

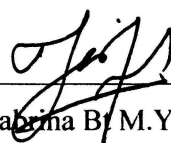
**INHIBITIVE EFFECT OF BLACK PEPPER EXTRACT ON THE  
SULPHURIC ACID CORROSION OF MILD STEEL**

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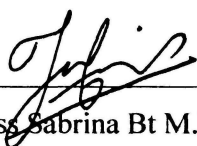


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## ABSTRACT

### THE INHIBITORY EFFECT OF BLACK PEPPER EXTRACT ON THE SULFURIC ACID CORROSION OF MILD STEEL

The corrosion inhibitive effect of the extract of black pepper (*Piper nigrum plant*) on mild steel (MS) in 1M $\text{H}_2\text{SO}_4$  media was evaluated by electrochemical studies (Tafel polarization), Fourier transform infrared (FTIR) and scanning electron microscope (SEM) studies. Generally, corrosion rate information was determined using the polarization method. The results showed that different concentration of black pepper extract (200ppm, 400ppm, 600ppm, 800ppm and 1000ppm) gave a different percentage of inhibition efficiency. Higher concentration of black pepper extract, 1000ppm inhibit more than others. Meanwhile, for the characterization, the FTIR managed to show that the corrosion inhibition was primarily due to the presence of conjugated double bond with polar group in black pepper extract. The effectiveness was based on the chelating action on the electrode surface, preventing metal reaction and dissolution. Corrosion inhibition potential can be attributed to adsorption which was revealed by SEM studies. Qualitatively, the metal immersed in solution without inhibitor was highly damaged compared to solution contained inhibitor. Therefore, SEM studies provide confirmatory evidence for the protection of MS by the black pepper extract.