

ANOXIDATIVE ACTIVITY OF FLAVONOIDS *in vitro* AS DEPENDENT ON pH

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Flavonoids are natural compounds known for their antioxidative properties. Organic forms of lead and tin (OC), including triphenyltin (TPhT) and triphenyllead chlorides (TPhL), acquire free-radical forms under UV radiation. This finding was confirmed by the EPR method. They cause an increase in the level of phosphatidylcholine (PC) liposome oxidation, dependent on UV exposure time and OC concentration. The flavonoids present in the experiment (FL – mirycetin, quercetin and kempferol) protect liposome membranes against UV induced oxidation. The degree of PC-membrane protection depends on pH (the studies were made at pH 3.6, 7.4 and 9.0) and is highest in acidic medium, a bit weaker in neutral and weakest at pH = 9.0. Comparison of the antioxidative activity of the flavonoid studied with trolox (a known, water soluble analogue of α -tocopherol) indicates that both quercetin and mirycetin are better antioxidants than trolox at pH 3.6 and 7.4, exhibiting a weaker activity at pH 9.0 only. Under the experimental conditions kempferol is a worse antioxidant than trolox. Investigations with equimolar mixtures of OC with flavonoids (FL/OC) showed that the oxidation level of PC membranes induced by UV and OC free radicals is annihilated more or less in a pH dependent way. A weaker protection of membranes is offered by the flavonoids in the presence of TPhL in a medium of pH 7.0. The prooxidative effect of TPhT on PC membranes is effectively abolished by all the flavonoids used, the process being weakest for at pH 3.6. Quercetin and also mirycetin bode may be good and effective antioxidants for lipids in practical applications, e.g. as UV filters, as chelators of metals that catalyze oxidation.

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