

Polyphenolic Compounds in Human Health with Pharmacological Properties

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Editorial

The paper presents the important information on the origins and health effects and activities of polyphenolic compounds. Polyphenolic compounds such as flavonoids have been used in various medicines and food products due to their potential health benefits in ancient times and are still relevant and popular nowadays. Many phenolic compounds present in natural foods may reduce the risk of serious health problems because of their antioxidant action. Flavonoids are found ubiquitously in plants as a member of polyphenolic molecules that share diverse chemical structure and properties. Flavonoids are cyclized diphenylpropanes that commonly occur in plants and particularly plant foods. More than 6000 flavonoids have been identified. The family members of flavonoids include flavones, flavonol, isoflavones, flavanones, flavanonol, flavanol and anthocyanidin. Flavonols are represented mainly by quercetin, kaempferol and myricetin, of these, quercetin is most ubiquitous [1,2]. Recently, the numbers of the studies conducted for the use of flavonoids in various areas of industry are increasing. The using of these compounds is being common due to their antioxidant properties in the area of food, medicine and agriculture [1,3].

The secondary metabolites, ubiquitous in plants, are considered as a main part of the human diet as well [4]. Most of phenolic compounds as secondary metabolites in the plants present in natural foods may reduce the risk of important health defects because of their antioxidant properties. The origin and biochemistry of these phyto-compounds have some practical uses [5]. Secondary metabolites are synthesized in biochemical pathways that are not necessary for plant growth but have biological and pharmacological importance. Sources of natural antioxidants are primarily plant phenolics that may occur in all parts of plants. Naturally-occurring antioxidant compounds are flavonoids, phenolic acids, lignans, terpenes, tocopherols, phospholipids and polyfunctional organic acids and others. There have been numerous studies on the biological activities of phenolics, which are potent antioxidants and free radical scavengers [1,6,7]. Generally, the ability of flavonoids to be effective antioxidants depends on three factors. These

are the metal-chelating potential that is strongly dependent on the arrangement of hydroxyls and carbonyl group around the molecule, the presence of hydrogen (electron donating) substituents able to reduce free radicals, and the ability of the flavonoid to delocalize the unpaired electron leading to the formation of a stable phenoxyl radical. Both known cases of the antioxidant effect, preventive mechanism and chain-breaking mechanism, are implied to be responsible for the high action of flavonoids. There are most of studies demonstrated to the importance of flavonoid structure for their antiradical activity as chain-breaking antioxidants [1,2,6]. As a result, the use of ecological and natural products that inhibit oxidation of biomolecules in living organism became more preferable in human diet. Finally, scientifically lay out and the use of phenolic molecules as a pharmacological compound with biological mechanism of effect and to follow the new trends.

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