

ABSTRACT

Half-sandwich ruthenium complexes, $[(\eta^6\text{-C}_6\text{H}_5\text{CH}_3)\text{RuCl}(\text{N,N})\text{PF}_6]$ where (N,N) = 5,5-dimethyl-2,2'-bipyridine, 4,4'-di-tert-butyl-2,2'-bipyridine and 2,2'-bipyridine were prepared by reacting $[(\eta^6\text{-C}_6\text{H}_5\text{CH}_3)\text{Ru}(\mu\text{-Cl})\text{Cl}]_2$ dimer with the N,N'-bidentate ligands in a 1:2 ratio. Characterization of the complexes was done using ^1H NMR, elemental analyses, IR and UV/Vis spectroscopy. Electrochemical properties of the complexes were determined by cyclic voltammetry. Antimicrobial activities of the complexes and respective ligands were tested against drug resistant Gram-negative *Escherichia coli* ATCC 11775 and drug susceptible Gram-positive bacteria *Staphylococcus aureus* ATCC 12600. Some of the synthesized mononuclear ruthenium complexes demonstrated good potential antimicrobial activities against the selected bacteria tested with some showing better activity than well-known antibiotics such as streptomycin (S-10).

Keywords: Ruthenium, half-sandwich, antimicrobial susceptibility, electrochemical, bipyridine ligands