Kalanchoe Blossfeldina Extract as a Green Corrosion Inhibitor for Carbon Steel in Na₂S-polluted NaCl Solutions

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The potential of Kalanchoe blossfeldina extract (KBE) as a corrosion inhibitor of carbon steel (CS) in polluted NaCl solution (3.5% NaCl + 16 ppm Na₂S) was determined utilizing AC impedance (EIS), potentiodynamic polarization (PP) and mass loss (ML) methods. Scanning electron microscopy with energy dispersive X-ray spectroscopy (SEM–EDX), and atomic force microscope (AFM) analyses were used to examine the CS surface. The adsorption of this extract follows Temkin isotherm. Maximum protection was achieved 92.6% at 300 ppm concentration. PP studies discovered that KBE behaved as a mixed-kind inhibitor in polluted NaCl solution. The inhibition efficiency (IE) of KBE obtained from the ML and electrochemical tests were in excellent agreement.

Keywords: Corrosion inhibition, Kalanchoe blossfeldina extract, HCl, PP, EIS

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