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Anticancer activity mechanisms of flavonoids

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Flavonoids are a vast group of heterogeneous polyphenols with various health benefits, derived from secondary metabolism of plants. They are ubiquitously found in fruits, vegetables, tea, and wine. Chemically, flavonoids are classified into several subclasses among them are flavones (2-phenyl-4H-benzopyran-4-ones), aurones (structural isomers of flavones; 2-benzylidene benzofuran-3(2H)-ones) and 2-styryl chromones (vinylogues of flavones). Low molecular weight polyphenolic phytochemical flavonoids play important role in various biological processes at nontoxic concentrations in organisms. Therefore, flavonoids are important components of the human diet. Many natural products belonging to the flavonoid subclasses possess anticancer activity like quercetin and apigenin (flavones), hamiltrone (aurone), hamilcone (chalcone) and hormothamnione (styrylchromone). The role of dietary flavonoids in cancer prevention is well established and widely discussed. Many mechanisms of their action have been identified including cell cycle arrest, induction of apoptosis, inhibition of angiogenesis, antioxidant effect and inhibition of some functional enzymes like cyclin-dependent kinases, tyrosine kinases, aromatases, topoisomerases, glycogen phosphorylases and reversal of multidrug resistance or a combination of these mechanisms. Naturally obtained flavone moiety having a variety of biological activities can be taken as lead compound for the synthesis of synthetic flavone derivatives with different functional groups at different positions of flavone skelton.

Biography

Oya Bozdag Dundar has completed her PhD from Ankara University in 1998. She is a full Professor at the same department since 2009. She has been lecturing to BSc, MSc and PhD students in Ankara University, Faculty of Pharmacy, Department of Pharmaceutical Chemistry. She published 59 articles and is interested with drug design and synthesis of heterocyclic compounds having antidiabetic, aldose-reductase enzyme inhibitory, antioxidant, histone deacetylase enzyme inhibition, bromodomain inhibitors and anticancer activities.

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