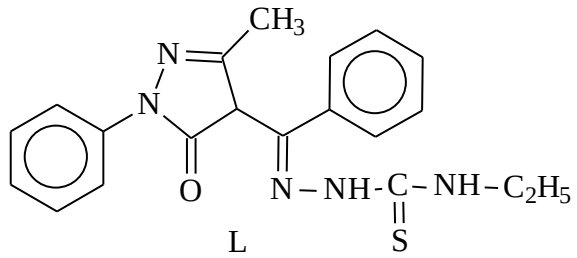
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THE CRYSTAL STRUCTURES AND ANTITUMOR ACTIVITY OF 1-PHENYL-3-METHYL-4-BENZOYL-5-PYRAZOLONE 4-ETHYLTHIOSEMICARBAZONE AND ITS COPPER(II) COMPLEXES

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From literature sources it is known that many thiosemicarbazide derivatives are widely used in medical practice as antimicrobial, antituberculous, antifungal, antitumor and other kind of preparations. Their biological activity in many cases is determined by the possibility of formation different coordination compounds with biometal ions in the living organism. Therefore, accumulation and systematization of the experimental data on synthesis and properties of new coordination compounds of biometals with thiosemicarbazide derivatives remains an actual direction of the modern chemistry.



L

The aim of this work is the synthesis, determination of the composition, structure and antitumor activity of the 1-phenyl-3-methyl-4-benzoyl-5-pyrazolone 4-ethylthiosemicarbazone (L) and its coordination compounds of copper(II) chloride, nitrate and acetate. The stated above thiosemicarbazone L was synthesized by the reaction of condensation between 1-phenyl-3-methyl-4-benzoyl-5-pyrazolone and 4-ethylthiosemicarbazide. The synthesis of the coordinational compounds was carried out in the ethanol solutions. Green compounds with composition $Cu(L\text{-}H)X \cdot nH_2O$ [X = Cl(I), NO_3(II); n =0(II), 1(I)] were obtained by the interaction of ethanol solutions of copper(II) chloride and nitrate with thiosemicarbazone L (molar ratio 1:1). If copper(II) acetate was taken instead of chloride or nitrate, than compound with composition $Cu(L\text{-}H)_2$ (III) was obtained, regardless of molar ratio between copper salt and thiosemicarbazone. Monocrystals of the stated above compounds were obtained as a result of recrystallization from dimethyl sulfoxide and their crystal structures were determined by X-ray analysis. It was found that the synthesized coordination compounds have monomeric structures. In compounds I and II thiosemicarbazone L behaves as monodeprotonated ligand with O, N, S set of donor atoms and coordinates to the central atom by carbamide oxygen, azomethinic nitrogen and sulfur atom, forming five- and six-membered s metallocycles. In the compound I the fourth coordination site is occupied by chlorine atom. In the compound II nitrate-ion is a bidentate bounded ligand. In the coordination compound III two molecules of monodeprotonated thiosemicarbazones L are bonded to the central ion by azomethinic nitrogen and sulfur atom forming five-membered metallocycles. The synthesized compounds selectively inhibit the human promyelocytic leukemia HL-60 cells growth in the concentration 10^{-5}-10^{-6} M.

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