Determination of sparfloxacin and besifloxacin hydrochlorides using gold nanoparticles modified carbon paste electrode in micelliar medium

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Abstract

A gold nanoparticles modified carbon paste electrode (AuCPE) was used to study the electrochemical

behavior of sparfloxacin HCl (SPAR) and besifloxacin HCl (BESI) using cyclic and differential pulse

voltammetry modes in the presence of micellar medium. Effect of different surfactants on peak current

was studied in BrittonóRobinson buffer solution of pH 2. Sodium dodecyl sulphate is the optimum

surfactant based on the enhancement of the peak current. The modified electrode shows highly

sensitive sensing giving an excellent response for SPAR and BESI. The peak current varied linearly over

the concentration ranges from 1.1 10 7 mol L 1 to 3.3 10 6 mol L 1 and from 2.2 10 6 mol L 1 to

5.5 10 5 mol L 1 with determination coefficients of 0.9976 and 0.9984 in case of SPAR and BESI,

respectively. The recoveries and the relative standard deviations were found in the following ranges:

99.976101.4% and 0.6361.48% for SPAR and 99.896101.1% and 0.8561.76% for BESI. The detections

limits were 2.87 10 8 and 3.76 10 7 mol L 1 for SPAR and BESI, respectively. The proposed method

has been successfully applied to determine SPAR and BESI in biological fluids.

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