

Electrochemical oxidation of salicylhydroxamic acid on Pt electrode

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Abstract. The electrochemical oxidation behavior of salicylhydroxamic acid (SHAM) on a Pt electrode was investigated in aqueous solution of different pHs, containing 10 mM of SHAM, at 25 °C, by cyclic voltammetry technique. The results indicate that the SHAM was oxidized more easily in alkaline medium than acidic and neutral mediums, and the oxidation peaks of SHAM shifted toward lower potential values by increasing pH values. The SHAM electrooxidation involves an irreversible transfer of one or two electron, depending on the pH of solution. If solution pH is lower than 3 and higher than 7, the two electron transfer is involved in the electrooxidation. While, from pH=3 to pH=7, the SHAM electrooxidation involves an irreversible transfer of one electron and two protons in the first step, in agreement with the one step one-electron mechanism. The effect of SHAM concentration on the electrode reaction was investigated in artificial saliva solution. SHAM gives a single irreversible oxidation wave over the wide concentration range studied. Possible mechanism of SHAM electrooxidation was proposed.

Keywords: salicylhydroxamic acid, cyclic voltammetry, electrooxidation, platinum electrode.

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