

Investigation of Corrosion Inhibition Effect and Adsorption Activities of *Apium graveolens* Extract for Mild Steel in 0.5 M H₂SO₄

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Abstract—The corrosion inhibition effect of *Apium graveolens* seeds extract, a species in the family Apiaceae, has been examined on mild steel corrosion in 0.5 M H₂SO₄ by using weight loss measurements, potentiodynamic polarization measurements and electrochemical impedance spectroscopy (EIS) techniques. The presence of this Sedanolide and Senkyunolide-N containing extract decreases the corrosion rate of mild steel in acidic solution. The best inhibition effect of *Apium graveolens* extract for mild steel in 0.5 M H₂SO₄ was obtained at 500 mg/L using electrochemical and weight loss measurements. The adsorption of *Apium graveolens* extract on the surface of mild steel has been investigated by using AFM study, SEM study and absorption spectroscopic techniques. Due to the existence of hetero atoms in the main components, *Apium graveolens* extract is considered to be a good inhibitor.