- **Complexes show an axial EPR spectra in polycrystalline state at 298 K.**
- **Complexes showed good antibacterial and cytotoxicity activity.**

Syntheses, spectral aspects and biological studies of bromide and azide bridged box dimer copper(II) complexes of an NNO donor aroylhydrazone

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Abstract

A new NNO donor aroylhydrazone, di-2-pyridyl ketone-3-methoxybenzhydrazone (Hdkm) and its three copper(II) complexes were synthesized and characterized by different physicochemical techniques including single crystal X-ray diffraction technique. The structural analysis of copper(II) complexes revealed that a mononuclear bis coordinated complex $[Cu(dkm)_2]$ **(1)** and two monocoordinated dkm with dinuclear metal center, $[Cu_2(dkm)_2(\mu\text{-}Br)_2]$ **(2)** and $[Cu_2(dkm)_2(\mu\text{-}N_3)_2]$ **(3)** are formed. The coordination geometry of complex **1** is distorted octahedral with an N_4O_2 chromophore while complexes **2** and **3** are bromide and azide bridged box dimers respectively with distorted square pyramidal geometry. These complexes showed an axial spectra with $g_{||} > g_{\perp} \geq 2.0023$. The antibacterial and cytotoxicity results showed that these complexes displays good activity.

Keywords: Methoxybenzhydrazone; N_4O_2 chromophore; Box dimer; Copper(II) complex; Distorted square pyramidal; Axial spectra

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