Environmentally friendly inhibitors from vegetable extracts to protect carbon steel corrosion in acidic environment

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Vegetable extracts have become important as an environmentally acceptable, readily available and renewable source for wide range of inhibitors. They are the rich sources of ingredients which have very high inhibition efficiency. The aim of the present work is to study the corrosion inhibition characteristics of aqueous extract of USINHIB for corrosion control of carbon steel in 0.5 M hydrochloric acid. Open circuit potential, potentiodynamic polarization, electrochemical impedance spectroscopy and cyclic voltammetry in presence and absence of vegetable inhibitor were used to provide detailed information about the corrosion of steel surface which occurs in acidic environment. The inhibitive effect of naturally available vegetable extract USINHIB toward the corrosion of carbon steel in 0.5 M HCl solution has been investigated by electrochemical techniques. The results show the increase of inhibition efficiency.

This research paper proves a higher passive domain and a better corrosion resistance of carbon steel in 0.5 M hydrochloric acid solution which contains vegetable inhibitor in comparison with the passive domain of carbon steel in 0.5 M hydrochloric solution without inhibitor.

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