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ELECTROCHEMICAL BEHAVIOR OF CAPSAICIN AND ITS ANTI-OXIDATIVE PROPERTIES STUDIED BY MEANS OF CYCLIC VOLTAMMETRY

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The major aim of this work is to study the electrochemical behavior and antioxidative features of the plant derived anti-oxidant capsaicin. The antioxidant activity and the redox behavior of this compound were investigated by means of cyclic voltammetry at a glassy carbon electrode. Stock solution of capsaicin was prepared in 96% ethanol, and diluted to different concentrations (10, 100, 150, 200, 250, 300 μmol/L). The anodic oxidation behavior of capsaicin and its catalytic (regenerative) effect on the reduction of Ferric to Ferrous ion were investigated in different pH values (3,5; 5,5; 7 and 10) and different scan rates (5 to 100 mV/s). For a comparison of the anti-oxidative properties of capsaicin, voltammetric experiments with vitamin C (100, 200, 300, 400, 500 μmol/L) were also conducted in the same experimental conditions using cyclic voltammetry (CV). Results showed that in acetic buffer with pH=3,6 capsaicin is generating the highest anodic currents I_a, and shows well defined voltamograms.

The electrochemical characterization under different conditions is a promising tool to understand the redox behavior of these alkaloids found in *Capsicum sp*. and only several studies are reported on the electrochemical properties of capsaicin. Therefore, these results can contribute to development of a new method for a rapid estimation of capsaicin and its anti-oxidative properties by fast and simple technique as cyclic voltammetry.

Key words: capsaicin, antioxidant, electrochemical, redox potential, voltammetry.

References:

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