

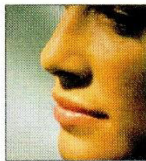
MIXED FRUIT ANTHOCYANINS

Diverse Health Effects

Studies show anthocyanins' positive influences on a variety of health conditions. One reason is their anti-inflammatory properties, which affect collagen and the nervous system. Their ability to protect both large and small blood vessels from oxidative damage derives from a range of effects, including mitigating microvessel damage from high blood-sugar levels that cause complications in diabetics. By the same token, diabetic retinopathy, which damages eyesight, is caused by leaking, damaged capillaries.

Inflammation and Collagen

In the course of inflammation, enzymes damage connective tissue in capillaries, causing blood to leak into surrounding tissues. Oxidants are released and further damage blood-vessel walls. Anthocyanins protect in several ways. First, they neutralize enzymes that destroy connective tissue. Second, their antioxidant capacity prevents oxidants from damaging connective tissue. Finally, they repair damaged proteins in the blood-vessel walls. Animal experiments have shown that supplementation with anthocyanins effectively prevents inflammation and subsequent blood-vessel damage.



Collagen

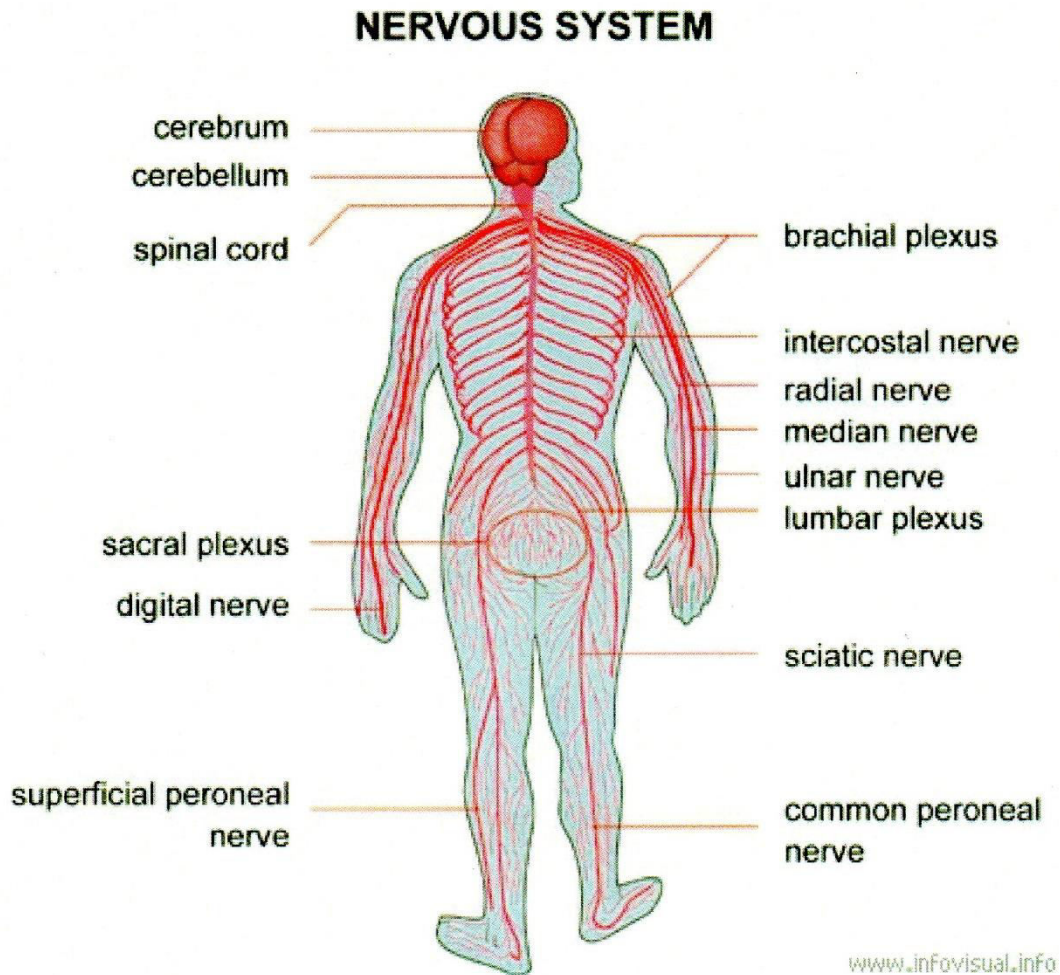


Inflammation

Anthocyanins' anti-inflammatory ability has been shown to help dampen allergic reactions. In one study, Bulgarian researchers gave animals histamine and serotonin, both of which cause allergic reactions and increase capillary permeability. The animals were supplemented with a variety of flavonoids. Anthocyanins were found to have the strongest anti-inflammatory effect of any flavonoid tested.

