Investigation of Corrosion Inhibition Efficiency of Amazonian Tree Alkaloids Extract for C38 steel in 1M Hydrochloric Media

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The present study investigated the potential of the alkaloidic extract of *Xylopia cayennensis* used as C38 steel corrosion inhibitor in 1M HCl by electrochemical impedance spectroscopy and potentiodynamic polarization. Both methods indicated that *Xylopia cayennensis* alkaloidic extract (XCAE) acts as mixed-inhibitor with maximal efficiency up to 93% (polarization curve) and 94% (EIS measurements) for 200 mg/L. The effect of time immersion and temperature was discussed, as well as adsorption mechanism (with XPS study and adsorption isotherm). Phytochemical study was undertaken to highlight key compound responsible for the corrosion inhibition and determine major constituent of this extract, and to permit better comprehension of adsorption mechanism.

Keywords: C38 steel; *Xylopia cayennensis* extract; Adsorption-XPS; Acidic media; Corrosion inhibitor.

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