Tobacco Rob Extract as Green Corrosion Inhibitor for N80 Steel in HCl Solution

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The inhibitive action of tobacco rob water extract (TRE) on corrosion of N80 steel in HCl solution was investigated by weight loss, electrochemical measurement, and surface analysis. Results show the main constituents responsible for corrosion inhibition properties of TRE were found to be the nicotine and other components which contain C, O. And a maximum inhibition efficiency of 91.5% is achieved with 750 mg·L⁻¹ of TRE in 1M HCl at 60 °C. Polarization curves reveal that the TRE acts as a mixed-type inhibitor. The values of effective capacitance obtained by electrochemical impedance spectroscopy (EIS) are in the range of double layer capacitance. The adsorption behavior of TRE follows Langmuir adsorption isotherm and the activation parameters governing adsorption process were calculated and discussed.

Keywords: tobacco rob extract, corrosion inhibitor, polarization, EIS

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