104:8-16.)

Experiments in mice also indicate that mulberry fruit, which has long been used in Traditional Chinese Medicine, may have a protective effect against PD.

Chiropractic Nutritional Advice

A balanced diet of whole foods is a critical component of the chiropractic lifestyle. That's why this office provides regular handouts and educational opportunities on the latest nutrition research. Find out how you can boost your health by calling today for an evaluation.

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