

Journal of Analytical Chemistry 2004 vol.59 N7, pages 654-658

Determination of some liposoluble antioxidants by coulometry and voltammetry

Budnikov G., Ziyatdinova G., Gil'Metdinova D.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

It is found that the interaction of retinol, ergocalciferol, and cholecalciferol with electrochemically generated bromine proceeds rapidly and quantitatively. The stoichiometric coefficients of the reaction are 1:2, 1:7, and 1:3, respectively. A coulometric determination of microgram amounts of individual liposoluble antioxidants in model solutions was performed with RSD = 1-5%. The voltammetric response of retinol and α -tocopherol was studied at a stationary platinum microelectrode in 0.1 M HClO₄ and 0.1 M CH₃COONa in acetonitrile. The quantification limit for α -tocopherol is 2.7×10^{-4} M in 0.1 M HClO₄, and the quantification limits for retinol are 4.1×10^{-5} M in 0.1 M HClO₄ and 2.1×10^{-5} M in 0.1 M CH₃COONa. A procedure for the coulometric determination of total free liposoluble antioxidants in human blood serum is proposed.

<http://dx.doi.org/10.1023/B:JANC.0000035278.20459.9e>
