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عنوان مقاله:

Dopamine and ascorbic acid measurementusing the modified electrode containing theMo (VI) schiff base complex and the cationicsurfactant

محل انتشار:

هفتمین کنفرانس ملی شیمی و توسعه فناوری نانو (سال: 1402)

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خلاصه مقاله:

A carbon-paste electrode (CPE) is modified incorporating Mo (VI) Schiff base complex andtetraoctylammonium bromide (TOAB). The mechanism of electrocatalytic oxidation of dopamine (DA) and ascorbicacid (AA) at the surface of Mo (VI) schiff base complex-modified CPE containing various percents of TOAB isthoroughly investigated by cyclic and differential pulse voltammetry. In solutions with pH ۵.۰, which all studies areperformed, DA exists as the positively charged species whereas AA is mainly as neutral form. Therefore, thefavorable ionic interaction (electrostatic repulsion) between cationic form of DA and cationic surfactant (TOA+)caused increasing the overvoltage for DA and positive shift in its anodic peak potential. Results of these studiesshowed that by increasing the weight percent of TOAB in the matrix of modified CPE, ΔEp for oxidation of AA andDA is increased, which makes it suitable for simultaneous voltammetric detection of AA and DA. A linear range of۲×۱۰-۶ to ۱×۱۰-۳ M for AA in absence and also presence of a constant concentration of ۱×۱۰-۴ M DA is resulted usingthe modified electrode. The linear range for DA in a constant concentration of ۱×۱۰-۴ M AA was in the range of ۴×۱۰-۶ to ۱×۱۰-۳ M. The preparation of the modified electrode is very easy and renewed by simple polishing. This electrodehas very good reproducibility (RSD ≤ ۳%), high stability in its voltammetric response (more than two month withoutany considerable change in response) and low detection limit (micromolar) for the detection of both AA and DA. Theprepared electrode is successfully applied for the voltammetric detection of AA and DA in pharmaceuticalpreparations.

کلمات کلیدی:

Dopamine; Schiff-base complex; voltammetry, ascorbic acid

لینک ثابت مقاله در پایگاه سیویلیکا:

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