

Electrochemistry and Reactivity against Superoxide Anion Radicals of Hydroxycoumarins and Its Derivatives

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Abstract

The present studies reveal superoxide radical anion reactivity against synthesized coumarins. Free radicals play an important role in many diseases and they have a protective function also. Therefore, we must keep a balance in their concentration, and this is where exogenous antioxidants such as coumarins become important. There are multiple methodologies to quantify the efficiency of an antioxidant due to vast amounts of mechanism with which a radical can act. Electrochemistry is a useful tool for this purpose. In this work, the cyclic voltammetry-based methodology was used to generate superoxide anion radical through oxygen one-electron reduction in a dimethyl sulfoxide solution. Plotting the remaining percentage of initial current against compound concentration we can establish a Reactivity Index (RI50), for comparative purpose. This index means the value of concentration to reduce in a 50% the initial peak current. The most reactive coumarin against electrogenerated superoxide anion radical was 3-acetyl-7,8-dihydroxycoumarin (7,8-coum).

Indexed keywords

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Dimethyl sulfoxide

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