Eletrodo de Carbono Vítreo Modificado com Guanina ou Adenina e Nitrofural – Interação entre espécies reativas in situ

Glassy Carbon Electrode modified with Guanine or Adenine Base and Nitrofural – In situ Interaction of reactive species

L. S. Ortunho [(1)], C. G. Sanz[(1)], R. P. Silva[(1)], R. M. Buoro[(2)], S. H. P. Serrano[(1,*)]

[1] Universidade de São Paulo, Av. Lineu Prestes, 748 - São Paulo - Brazil
[2] Instituto de Química de São Carlos, Universidade de São Paulo, Av. Trabalhador São Carlense, - São Paulo - Brazil

GCE was modified with nitrofural (NFZ) and the nitrogenous bases of DNA, guanine (GUA) or adenine (ADN) to evaluate, in aqueous medium, the interaction between the reactive intermediate of the NFZ reduction process[(1)] and the nitrogenous bases. The differential pulse voltammograms presented in Figure 1 illustrate the re-oxidation process of the NFZ reduced derivatives (blue lines), as well as, their products of interaction with ADN (A) and GUA (B), (red lines). Lower current values for the oxidation of the NFZ reduced derivatives were observed in presence of ADN. In contrast, higher values of current were obtained in the presence of GUA. The main hypothesis is that the nitrogenous bases form an adduct with the nitro radical anion, which mainly differ in stability. While the $RNO_2^{\bullet -}$/ADN adduct consumes the reactive intermediate of the nitro compound, the $RNO_2^{\bullet -}$/GUA adduct can be involved in a disproportionation mechanism[(2)], generating RNO_2 and RNO. Therefore, RNO can be re-oxidized to $RNO_2^{\bullet -}$ at Epa_0; $RNO_2^{\bullet -}$ to RNO_2 at Epa_1 and its adduct to RNO_2 at Epa_2. Epa_3 corresponds to the oxidation of the azomethine group.

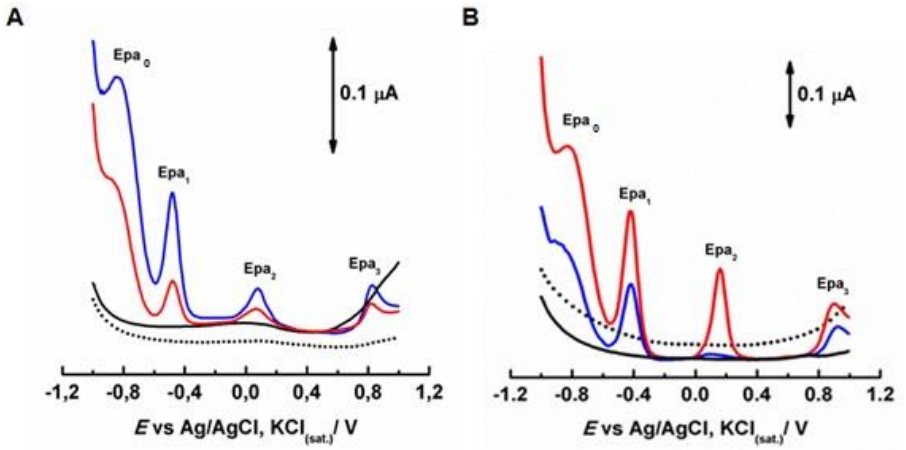

Figure 1. (A) Differential pulse voltammograms obtained with (●●) GCE, (—) GCE-ADN, (—) GCE-NFZ and (—) GCE-NFZ-ADN electrode in BR buffer 0.1 M pH 8.0. (B) Differential pulse voltammograms obtained with (●●) GCE, (—) GCE-GUA, (—) GCE-NFZ and (—) GCE-NFZ-GUA electrode in BR buffer 0.1 M pH 8.0.

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***main author e-mail:** shps@iq.usp.br