Electrochemical study, on mercury, of a Meta-nitroarylamine derivative of nor-?-lapachone, an antitumor and trypanocidal compound

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The electrochemistry of 2,2-dimethyl-(3H)-3-(N-3'-nitrophenylamino) naphtho[1,2-b]furan-4,5-dione ([Q]-PhNO2), on mercury was investigated. The first peak is consistent with a quasi-reversible one-electron reduction of the ortho-quinone, forming [Q·-]-PhNO 2, while the second one, bielectronic, corresponds to the simultaneous reduction of the latter radical to a dianion and the nitro group to a nitro radical anion. The second order rate constant, kdisp, for the decay of [Q·-]-PhNO2 is 15.188 × 10 3 ± 827 mol-1 L s-1 and the t 1/2 equals 0.06 s. E17Ic values for [Q]-PhNO2 and its precursor, nor-?-lapachone, are similar. The ease of semiquinone generation and its stability are parameters statistically relevant in the correlation biochemical/theoretical aspects.