

## **Sensitization and inhibition on redox activity of hybridization labels by acridine orange, hoechst 33258 and DNA using rapid electrochemical method.**

### **Abstract**

We investigated sensitization and inhibition effects of DNA on cyclic voltammetry peak currents of ferricyanide, ferrocene complex, ruthenium complex, acridine orange and Hoechst 33258. We also studied sensitization by acridine orange and Hoechst 33258 of peak CV currents for ferricyanide, ferrocene complex and ruthenium complex in the presence and absence of DNA. This work employed a bare glassy carbon (GC) electrode with double-stranded calf thymus DNA (ctDNA) in solution. Cyclic voltammetry was carried out in 0.1 M KCl at pH 7 with DNA solution (400 ppm) and ligand concentrations in the  $10^{-3}$  molar range. DNA had a negligible effect on the redox activity of ferricyanide. However inhibition was observed in the redox activity of ferrocene and ruthenium complexes. At low concentrations DNA increased the redox activity of the intercalator ligands acridine orange and Hoechst 33258. Acridine orange and Hoechst 33258 influenced the redox activity of different intercalator ligands (ferricyanide, ferrocene complex and ruthenium complex); effects included shifting of anodic and cathodic peaks both in the presence and absence of DNA. This method affords a convenient and sensitive approach for exploring interactions between DNA and electroactive ligands.

**Keyword:** DNA biosensor; Acridine orange; Hoechst 33258.