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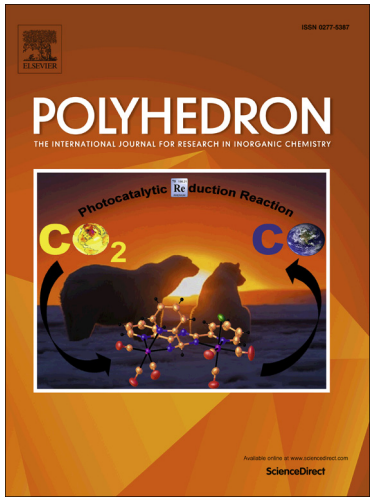


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# Synthesis, structural, thermal characterization and interaction with calf-thymus DNA and albumins of cationic Ni(II) complexes with 2,2'-dipyridylamine and salicylaldehydes

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**ABSTRACT**

Five cationic mixed-ligand Ni(II) complexes with 2,2'-dipyridylamine (dpamH) and substituted salicylaldehydes (X-saloH), having the general formula $[Ni(dpamH)_2(X\text{-}salo)](NO_3)$, were prepared and characterized by physicochemical and spectroscopic techniques (FT-IR and UV-vis) and their interaction with calf-thymus (CT) DNA and serum albumins was investigated. The complexes are formulated as $[Ni(dpamH)_2(3\text{-}OCH_3\text{-}salo)](NO_3)\cdot CH_3OH$, **2**, $[Ni(dpamH)_2(5\text{-}CH_3\text{-}salo)](NO_3)\cdot CH_3OH$, **3**, $[Ni(dpamH)_2(5\text{-}NO_2\text{-}salo)](NO_3)\cdot CH_3OH$, **4,** $[Ni(dpamH)_2(5\text{-}Cl\text{-}salo)](NO_3)$, **5** and $[Ni(dpamH)_2(5\text{-}Br\text{-}salo)](NO_3)$, **6**. Moreover, in the absence of dpamH, one neutral nickel-salicylaldehydato complex was also prepared and characterized as $[Ni(5\text{-}NO_2\text{-}salo)_2(CH_3OH)_2]$, **1**. The structures of complexes **2** and **4** were verified by X-ray crystallography. The thermal stability of the complexes was examined by the simultaneous thermal analysis technique (TG/DTG-DTA). Spectroscopic (UV-vis), electrochemical (cyclic voltammetry) and physicochemical (viscosity measurements) techniques were employed in order to study the binding mode and binding strength of the complexes to CT DNA, while ethidium bromide (EB) displacement studies (performed by fluorescence emission spectroscopy) revealed the ability of the complexes to displace the DNA-bound EB. Intercalation is the most possible mode of interaction of the complexes with CT DNA. The interaction of the complexes with albumins was studied by fluorescence emission spectroscopy and the determined binding constants present relative high values.

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