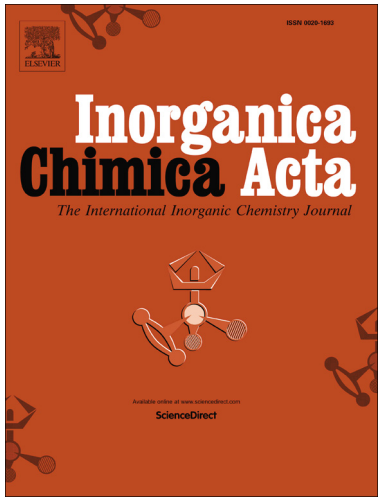

Research paper

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Synthesis, Physicochemical Characterizations and *In Vitro* Biological Evaluations of Amide Based Zn(II) Carboxylates

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Abstract

Carboxylate ligands are widely used in chemistry and pharmacy owing to their ability to form stable complexes with a large variety of metal ions. In that context, carboxylate complexes allow modulation of the pharmaceutical products. Herein, a series of six novel Zn(II) carboxylates: $[Zn(L^1)_2]$ (**1**), $[Zn(L^1)_2$ (bipy)] (**2**), $[Zn(L^1)_2$ (phen)] (**3**), $[Zn(L^2)_2]$ (**4**), $[Zn(L^2)_2$ (bipy)] (**5**) and $[Zn(L^2)_2$ (phen)] (**6**) (where L^1 = 4-(2-methoxy-5-nitrophenylamino)-4-oxobutanoic acid), L^2 = 4-(2-nitro-4-methoxyphenylamino)-4-oxobutanoic acid), phen = 1,10-phenanthroline and bipy = 2,2′-bipyridine) were synthesized in good yield and successfully characterized by ^{1}H, ^{13}C NMR, FT-IR and single-crystal X-ray crystallography. The spectroscopic data reveal that the absence of OH peak in the spectra of complexes confirm their formation. Single-crystal X-ray crystallographic data for complexes **1** and **5** show a distorted octahedral environment around the Zn atom. The results of both FT-IR and single-crystal X-ray crystallography confirm the bidentate nature of the carboxylate ligands. The DNA interaction study of the synthesized complexes was investigated using UV-visible spectroscopy and viscosity measurements suggesting an intercalative binding mode of interaction of the complexes with SS-DNA. The interaction between the synthesized complexes and CTAB was elaborately studied with a conductometric method. The conductivity method was used to find CMC, higher CMC values suggesting a stable complex-CTAB system. Results of *in vitro* antibacterial and antifungal activities indicate the biological potency of the synthesized compounds.