Flavonoid Encyclopedia Article

Flavonoid

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Flavonoid

Flavonoids are a large family of complex, phenolic compounds found universally in vascular plants. Extracted from plant material or synthesized artificially, flavonoids are colorless, crystalline, tricyclic (consisting of three **carbon** rings) subtances that form the base molecules of certain yellow pigments. Consisting of approximately 2,200 compounds, the flavonoid family of chemicals consists also of the closely related flavones, flavonones, and flavonols. Flavonoids are found naturally as flower and other plant structure pigments, as intermediates in general plant **metabolism**, and as specially produced plant *secondary compounds*. Secondary compounds are bioactive compounds which many plants produce as defense mechanisms against herbivory, or to reduce competition with rival plants for optimal habitat. Many commonly used spices are secondary plant compounds, including cinnamon and anise. Flavonoid secondary compounds that act as insect and mammalian repellants make plant material unpalletable or toxic. Flavonoids have diverse toxic effects including disruption of **cellular respiration**, inhibition of **enzyme** function, and interference with reproduction. Some flavonoids, such as proanthocyanidins and anthocyanins, are protective pigments which absorb harmful ultraviolet radiation. Other, closely related compounds like tannins reduce the digestibility of plant material, making it undesirable to animals. Flavonoids have gained notoriety as so-called phytonutrients or phytochemical extracts which are sold as nutritional supplements. Cranberries, citrus fruits, and grapes are reported to have high levels of flavonoids, presumably useful in the prevention of such ailments as cancer and circulatory diseases. Because of their powerful antioxidant properties, flavonoids are also touted as anti-aging supplements.