The Nervous System

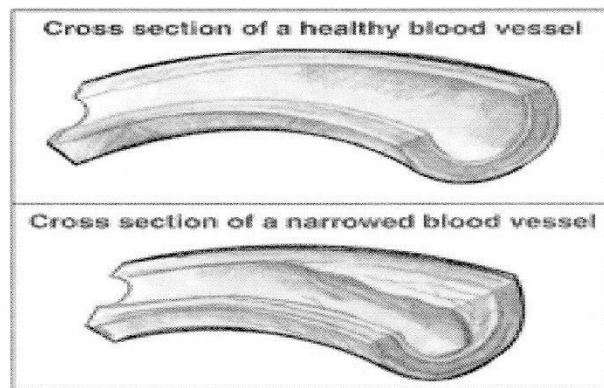
Anthocyanins' effects on inflammation help explain many of their protective effects elsewhere in the body. The brain is particularly vulnerable to oxidative damage.



Test-tube studies show that nasunin protects lipids in animal brain tissue from oxidation. Peroxynitrite nitration of tyrosine residues in enzymes and proteins is believed to be a major cause of brain damage in neurodegenerative diseases and in brain trauma. Nitrated tyrosine blocks nerve growth-factor receptor sites, thus preventing new neural growth and inhibiting repair. By preventing tyrosine nitration, the anthocyanin pelargonidin may help protect against neurological diseases. Blueberry supplements have even been found to reverse age-related neurological deficits in animals.

Large Blood Vessels

Anthocyanins' ability to counter oxidants makes them brawny atherosclerosis fighters. First, anthocyanins prevent a key step in atherogenesis: oxidation of low-density lipoproteins (LDL). Bilberry in even trace amounts effectively protects against LDL oxidation in test-tube studies. Researchers in a USDA-funded study concluded that bilberry is a "more potent" antioxidant than vitamin C or BHT, which is used as a preservative. In a human study conducted in Europe, researchers found that 55 women with intrauterine growth retardation (which manifests as a decreased rate of fetal growth), who took anthocyanins, experienced decreased oxidated LDL levels from 1,104 mU/ml to 726 in two months. LDL levels rose in the control group.



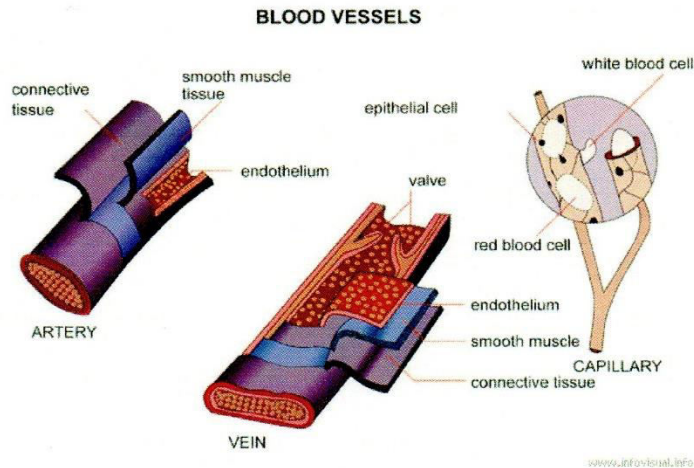
Second, anthocyanins protect the integrity of the endothelial cells that line blood-vessel walls. Damage to these cells stimulates white blood cell migration to the area, initiating atherosclerosis and stimulating red blood cell migration. A study by the USDA at Tufts University in Boston found elderberry anthocyanins are quickly taken up into endothelial cell membranes where they prevent oxidation from hydrogen peroxide and other oxidants. The researchers concluded that elderberry has "important implications on ... vascular diseases."

In addition, anthocyanins relax blood vessels. In one experiment, French researchers treated animal aortas with norepinephrine, which constricts blood vessels. Presence of the anthocyanin delphinidin relaxed the aorta by 89 percent, whereas another anthocyanin, malvidin, was ineffective. The researchers concluded that delphinidin may "be involved in reduction of cardiovascular mortality related to the presence of wine, fruits, and vegetables in the diet."

