عنوان مقاله:

Preparation of MWCNT/Schiff base complexof molybdenum modified electrode and itsapplication in simultaneous detection ofascorbic acid and acetaminophen

محل انتشار:

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

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خلاصه مقاله:

Multi-walled carbon nanotube (MWCNT) and Cis-Dioxo-(E)-۴-amino-N'-(۳-ethoxy-۲-hydroxybenzylidene) benzohydrazide Mo(VI) was used in the modification of carbon-paste electrode (CPE). Themodified electrode is used as a sensitive voltammetric sensor for determination of acetaminophen (AC) and ascorbicacid (AA). The electrode showed efficient electrocatalytic activity in lowering the anodic overpotentials andenhancement of the anodic currents. This electrode showed to be able to completely resolve the voltammetricresponse of AC and AA. The effects of potential sweep rate and pH of the buffer solution on the response of theelectrode, toward AC and AA, and the peak resolution is thoroughly investigated by cyclic and differential pulsevoltammetry (CV and DPV). The best peak resolution for these compounds using the modified electrode is obtainedin solutions with pH = ۴.۰. The ΔEp for AC and AA in these methods is resulted as about ۳۴۰ mV, which isconsiderably better than previous reports for these compounds. A linear dynamic range of ۴×۱۰-۷ to ۱×۱۰-۳ M and۲×۱۰-۶ to ۱×۱۰-۳ M for AC and AA, respectively in buffered solutions with pH ۴.۰. The detection limit of ۲×۱۰-۷ M and۱×۱۰-۶ is resulted for AC and AA, respectively. The voltammetric detection system was very stable and thereproducibility of the electrode response, based on the six measurements during one month, was less than ۳.۵% forthe slope of the calibration curves of AC. The prepared modified electrode is successfully applied for thedetermination of AA and AC in mixture samples and reasonable accuracies are resulted.

کلمات کلیدی:

Schiff-Base complex of molybdenum; acetaminophen; carbon nanotubes; voltammetry

لینک ثابت مقاله در پایگاه سیویلیکا: