

# UTILIZATION OF AMMIMAJUS L. FRUITS EXTRACTS AS INHIBITORS FOR MILD STEEL CORROSION IN ACID MEDIA

S.T. Arab, A. M. Al-Turkustani and S.Y. AI-Nami

Department of Chemistry, Girls' College of Education,  
P. O. 55002, Jeddah (Saudi Arabia)

(Received, 15 November, 2005)

## Abstract

*The inhibition effect of Ammi majus L. fruit extracts, alcoholic extract (A), aqueous extract (B) and defatting extract (C), on the corrosion of mild steel in 2.0M H<sub>2</sub>SO<sub>4</sub> containing 10% EtOH at 30°C was investigated using chemical, electrochemical and scanning microscopy measurements. It was found that as the concentration of extracts increases, the rate of mild steel corrosion is decreased, which indicates that an inhibition of the corrosion process take place. The decrease of the inhibition efficiency of the extracts was given as: B > C > A. The electrochemical results showed that the extracts A, B and C, act as mixed inhibitors and the corrosion inhibition of mild steel occurred mainly by charge transfer mechanism. The scanning electron microscopy results showed that the changes (pits) on the mild steel surface is due to the effect of acid corrosion became less, the steel surface appears to be unchanged, by the extracts addition. The experimental results fit Langmuir isotherm. Values of equilibrium constant of adsorption  $K_{ads}$  and the standard free energies of adsorption  $\Delta G_{ads}^{\circ}$ , for the extracts, were calculated.*

*The effect of two coumarin compounds was studied by chemical methods in 2.0M H<sub>2</sub>SO<sub>4</sub> containing 10% EtOH separately and in mixture of them. The results showed that:*

- As the concentration of studied compounds (Xabthotoxin(I) and Imperatorin (II)) increased the rate of mild steel corrosion was decreased.*
- The inhibition efficiency obtained from the mixture was very high and nearly the same as when the extract was used which supported that the inhibition of Amajus extract is due to the presence of coumarin compounds.*

**Keywords:** *AmmimajuS, fruit extracts, mild steel corrosion & acid media.*