ASSESSMENT OF THE CORROSION INHIBITION EFFECT OF FLAVONOID EXTRACTS OF RUTA CHALEPENSIS ON API 5L X52 STEEL IN 1M HCl MEDIUM

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Abstract

The development of green eco-friendly inhibitors for the corrosion of metallic surfaces in acid media is still considered as a major challenge and target for corrosion-mitigation engineers. We have prepared in this work 4 different extracts from the plant Ruta Chalepensis using methanol, chloroform, ethyl acetate and aqueous ethyl acetate solvent systems. The flavonoids content, as well as the other oxygenated compounds, in the 4 extracts was carefully screened using the gas chromatographic – mass spectrometry (GC-MS) technique. The corrosion inhibition property of all extracts for API 5L X52 steel in the hydrochloric acid medium has been carefully assessed using electrochemical techniques and surface-morphological characterizations. Our results revealed promising corrosion-inhibition properties for the methanol and chloroform extracts compared to other extracts and suggest a potential applicability for the flavonoids from the studied plant as green corrosion inhibitors for steel substrates in acid media.

Key words: Ruta Chalepensis, Corrosion inhibitors, flavonoids, API 5L X52 steel

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