Corrosion Inhibition Effect of Expired Ampicillin and Flucloxacillin Drugs for Mild Steel in Aqueous Acidic Medium

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The inhibition efficiencies of ampicillin and flucloxacillin expired drugs on mild steel (MS) corrosion in 1.0 M sulfuric acid medium was examined at 20°C using weight loss (WL), and electrochemical potentiodynamic polarization (PDP) and electrochemical impedance spectroscopy (EIS) techniques. Examined expired drugs are set to be efficient inhibitors for MS corrosion in sulfuric acid medium. The experimental outcomes of weight loss technique displayed that the inhibition performances of the investigated expired drugs augmented with increasing concentrations of such drugs and reduced by raising the temperature. The observed high inhibition efficiencies of the studied expired drugs may be owing to powerful adsorption of the drug species on MS surface resulting in formation of protective layers. Adsorption of the tested expired drugs on the MS surface was set to accord with Langmuir adsorption isotherm. The assessed thermodynamic parameters supported the mechanism of physical adsorption of the inhibitors.

Keywords: Expired drugs, Inhibitors, Corrosion, Mild steel, Adsorption.

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