Dynamic Chiropractic

NUTRITION / DETOXIFICATION

Blue is the Healthy Color: The Health Benefits of Anthocyanins

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Bilberries (*Vaccinium myrtillus*) and blueberries (*Vaccinium corymbosum*) are closely related berries rich in blue pigments known as anthocyanins.

The bilberry has been traditionally eaten as a wild fruit, whereas the blueberry is now widely cultivated. From both a food and herbal perspective they are virtually identical. This is useful because one can be used in place of the other, depending on convenience and availability.

Interest in bilberry as an herbal treatment is said to have begun in World War II when British RAF pilots accidentally discovered it could help night vision. Subsequent research found that the bilberry could help to improve vision in other ways. From there, the research branched out and it was discovered that the herb could assist in circulatory disorders, especially where the very fine blood vessels (or microcirculation) were involved.

The anthocyanins in bilberry have been shown to hasten the regeneration of the visual pigment (rhodopsin) found in the rods of the retina.[1] This explains the value for improving night vision, since we use the rods for this. A bilberry extract rich in anthocyanins given to healthy subjects hastened their adaptation to the dark and they could see better in the dim light. This effect was established in a placebo-controlled clinical trial.[2]

But, as mentioned above, bilberries are not just helpful for night vision. In uncontrolled trials conducted as early as 1964, bilberry extract (including isolated anthocyanins), alone or in combination with β-carotene and retinol (vitamin A), improved vision in healthy subjects and in patients with visual disorders such as myopia (short sightedness).[3,4] Enlargement of visual range was observed for patients with pigmentary retinitis (inflammation of the retina),5 and retinal sensitivity was improved in patients with hemeralopia (defective vision in bright light).[6]

Visual perception improved in 76 percent of myopic patients receiving bilberry extract (equivalent to 54 mg anthocyanins per day) and retinol for 15 days.[7] Similar results were obtained for patients with simple glaucoma.[8]

Bilberry also is an excellent herb for the circulation. Uncontrolled trials dating back to 1964 demonstrated the efficacy of bilberry in the treatment of peripheral vascular disorders (varicose veins and their associated symptoms, often called *venous insufficiency*).[2] In later trials, bilberry extract improved edema and symptoms of varicose veins,[9] and reduced the protein exudate from varicose ulcers.[10] The extract also provided relief for vein disorders including hemorrhoids during pregnancy.[11,12] A review of uncontrolled trials from 1979 to 1985 on a total of 568 patients with venous insufficiency of the lower limbs concluded that bilberry extract caused rapid disappearance of symptoms and improvements in microcirculation and lymph drainage.[13] Bilberry extract or

placebo was administered for 30 days in a single-blind, placebo-controlled clinical trial on 60 patients with venous insufficiency. Significant reduction in the severity of symptoms (edema, sensation of pain, paresthesia, cramping pain) was observed for the treated group after four weeks of treatment.[14]

Anthocyanins also improved functional disturbances of the fine blood vessels, (especially capillaries),[15] were more effective in protecting damaged capillaries than flavonoids[16] and stimulated capillary repair.[17] This is particularly beneficial in diabetes and hypertensive retinopathy where the retina of the eye becomes damaged, particularly the microcirculation. Retinopathy can eventually result in blindness. In a placebo-controlled trial, bilberry extract improved early-phase diabetic retinopathy, as indicated by an improved appearance of the retina.[18] In a double-blind, placebo-controlled clinical trial, 14 patients with diabetic and/or hypertensive retinopathy received bilberry extract or placebo for one month. Significant improvements in the retina were observed in 77 to 90 percent of treated patients.[19]

More recently, the research effort has focused on another kind of blue: the blueberry. Dr. James Joseph is a U.S. scientist investigating the effects of antioxidant foods on aging. In particular, he has investigated foods that are able to reduce the effects of mental aging. While some fruits (such as strawberries) and vegetables (such as spinach) gave promising results, only blueberry supplementation reversed the negative effects of aging on balance and coordination.[20] His team found that the anthocyanins in blueberries showed the most activity in penetrating cells and providing deep antioxidant protection.[21] The anthocyanins were even found in the brains of elderly rats after they were fed blueberries for eight weeks. The more anthocyanins found in the brains of the rats, the better they were at negotiating a complex maze.[22] In fact, blueberries had a rejuvenating effect on the brain cells of elderly rats, making them more like young rats.[23]

All this has huge implications for those degenerative diseases, such as Alzheimer's disease and Parkinson's disease, associated with brain oxidation. Will blueberries, or for that matter bilberries, help to prevent them? We still need to do more research. But I can inform you that I now have a regular intake of either fresh or frozen blueberries (40 to 60 gm per day) or bilberry tablets (three to four a day).

One caveat regarding bilberry use is to ensure that the extract is of good quality. I recently was involved in the publication of a study that discovered a serious, potentially harmful adulteration of a commercial bilberry extract.[24] For bilberry, the usual method for determining the anthocyanin content is a spectrophotometric assay based on the blue color. If there is no adulteration and the extract is authentic, this method is adequate to the task. However, if deliberate adulteration to the anthocyanins has taken place using a pigment or dye of a similar blue color, the method will yield a false-positive result. This was what we found for one commercial extract. But perhaps more alarming was that the synthetic dye used to adulterate the extract was amaranth (FD and C Red No. 2), banned by the FDA in 1976 for suspected carcinogenic activity. We concluded that the only way to check the quality and authenticity of a bilberry extract was to use high-performance liquid chromatography.

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