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A Brief Note on Flavonoids

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Commentary

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DESCRIPTION

Flavonoids have a 15-carbon skeleton that consists of two phenyl rings (A and B) and a heterocyclic ring in general. C6-C3-C6 is the abbreviation for this carbon structure. According to IUPAC nomenclature, they are classified as follows: Isoflavonoids derived from the 3-phenylchromen-4-one (3-phenyl-1, 4-benzopyrone) structures are known as flavonoids or bioflavonoids.Neoflavonoids derived from the structure of 4-phenylcoumarine (4-phenyl-1, 2-benzopyrone). The three flavonoid classes mentioned above are all ketone-containing compounds, and as such, anthoxanthins are also ketone-containing compounds (flavones and flavonols).

This was the first class of bioflavonoids. The terms flavonoid and bioflavonoid have also been used more loosely to describe non-ketone polyhydroxy polyphenol compounds, which are more precisely referred to as flavonoids.

Flavonoids are the most important plant pigments for flower coloration, producing yellow or red/blue pigmentation in petals that attract pollinators. Flavonoids are involved in UV filtration, symbiotic nitrogen fixation, and floral pigmentation in higher plants. They may also function as chemical messengers, physiological regulators, or cell cycle inhibitors. Flavonoids secreted by their host plant's root aid Rhizobia in the infection stage of their symbiotic relationship with legumes such as peas, beans, clover, and soy. Rhizobia in the soil can detect flavonoids, which causes the secretion of Nod factors, which are recognised by the host plant and can result in root hair deformation and a variety of cellular responses.

Flavonoids (specifically flavanoids like catechins) are "the most common group of polyphenolic compounds in the human diet and are found everywhere in plants." Flavonols, the original bioflavonoids like quercetin, are also found everywhere, but in smaller amounts. Because of the widespread distribution of flavonoids, their variety, and their

low toxicity when compared to other active plant compounds (for example, alkaloids), many animals, including humans, consume significant amounts in their diet. Parsley, onions, blueberries and other berries, black tea, green tea and oolong tea, bananas, all citrus fruits, Ginkgo biloba, red wine, sea-buckthorns, buckwheat, and dark chocolate with a cocoa content of 70% or higher are all high in flavonoid content.

Flavonoids are poorly absorbed in the human body (less than 5%), then rapidly metabolised into smaller fragments with unknown properties and excreted. Flavonoids have negligible antioxidant activity in the body, and the increase in antioxidant capacity of blood seen after consumption of flavonoid-rich foods is caused not by flavonoids directly, but by the production of uric acid caused by flavonoid depolymerization and excretion. Microbial metabolism is a significant contributor to the overall metabolism of dietary flavonoids. The effect of routine flavonoid consumption on the human gut micro biome is unknown. Inflammation has been implicated as a possible cause of numerous local and systemic diseases, including cancer, cardiovascular disorders, diabetes mellitus, and celiac disease.

There is no clinical evidence that dietary flavonoids have any effect. Clinical studies investigating the relationship between flavonoid consumption and cancer prevention or development are contradictory for the majority of cancers, most likely due to poor design, such as a small sample size, in most human studies. Although there is little evidence that dietary flavonoids reduce the risk of human cancer in general, observational studies and clinical trials on hormone-dependent cancers (breast and prostate) have shown benefits. According to a recent review, flavonoids in the diet are linked to a lower risk of various types of cancer, including gastric, breast, prostate, and colorectal cancer.