Small Blood Vessels

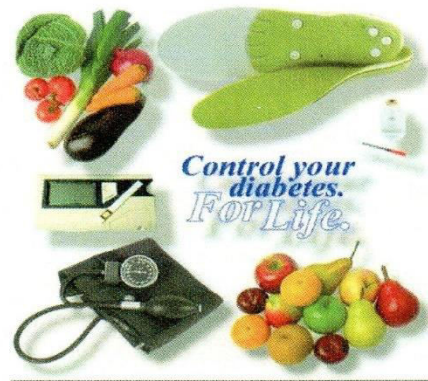
Anthocyanins help maintain microcapillary integrity by stabilizing capillary walls. Blocked or reduced oxygen followed by reestablishment of normal supplies is called ischemia-reperfusion. Ischemia-reperfusion creates oxidants that result in white blood cell adhesion to microcapillary walls, increases capillary wall permeability, reduces blood flow, and often causes permanent capillary damage.

One of the classic experiments on anthocyanins was conducted on hamsters in Italy. Ischemia-reperfusion was created in their cheeks by a brief clamping, causing white cells to clump onto the capillary wall and damage it. After several weeks of bilberry supplementation, scientists repeated the tests. This time, normal blood supply through the capillaries was restored, fewer white blood cells stuck to the vessel walls, and permeability was significantly reduced after reperfusion.



Diabetes

Microvessel damage from high blood-sugar levels causes most of the complications in diabetes. Collagen proteins become linked with sugars, resulting in abnormal polymeric blood vessel collagen. In one German study, 12 adult diabetics took 600 mg anthocyanins daily for two months. Samples of their gum tissue were taken before and after treatment. After supplementation, abnormal collagen production was significantly decreased. Diabetes renders capillaries more permeable to large molecules than they should be. For instance, the protein albumin migrates into the space between cells and is not adequately taken up by the lymphatic system. In a recent French study, researchers using an animal diabetic model found that those treated with bilberry maintained normal microcirculatory function including normal capillary filtration of albumin and its uptake by the lymphatic system.



One of the most serious diabetic complications is retinopathy, which can cause blindness. Retinopathy occurs when the body attempts to repair leaking, damaged capillaries, but does so by overproducing abnormal proteins. Not only do anthocyanins prevent capillaries from leaking in the first place, but they also prevent abnormal protein proliferation. In one Italian study, 30 out of 40 people with retinopathy showed significant improvement after taking 120 mg anthocyanin daily for several weeks. None of the control subjects improved.

Eyesight

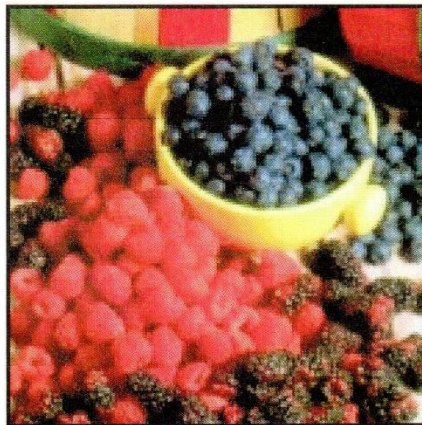
Anthocyanins may also improve eyesight by other mechanisms. In a French study conducted in 1964, researchers vision-tested 36 people for their ability to adapt to light and dark both before and after taking bilberry anthocyanins. For several hours after supplementation, their eyesight improved significantly, although the effect wore off within 24 hours. A recent Japanese study found that people taking 50 mg, but not 20 mg, black currant anthocyanins adapted better to the dark and had less eye fatigue than those in the placebo group.

Two recent tests on anthocyanins and vision have produced negative results. In 1999, Israeli researchers found that supplementation with 24 mg and 48 mg anthocyanins daily did not improve three measures of night vision: scotopic retinal threshold, dark adaptation rates, and mesopic contrast sensitivity. Researchers in a NASA study found that using 40 mg bilberry anthocyanins had no effect in night vision, visual acuity, or contrast sensitivity compared with placebo.



Other Effects

Anthocyanins may have other potential benefits for humans. In the laboratory, they have been found to inhibit some human tumor cells. Cyanidin and delphinidin inhibit epidermal growth factor receptor in cancer cells, while malvidin is less effective. Bilberry, traditionally used for ulcers, may increase the production of stomach mucus and protect the stomach from injury. In one uncontrolled Italian study, 10 men took 1,200 mg anthocyanins for 10 days. This increased their gastric juice secretion and mucus, while stomach acid production remained constant. Anthocyanins have received less attention than other flavonoids, despite their far-reaching effects. Because berries were such a large part of early diets, our ancestors probably ate far more anthocyanins than we do. Some researchers feel that, by comparison, we are deficient in anthocyanins. When people become aware of the antioxidant power of these compounds, perhaps we can remedy that deficiency. In the process, some of our popular foods may become even more enjoyable.



Recommended Dosage:

1 teaspoon – 1 x daily

Ingredients of Mixed Fruit Anthocyanins:



Aroniaberry



Elderberry



Red Raspberry



Red Grape



Blueberry



Pomegranate

Flavonoid Information

Dear Doctors,

I have found the fruit anthocyanins helpful for many of my patients. I have been using them since I created the product in 1995 for clinical use in a variety of problems for which flavonoids might be beneficial. After 11 years of constant use in **thousands** of patients, I have come to the following conclusions as to effectiveness of the flavonoids:

Cardiovascular disease: The flavonoids are helpful in protecting the heart. Since 1995 I have had virtually no incidence of repeat cardiac events in patients who have had heart attacks. It is essential medicine for heart attack recoverers. I also use it for patients who have heart disease in their family histories.

Arterial disease: Arteritis, vascular disease with compromised peripheral circulation, phlebitis, and varicosities have all improved. Some of these cases are actually quite remarkable. I have had no diabetic patients needing to undergo amputation as a result of compromised peripheral circulation since using the berry flavonoids.

Diabetes. Using a tablespoonful of flavonoids in a large glass of water daily has resulted in lower blood sugar levels. Diabetic retinopathy is a condition that the flavonoids are particularly helpful with. Here again, take the flavonoids in a large glass of water consumed with a meal twice daily.

Macular degeneration. I have had 6 cases of macular degeneration that have healed using the flavonoids. I am particularly excited about this application of the flavonoids.

Pulmonary fibrosis: The cases I have treated have recovered a great deal of energy and liveliness. They have less shortness of breath and are actually able to take walks again. An established case of pulmonary fibrosis where the breathing is severely compromised is considered progressive and terminal. Given this, I am very pleased to see progression slowed and even stopped in some cases. Follow up in these cases is currently ongoing.

Cancer: Studies on the organic acids in the pigments are interesting, such as ellagic acid from red raspberries. I use the flavonoids in all of my cancer patients as a protective nutrient.

Asbestosis: The cases I have treated have stopped progressing. The results are remarkable.

Capillary fragility diseases: Bruising, spider hemangiomas, and Henoch- Schonline purpura have responded to flavonoids.

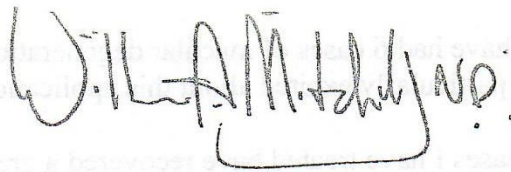
Emphysema: I have used the berry anthocyanins in emphysema cases that have survived far longer than expected. I feel that the use of the anthocyanins has been contributory rather than artifactual in the longevity of these patients. As in all cases, diet as well as attitude plays a role in the quality of the life of these patients.

Capillary mesh integrity: The flavonoids improve nutrient exchange at the capillary level. This includes supply of nutrients to the tissue as well as drainage of toxins from the tissues. These events are dependant on effective osmolality maintenance in the peripheral tissue spaces supplied by the capillaries.

Peripheral edema: Edema caused by accumulation of polyols or organic waste materials in the periphery are treatable by the flavonoids.

Trigeminal neuralgia and other neuralgias: Especially the elderberry seems to be effective in treating these problems. I use 2 tablespoons twice daily for neuralgia and neuritis.

Other problems: Because the flavonoids protect tissue as well as serve the capillary maintenance of tissue, most pathology is affected in a positive way for the body.

A handwritten signature in black ink that reads "WILLIAM MITCHELL ND". The signature is written in a cursive, somewhat stylized font. The first name "WILLIAM" is written in all caps, and "MITCHELL" is also in all caps. "ND" is written in smaller letters at the end. There is a horizontal line underlining the name "MITCHELL".

William Mitchell ND