



25 a 27 de novembro de 2024

Sejam Bem Vindos (as)

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A DISPOSABLE ULTRASENSITIVE SCREEN-PRINTED-CARBON ELECTRODE BASED ON CONDUCTIVE POLYMERS FOR THEOBROMINE DETECTION

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Apresentação Oral

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COMO CITAR ESSE TRABALHO?

Resumo

In this work, a screen-printed carbon electrode (SPCE) modified with Vulcan (V) carbon black on Chitosan (Chi), V@Chi, was developed, followed by electropolymerization of pyrrole (PPy), addition of gold (Au) particles and electropolymerization of cysteine (p-L-Cys). The resulting electrode was named L-Cys/PPy/Au/V@Chi/SPCE and applied for theobromine (TB) detection^[1]. The stability, reproducibility and sensitivity of the SPCE were evaluated through cycle voltammetry (CV) using 1.0 mmol L⁻¹ Fe(CN)₆^{3-/4-} in 0.1 mol L⁻¹ KCl. The SPCE was constructed with a conductive layer composed of 70% graphite ink and showed a significant increase in the electroactive area. The FEG-SEM images by revealed a greater complexity of the surface compared to the unmodified electrode. The analytical curve was established with concentrations ranging from 0.01 to 5.0 µmol L⁻¹ at pH 8.0 (E vs. graphite= 1.25 V), resulting in a limit of detection of 0.00235 µmol L⁻¹. During the interference studies, the platform demonstrated high selectivity for TB over eight interferents compounds. In addition, the L-Cys/PPy/Au/V@Chi/SPCE presented TB recovery percentages ranging from 100.87% to 106.25%, when applied in tap water, green tea, and black tea samples. Thus, the electrochemical platform proved to be a reproducible, selective, and low-cost sensor for the TB detection in different complex matrices. The modifications performed on the SPCE increased the sensitivity of the electrode, making it viable for applications in real samples.

Compartilhe suas ideias ou dúvidas com os autores!

Sabia que o maior estímulo no desenvolvimento científico e cultural é a curiosidade? Deixe seus questionamentos ou sugestões para o autor!

+ Criar tópico

Programação

11:00 até 12:30 em 27/11/2024
 Bloco A - Auditório...
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Eixo Temático
Sensores e Biossensores Eletroquímicos

Palavras-chave
p-cysteine
polipyrrole
vulcan@chitosan
tea sample

Discussões Científicas de Qualidade

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