Abstract

Flavonoids are a group of natural substances that are located in sources of vegetal origin. More than 4,000 varieties of flavonoids have been identified. All of them are phenyl-benzopyrones of low molecular weight with a basic structure formed by two benzene rings united through a heterocyclic pyrane or pyrone. Besides their relevance in plants, flavonoids are important for human health. Their antioxidant capacity confers a therapeutic potential in cardiovascular diseases, gastric or duodenal ulcers, cancer or hepatic pathologies. Also important are their antiviral and anti-allergic actions, as well as their anti-thrombotic and anti-inflammatory properties. Prostaglandins and nitric oxide biosynthesis is involved in inflammation, and isoforms of inducible nitric oxide synthase (iNOS) and of cyclooxygenase (COX-2) are responsible for the production of a great amount of these mediators. It has been demonstrated that flavonoids are able to inhibit both enzymes, as well as other mediators of the inflammatory process such as reactive C protein or adhesion molecules. Modulation of the cascade of molecular events leading to the overexpression of those mediators include inhibition of transcription factors such as nuclear factor kappa B and AP-1, through the inhibition of protein kinases involved in signal transduction. Increased antioxidant defenses through activation of the NF-E2 related factor 2 (Nrf2) also contribute to the anti-inflammatory capacity of flavonoids.

Keywords

Flavonoids, Inflammation, Oxidative stress, Nuclear factor kappa B, Nitric oxide.