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Voltammetric determination of α -tocopherol in the presence of surfactants

Ziyatdinova G., Giniyatova E., Budnikov H.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

As established, α -tocopherol is electrochemically active on glassy carbon electrode in the available range of anodic potentials in acetonitrile and its aqueous mixtures. However, an increase in the water percentage up to 50% and beyond leads to a substantial decrease and then the total disappearance of the analytical signal. A scheme of electrode reaction responsible for the signal formation is proposed. The effect of surfactants on the oxidation of α -tocopherol in aqueous acetonitrile is estimated. As found, surfactants (N-dodecylpyridinium bromide, Triton X-100 and N-cetylpyridinium bromide) enhance the current of α -tocopherol oxidation. The surfactants reduce the detection limit and extend the analytical range. Analytical methods for the voltammetric quantification of α -tocopherol in drugs in the presence of surfactants are elaborated and may be recommended for the control of pharmaceuticals. © 2012 Pleiades Publishing, Ltd.

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Keywords

α -tocopherol, Glassy carbon electrode, Surfactants, Voltammetry