

Tin Compounds Interaction with Membranes of Egg Lecithin Liposomes

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This work is a continuation of earlier research concerning the influence of tin compounds on the dynamic properties of liposome membranes produced with lecithin hen egg yolks (EYL). The experiments were carried out at room temperature (about 25 °C). Four tin compounds were chosen, including three organic ones, $(\text{CH}_3)_4\text{Sn}$, $(\text{C}_2\text{H}_5)_4\text{Sn}$ and $(\text{C}_3\text{H}_7)_3\text{SnCl}$, and one inorganic, SnCl_2 . The investigated compounds were admixed to water dispersions of liposomes. The content of the admixture changed within the range 0 mol-% to 11 mol-% in proportion to EYL. Two spin probes were used in the experiment: 2,2,6,6-tetramethylpiperidine-1-oxyl (TEMPO) and 2-ethyl-2-(15-methoxy-15-oxopentadecyl)-4,4-dimethyl-3-oxazolidinyloxyl (16-DOXYL-stearic acid), which penetrated through different areas of the membrane. It was found that tin compounds containing chlorine were the most active in interaction with liposome membranes. In the case of $(\text{C}_3\text{H}_7)_3\text{SnCl}$, after exceeding 4% admixture content, an additional line appeared in the spectrum of the TEMPO probe which can be a result of formation of domain structures in the membranes of the studied liposomes. Compounds containing chlorine are of ionized form in water solution. The obtained results can thus mean that the activity of admixtures can be seriously influenced by their ionic character. In case of an admixture of non-ionic compounds the compound with a longer hydrocarbon chain displayed a slightly stronger effect on the spectroscopic parameters of the probes.

Key words: EYL Liposomes, ESR Method, Tin Compounds