

Nitro radical anion formation from nifurtimox II: electrochemical evidence

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The cyclic voltammetric (CV) behaviour of nifurtimox was studied. The addition of aprotic solvent (DMF) to nifurtimox in an aqueous citrate buffer system was examined. Qualitatively this results in separation of the initial irreversible four-electron reduction into two stages, the $\text{RNO}_2/\text{RNO}_2^-$ and $\text{RNO}_2^-, 4\text{H}^+/\text{RNHOH}, \text{H}_2\text{O}$ couples respectively. Particular attention was directed to the one-electron $\text{RNO}_2/\text{RNO}_2^-$ couple as measured by the CV mode in mixed media. Analysis of the CV response as a function of scan rate and non-aqueous solvent content yields information on the stability of the radical anion. The chemical forward reaction of the radical anion follows a second-order kinetic with a stability constant of $954 \text{ L mol}^{-1} \text{ s}^{-1}$ and a half-life of 1.05 s for 1 mM nifurtimox in aqueous citrate buffer, pH 10.5, + DMF, 40:60. © 1995.