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Voltammetric detection of LSD using a chemically modified carbon paste electrode with Schiff base complex

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The consumption of LSD (lysergic acid diethylamide) continues to rise in Latin America especially in Colombia and Brazil according to the World Drug Report of 2014. Despite of various studies in the electrochemical detection for seized drugs like cocaine, there is only one work about voltammetric detection of LSD in the literature. It is important to highlight the specificity obtained in this analytical technique through chemical modification in electrode surface. This study proposes a methodology with chemically modified carbon paste electrode using a Schiff base complex, $[UO_2$ (Ac-ophen)]• H_2O for voltammetric detection of LSD. The experimental procedure was carried out mixing graphite powder, modifier and paraffin (40:20:40/m:m) in an easy and fast way. We analyzed LSD by Differential Pulse Voltammetry which is known by its high sensitivity for the analyte. The use of an aqueous system for the analyses is an innovation, so is the new application of this Schiff complex. For a potential range from -1.5 to 1.5 V in a scan rate of 10 mV s^{-1}, there is an oxidation current peak related to a reaction between the modifier and the drug. After the optimization of all the experimental parameters, we constructed an analytical curve using the standard addition of LSD. The linear correlation coefficient was 0.992 and the values obtained for limits of detection and quantification were 168.2 and 559.5 ng mL^{-1} respectively. The results indicate this methodology is suitable for analyses in trace levels of LSD in seized samples.

Biography

Marcelo Firmino de Oliveira has completed his PhD in Analytical Chemistry at the age of 30 years from Universidade Estadual Paulista-Instituto de Química, Brazil. He is a Professor of Analytical Chemistry at Universidade de São Paulo, Departamento de Química-FFCLRP, Brazil. He has published 50 papers in reputed journals. His workgroup has three master students and four postdoctoral students.

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