Sage Extracts as Inhibitors of Steel Corrosion in 4% HCl

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In this paper the research of corrosion protection of steel by processing corrosion environment using various concentrations of sage extracts (*Salvia officinalis*) (0.5 g/dm³, 1 g/dm³ and 1.5 g/dm³) in a 4% solution of HCl was carried out. Measurements were performed using gravimetric and electrochemical methods (Tafel extrapolation method and electrochemical impedance spectroscopy). The results have showed that sage is recommendable as a possible inhibitor in 4% solutions of HCl. The research also confirms that electrochemical impedance spectroscopy is a reliable method to use for rapid corrosion tests, since the results confirm the gravimetric measurements of corrosion indicators. Determination of corrosion rate and the degree of protection using Tafel diagrams calculated on the basis of corrosion current did not give reliable results. The results show that sage may be used as a "green inhibitor" for protection of steel in a shorter period of time. The degree of protection ranges up to 64.5% for steel 2; however, since sage is environmentally friendly, it is a suitable corrosion inhibitor for shorter periods of time.

Keywords: steel, inhibitor, corrosion, corrosion indicator, protective factor.

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