

BIOFLAVONOIDS

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Bioflavonoids are a class of water-soluble plant pigments. Bioflavonoids are broken down into subcategories. One system breaks bioflavonoids into isoflavones, anthocyanins, flavans, flavonols, flavones and flavanones. Some of the best-known bioflavonoids such as genistein in Soy and quercetin in onions can be considered subcategories. Although they are all structurally related, their functions are different. Bioflavonoids also include hesperidin, rutin, citrus bioflavonoids and a variety of other supplements.

While they are not considered essential, some bioflavonoids do support health as anti-inflammatory, anti histaminic and antiviral agents. Quercetin has been reported to block the "Surbitol pathway", that is linked to many problems associated with Diabetes. Rutin and several other bioflavonoids may also protect blood vessels.

As antioxidants, some bioflavonoids such as quercetin, protect LDL -Cholesterol from oxidative damage. Others such as arthocyanidins from bilberry, may help protect the lens of the eye from cataracts. Animal research suggests that naringenin may have anticancer activity. Soy isoflavones are also currently being studied to see, if they help fight cancer.

Bioflavonoids are found in a wide range of foods. For Example, Flavanones are in citrus, isoflavones in soy products, anthocyanins in wine and bilberry, flavons in apples and tea etc.

Bioflavonoids have been used in connection with the following conditions:

| Ranking | Health Concerns |
|-----------|--|
| Primary | Capillary Fragility (Hesperidin, quercetin, rutin) Chronic venous insufficiency (rutin) Injury (Minor) (for Prevention only) |
| Secondary | Bruising Chronic venous insufficiency (hesperidin) Diabetes (Bilberry) Hepatitis (Catechin) Retinopathy (Bilberry) |
| Other | Atherosclerosis (Quercetin, bilberry) Cataracts (Quercetin, bilberry, Diabetes (Quercetin) Edema (Water retention) (Quercetin, rutin) Gingivitis (Periodontal disease) Glaucoma (Rutin) Hay Fever (Quercetin, hesperidin, rutin) High cholesterol, (Quercetin) Macular degeneration (Bilberry) Menopause (Hesperidin) Menorrhagia (Heavy menstruation) Night blindness (Bilberry) Peptic Ulcer (Quercetin) Retinopathy (Quercetin) Varicose Veins (Bilberry) |

Bioflavonoid deficiencies have not been reported. Bioflavonoid supplements are not required to prevent deficiencies in individuals eating a healthy diet. When doctors of natural medicine recommend supplementation typically in people with one of the conditions listed above, the most common amounts suggested are 1000 mg of citrus bioflavonoids or 400 mg of quercetin, each taken three times per day.

No consistent toxicity has been linked to the bioflavonoids. The exception is for a bioflavonoid called cianidanol, which is not found in supplements.

Years ago, quercetin was reported to induce cancer in animals. Most further research did not find this to be true. However, quercetin is mutagenic in test tube studies, it does not appear to be mutagenic in real animals. In fact, quercetin has been found to inhibit both tumor promoters and human cancer cells. People who eat high levels of bioflavonoids have been found to have no overall lower risk of getting a wide variety of cancers though preliminary human research studying only foods high in quercetin has found no relation to cancer risk one way or the other.

Despite the confusion, in recent years, experts have shifted their view of quercetin from concerns that it might cause cancer in test tube studies to guarded hope that quercetin has anticancer effects in humans.

The bioflavonoids help protect vitamin C; the citrus bioflavonoids in particular improve the absorption of vitamin C.

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