

# Effets des inhibiteurs verts sur la corrosion des aciers ordinaires dans deux milieux acides.

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**Abstract:** The cladodes extract of *Opuntia Ficus Indica* (O.F.I) which is found in eastern of Algeria (Annaba) and *Aloe Vera* brought from North America, were the object of our work with the aim of studying their inhibitory efficiencies, on two different mild steels, and in three acidic environments, 1M H<sub>3</sub>PO<sub>4</sub>, 0.5M H<sub>3</sub>PO<sub>4</sub> and 0.5M H<sub>2</sub>SO<sub>4</sub>. To do so, several analytical methods were used, such as gravimetry, stationary electrochemical methods (potentiodynamic polarization and chronoamperometry), transient electrochemical impedance spectroscopy (EIS) and the Zero-Charge Potential (PZC) method. Moreover, we used steel surface characterization methods, as the contact angle measurement method and Scanning Electron Microscopy (SEM). The obtained results, related to the inhibitory efficiency, were 97.6% and 80.9% respectively for O.F.I and *Aloe Vera*, separately used at 10% (v / v) of concentration. Whereas together, these two green inhibitors act as a mixed inhibitor and increase the polarization resistance, while increasing the inhibitor concentration. The synergy of the two extracts with and without the addition of KI, as an additive, improves the inhibitory efficiency by the increase of the polarization resistance. Then, based on the above experiments, we may qualify this inhibitors case as physisorption of the two inhibitors when used separately as well as in synergy. The characterizations of the surface condition of the two mild steel samples confirm the obtained results. Keywords: Corrosion,

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