

Electrocatalytic oxidation and voltammetric determination of sulfamethazine using a modified carbon electrode with ionic liquid

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© 2018 Sociedad Chilena de Química. All rights reserved. A carbon paste electrode was modified with the ionic liquid 1-methyl-3-octyl imidazolium hexafluorophosphate and it was applied for study the electrocatalytic oxidation and voltammetric determination of the drug sulfamethazine. The developed modified electrode was characterized using cyclic voltammetry and scanning electron microscopy. The oxidation of sulfamethazine at the surface of modified electrode occurs at lower potentials than that of an unmodified carbon paste electrode, and both an enhancement of the anodic peak current and a signal narrower and better defined with the modified electrode were observed. Accordingly, a method for the determination of sulfamethazine was developed using differential pulse voltammetry, at pH 11 and with an accumulation time of 3 min. The oxidation of sulfamethazine exhibited a dynamic range between 30 and 300 $\mu\text{g/mL}$ and detection and quantitation limits of 54 and 61 $\mu\text{g/mL}$, respectively. The m