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Application of electrode modified with carbon nanofibers and cationic surfactant for simultaneous voltammetric determination of syringaldehyde and vanillin

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Abstract

Syringaldehyde and vanillin are oxidized at 0.77 and 0.88 V, respectively, on the glassy carbon electrode modified with carbon nanofibers and cationic surfactant cetylpyridinium bromide in Britton-Robinson buffer pH 2.0. Two-fold increase of oxidation currents and cathodic shift of oxidation potentials on 10-20 mV as well as improvement of voltammograms shapes have been observed in comparison to bare electrode. Analytes peaks potential separation of 110 mV allows to perform their simultaneous determination. Variation of one component concentration at fixed concentration of the second one has shown that oxidation of syringaldehyde and vanillin runs independently. Voltammetric method for simultaneous determination of syringaldehyde and vanillin has been developed. The linear dynamic range is 2.5-30 and 5.0-40 μM for syringaldehyde and vanillin, respectively with detection limits of 0.53 and 1.17 μM.