

THE STRUCTURE-PROPERTY RELATIONSHIPS OF FLAVONOID COMPOUNDS AS POTENTIAL DETOXICANTS

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The toxicity of organometallic compounds may arise from the level of their adsorption to the lipid phase of biological membranes. It is also assumed that the toxicity of some organometallic compounds may relate to their free-radical properties with respect to lipids, proteins and DNA, under certain conditions. It is very probable that the relatively long life-span in the animal body of such radicals (e.g. radicals of triphenyltin) is the cause of the initiation and then propagation of oxidative processes, mainly on cell membrane lipids. Termination of this harmful process is possible, e.g. with the help of exogenous flavonoid substances. Another way is via prevention, i.e. not allowing free radicals to form. This may be achievable by chelating the compounds that generate free radicals.

This study investigated the effect of flavonoid compounds (differing in the number of hydroxyl groups in one of their rings) on the peroxidation of the phosphatidylcholine liposome membrane induced by UV radiation and n-phenyltin compounds. The ability of the flavonoids to chelate n-phenyltins was also investigated, as dependent on the pH and medium. The results obtained are discussed in the context of the molecular structure of the antioxidants studied and in connection with their ability to scavenge free radicals (exemplified by the tests performed with respect to DPPH). The antioxidant properties of flavonoids are compared with their ability to form chelates with toxicants.

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