

Editorial Note on Flavonoids

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APPLICATIONS OF FLAVINOIDS

Cardioprotective

Flavonoids are an essential component of food so it is also called 'Functional food' due to their antioxidant activity they have a good impact on the vascular system. In the cardiovascular system, flavonoids show antihypertensive, anti-atherosclerotic, antiplatelet activities and are potentially used in the treatment of Myocardial Ischemia. The cardioprotective activity of different flavonoids on the heart of Langendorff-perfused rat having Ischemia.

Luteolin is one of the flavones and decreases blood pressure in spontaneously hypertensive rats and helps in the improvement of vascular relaxation in the aortic ring. Luteolin causes relaxation by stimulation of NO-dependent and independent mechanism in the endothelium, in which Luteolin increases Camp level by inhibiting phosphodiesterase enzyme so, accumulation of cAMP activates endothelial Nitric oxide synthetase and increases the level of nitric oxide in endothelial cells.

ANTI-INFLAMMATORY

Inflammation is a biological response of our body that is common in various diseases like Asthma, Gout, Arthritis, Carcinoma, Diabetes, Multiple Sclerosis, Bacterial and Viral infection, etc. It is caused by the releases of various inflammatory mediators like prostaglandins, leukotrienes, histamines, serotonin, etc. These mediators are released due to the stimulation of signaling pathways which involves cyclooxygenase, caspases, and kinases. Isolated 52 flavonoids and chalcones from the root of Pongamia pinnata Pierre, the anti-inflammatory activity of isolated compounds were assessed through the inhibition of nitric oxide formation ten compounds were shown significant effect than the standard drug Dexamethasone.

ANTIOXIDANT

Antioxidants can prevent the damage of the living tissues by preventing the oxidation of biomolecules which are taking place by a high level of free radicals in a living system. This oxidation can lead to tissue damage, death of cells, and cause of various diseases like cancer, cardiovascular diseases, skin diseases, and inflammation, etc.

Prevention of oxidation and chain-breaking antioxidants. Various natural and synthetic derivatives flavones and flavonoids potentially act as antioxidants by both the mechanism.

ANTICANCER

Cancer is one of the death-causing health hazards. Incidence and mortality of Cancer are consistently rising universally. As per the survey of the International Agency on Cancer Research, There may be chances of 18.1 million new cancer cases and 9.6 million deaths in 2018. Anticancer activity of 28 different derivatives of flavonoids on human acute myeloid leukemia cell line HL-60, and activity was compared against known anticancer agents. Eight compounds were shown inhibition of growth of HL-60 cell line with IC50 value 10-940 ng/ml. The flavonoid genistein was shown the highest activity which was almost equivalent to known anticancer agents.

ENZYME INHIBITION

Flavonoids are found to be active at the inhibition of certain enzymes like topoisomerase, acetylcholinesterase, xanthine oxidase, cyclooxygenase, aldehyde oxidase, and aromatase enzyme. Topoisomerase is an enzyme that can inhibit DNA metabolism, the agents which will be activated through the inhibition of this enzyme will potentially act as anti-cancer agents. There are so many compounds that are found to be topoisomerase inhibitors, Quinoline derivatives, flavonoids derivatives, metal complexes, fatty acid, etc.

Angiotensin-Converting enzyme inhibitors play their vital role in the regulation of blood pressure evaluated different flavonoids for in vitro ACE inhibitor activity by fluorimetric method for which two concentrations were taken 100 μ m and 500 μ m. Highly active ACE inhibitors with an IC50 value of 23 μ m. Recently flavonoids are reported to have aromatase enzyme inhibitory activity.

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