An Expired Non-Toxic Diltiazem Hydrochloride as Corrosion Inhibitor for Cu in Nitric Acid Medium

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The corrosion inhibition of Cu in 1 M HNO₃ solution by expired Diltiazem Hydrochloride (HD) has been tested by Tafel polarization, electrical frequency modulation, electrical impedance spectroscopy, and mass loss method. The Diltiazem Hydrochloride gives 86.5 % protection efficiency at optimum dose at 300 ppm. DILTIAZEM HYDROCHLORIDE PP studies suggest that it is mixed kind inhibitor. EIS technique was also utilized to give the corrosion inhibition mechanism. The adsorption of the Diltiazem Hydrochloride on Cu surface was found to follow the Temkin's isotherm. Some adsorption parameters and thermodynamic activation were measured to given the corrosion protection mechanism. The relationship among the IE and some quantum calculation have been computed and argument.

Keywords: Copper, Expired Diltiazem Hydrochloride, Acidic medium, Quantum chemical calculations

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