



Adsorption and Protection of Low C-Steel Corrosion in 1M Hydrochloric acid Medium using Hyoscyamus Muticus Plant Extract

A. S. Fouda*, G. Y.Elawady and W.T.Elbehairy

*Chemistry Department, Science Faculty, Mansoura University, El-Mansoura-35516, **EGYPT**

Email: asfouda@mans.edu.eg

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ABSTRACT

The using of Hyoscyamus Muticus plant extract for corrosion inhibition of low C-steel in 1 M hydrochloric acid using chemical methods(mass reducing method, gasometric method), electrochemical methods(electrochemical impedance spectroscopy (EIS), Tafel polarization methods, electrochemical frequency modulation) and spectral methods (scanning electronic microscope (SEM), atomic force microscope (AFM)). From results the rise of the resistance of charge transfer (R_{ct}) with concentration increasing of the extract helps the extract components to adsorb on the surface of metal. From The polarization curves the using of extract deviate the reduction and oxidation reactions into less current density. These deviations confirm that Hyoscyamus extract anodic and cathodic inhibitor. The dissolution reaction rate measured by mass reduced data modified the later results. We found that the %IE rose with rising of both concentration of inhibitor and temperature. The Hyoscyamus extract is adsorbed on the low C-steel surface according to Temkin equation. Finally, the results show the Hyoscyamus extract adsorption type is chemisorption.

Keywords: Hyoscyamus Muticus, adsorption, corrosion, inhibition, low C-steel, HCl.
