

The determination of the restored glutathione by method of an inverse voltamperometry on the analyzer with the rotating disk carbosital electrode

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Keywords: an inverse voltamperometry, the restored glutathione, copper, a carbosital electrode.

Abstract

The technique of definition of the restored glutathione by method of an inverse voltamperometry for the analyzer of the *Ecotest-VA* brand with the rotating disk carbosital electrode is adapted. The conditions of carrying out the analysis are picked up: sodium – acetate buffer solution (pH 3.8), the range of potentials is from 0 V to -0.8 V, the speed of development of potential is 0.05 V/sec, the potential of accumulation of GSH of 0 V, the accumulation time is 60 sec. Preliminary electrochemical drawing of a mercury film on a working surface of an electrode from solution of mercury(II) nitrate is recommended.

Ions of Cu^{2+} and Hg^{2+} prevent GSH definition, at their presence the analytical signal of glutathione on a voltamogram increases. The possibility of masking and removal of ions of Cu^{2+} is studied in several ways: by a binding of an ion of metal directly in the reactionary environment by various makers of complexes (pyrophosphates, thiosulphates, a Seignette salt, disodium dihydrogenethylenediaminetetraacetate, lemon acid); preliminary removal of an ion of metal during a transmission of the studied cupriferous solution of glutathione through cation-exchange resin (cation exchanger UC-1 containing sulfonate group of SO_3H^- and a phenolic hydroxyl of OH^-).

The use of a pyrophosphate of sodium, thiosulphate of sodium, lemon acid allows to reduce active concentration of copper. The maximum decrease in concentration of Cu^{2+} happens to the help of introduction of additive of Seignette salt, lemon acid and a disodium dihydrogenethylenediaminetetraacetate (concentration decreases on average by 70-80% of the brought quantity of Cu^{2+} $3.6 \cdot 10^{-6}$ mol/dm³). In the analysis of the mix GSH+ Cu^{2+} in the presence of a disodium dihydrogenethylene diaminetetraacetate on the voltamograms the second peak disappears, but it isn't possible to receive the reproduced results. An optimal variant of realization of a technique is removal of ions of metal at the expense of a transmission of the studied solution through the column filled with cation-exchange resin UC-1 (the thickness of a layer is 10 cm, diameter is 1.5 cm, the speed of a transmission is 3 cm³/min). The Correctness of results of the analysis is proved by means of a method "is entered-is found".

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