

# INVESTIGATION OF INHIBITIVE ACTION OF EUGENOL EXTRACTED FROM CINNAMON (*Cinnamomum zeylanicum*) ON ALUMINUM CORROSION IN SALTY AND ACIDIC MEDIA

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Corrosion of metal surfaces, especially aluminum, has a large impact on the global economy due to its wide applications. Synthetic chemicals on prevention or inhibition of corrosion of aluminum are associated with a high cost and environmental threats. Therefore, natural inhibitors would be a good alternative since they provide solutions to these problems. Although many plant extracts have been investigated as corrosion inhibitors, identification of active components, responsible for corrosion inhibition has not been given sufficient attention.

Cinnamon leaves contain 81-85% eugenol is a corrosion inhibitor. Eugenol isolated from cinnamon leaves through steam distillation, has shown effective corrosion inhibition of aluminum in  $0.10 \text{ mol dm}^{-3}$  NaCl medium at acidic pH of 1.0 and 4.0. Open-circuit potential, pHvariation, mass loss measurement, electrochemical impedance spectroscopy and potentiodynamic polarization curves were employed to investigate the inhibition action of eugenol on aluminum surface.

All methods reveal a similar trend, demonstrating the maximum inhibition efficiency of 72% and 91% by eugenol in 0.50% V/V at pH 1.0 and 4.0, respectively. The experimental data conform to the Langmuir adsorption isotherm and the Gibbs free energy determined, suggest that of adsorption obtained suggested that inhibitor molecules have been spontaneously adsorbed on the aluminum surface through a physical adsorption mechanism.