Investigation of Adsorption and Inhibitive Effect of Expired Helicure Drug on Mild Steel Corrosion in Hydrochloric Acid Solution

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The inhibiting impact of expired Helicure drug (EHD) on the dissolution of mild steel (MS) in 1 M HCl was evaluated using weight loss (WL) and electrochemical methods. The outcome data displayed that this drug was adsorbed physically on MS surface following Langmuir isotherm. Some thermodynamic factors computed and discussed. The obtained data designated that the protection efficiency (PE) improved by raising the concentrations of the drug and lowered by raising the temperature of the medium. The maximum protection efficiency 85.8% was detected in the existence of 300 ppm EHD (in case of polarization). The analysis of MS surface are performed by utilizing scanning electron microscope (SEM), Fourier transform Infrared spectroscopy (FTIR) and atomic force microscopy (AFM) tests. All obtained results from different techniques are almost similar.

Keywords: Acid corrosion, Mild steel, Expired Helicure drug, SEM, AFM, FTIR

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