

Synthesis, characterization and biological studies of S- benzyl-b-N-(benzoyl)dithiocarbazate and its metal complexes

ABSTRACT

S-Benzyl-b-N-(benzoyl) dithiocarbazate (SBNBODTC) a new disubstituted dithio-carbazate oxygen–sulfur (OS) donor ligand derived from reaction of S-benzyl dithiocarbazate with benzoyl chloride, formed bischelated complexes of general formula $[M(OS)_2]$ where M is Cu^{2+} , Ni^{2+} , Cd^{2+} , Co^{2+} or Pb^{2+} and OS is a uninegative bidentate ligand. The ligand and its metal complexes have been characterized by a variety of physico-chemical techniques. S-benzyl-b-N-(benzoyl) dithiocarbazate crystallized with $Z_0 = 2$ in its thione form in cis–cis conformation, with the N–N bond adopting a cis geometry with respect to C@S, while the S-benzyl group adopts a cis geometry with respect to the thione sulfur atom across the C–S bond. SBNBODTC, $Cu(OS)_2$, $Ni(OS)_2$ and $Pb(OS)_2$ display marked cytotoxicity against HL-60 (human myeloid leukemia) while $Cd(OS)_2$ and $Co(OS)_2$ are moderately cytotoxic. The compounds showed moderate but selective activity towards targeted pathogens.

Keyword: Dithiocarbazate, Metal complex, Bidentate ligand, Bis-chelated