Research Article

Synthesis, spectral characterization, DNA-binding and antimicrobial profile of biological active mixed ligand Schiff base metal(II) complexes incorporating 1,8-diaminonaphthalene

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Pages 804-822 | Received 30 Jul 2020, Accepted 11 Dec 2020, Published online: 11 Jan 2021

Cite this article https://doi.org/10.1080/00958972.2020.1870967

Abstract

Mixed-ligand complexes of bivalent metal ions, *viz*, Co(II), Ni(II), Cu(II), and Zn(II) of the composition [ML(dan)]Cl (where L = Schiff base ligand, dan = 1,8-diaminonaphthalene and M = Co(II), Ni(II), Cu(II), Zn(II)) have been synthesized and characterized. The stoichiometric ratio of the prepared complexes has been estimated using complementary techniques such as elemental analyses, FT-IR, UV-vis and EPR spectra, magnetic and molar conductivity measurements. The study shows that all the complexes have square planar geometry. The synthesized compounds have been tested *in vitro* against various types of pathogenic bacteria to weigh up their antimicrobial properties. They have lofty activity against the tested bacteria. The complexes have higher activity than the free ligands. The interaction of synthesized complexes with calf thymus DNA (CT-DNA) has been studied by absorption spectroscopic technique and viscosity measurements. The complexes show a successful interaction with CT-DNA *via* intercalation mode. In addition, molecular docking approach has been performed for predicting the binding free energy of the synthesized compounds with 1BNA receptor.