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STUDY OF ANTIOXIDANT PROPERTIES OF COMBINED VITAMIN PREPARATIONS BY POTENTIOMETRIC METHOD

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The oxidative action of reactive oxygen species (ROS) in the human body can lead to disruption of cell membranes, and thus cause a number of diseases. Compounds with antioxidant properties of endogenous and exogenous nature carry out regulation of the oxidation processes. Since all processes take place in the body both in the aqueous and in the lipid phase, in order to maintain the redox balance of the organism, the use of combined pharmaceuticals containing active substances, both lipophilic and hydrophilic in nature, is most effective, and therefore it is relevant to study the antioxidant properties of the pharmaceuticals. Earlier, we developed the potentiometric method for studying antioxidant properties using the $K_3[Fe(CN)_6]/K_4[Fe(CN)_6]$ system as an oxidizer model¹. However, the limitation of the potentiometric method is the low solubility of the complexes in lipophilic media, which makes it impossible to evaluate the antioxidant properties of the important lipophilic antioxidants, for example, α -tocopherol. The aim of this work was to study the total antioxidant capacity (TAC) of different hydrophilicity antioxidants mixtures by the example of vitamins C and E, which are important components of metabolism and are part of many vitamin preparations. The studies were carried out in a water-emulsion medium in the presence of different type's surfactants. Various surfactant concentrations (0.5-2 mM) and concentrations ratio of surfactant: α -tocopherol (1:1-5:1) were studied. The criteria for selecting surfactants were stability of the system potential, adherence to the Nernst dependence, the emulsion stability. The nonionic surfactants Triton X-100 and Brij 35 satisfy the criteria. TAC model mixtures of vitamins C and E in different concentrations and commercial vitamin preparations containing C and E with the use of selected surfactants were studied. The experimental data obtained confirm the possibility of using the proposed approach for studying TAC mixtures of different hydrophilicity antioxidants. The relative standard deviation does not exceed 5-7%. 1Kh. Z. Brainina, A. V. Ivanova, E. N. Sharafutdinova, E. L. Lozovskaya, E. I. Shkarina "Potentiometry as a method of antioxidant activity investigation" *Talanta*, 71 (2007), p.13-18.

BIOGRAPHY

Ivanova A V has completed her PhD from Ural State University of Economics (Yekaterinburg, Russia). She is associate professor of the department of analytical chemistry, Institute of Chemical Engineering of the Ural Federal University named after the first President of Russia B.N.Yeltsin. She has published more than 25 papers in reputed journals.

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