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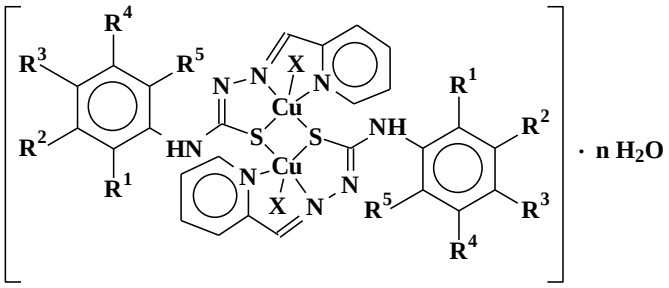
SYNTHESIS AND BIOLOGICAL ACTIVITY OF COPPER(II) COMPLEXES OF 2-FORMYLPYRIDINE 4-(DIMETHYLPHENYL)THIOSEMICARBAZONES

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Thiosemicarbazones of aldehydes and ketones form with transition metals a variety of coordination compounds, which differ by composition, structure and properties. Some of these compounds show biological activity, so that they could be used as disinfectants and antiseptics, as well as agents for generation of selective microbiological nutrient media. Thus, the synthesis and the study of new coordination compounds of biometals with thiosemicarbazones are both of scientific and practical interest.

The aim of this work consists in the development of optimal conditions for synthesis, determination of composition and most probable structure, study of physico-chemical properties, antimicrobial and anticancer activity of copper(II) coordination compounds with 4-(2,6-dimethylphenyl)-, 4-(2,5-dimethylphenyl), 4-(3,4-dimethylphenyl) and 4-(2,4-dimethylphenyl)-thiosemicarbazones of 2-formylpyridine (HL^{1-4}). Coordination compounds of the following composition have been synthesized: $Cu(L^{1-4})X \cdot nH_2O$ ($X = Cl^-, NO_3^-$; n = 2-4). Inferences about the likely structures of these compounds have been drawn by means of IR spectroscopy, magneto-chemical research and thermal analysis data. The synthesized complexes have polynuclear structures. Thiosemicarbazones (HL^{1-4}) act as double deprotonated N,N,S tridentate ligands. The thermolysis process consists of two successive steps: deaquation (70-95°C) and full decomposition (350-520°C). The determination of antimicrobial activity for the I-VI complexes has been performed in liquid nutrient medium by means of successive dilutions method. As reference cultures for *in vitro* experiments have been used standard stems of *Staphylococcus aureus*, *Bacillus cereus*, *Escherichia coli*, *Salmonella abony* and *Sighella sonnei*. It has been established that the synthesized complexes show a selective bacteriostatic and bactericidal activity against above mentioned strains within the following concentrations: from 0.0009 to 2.34 μg/mL for gram-positive and from 0.009 to 75.0 μg/mL for gram-negative microorganisms.



I - VI

I : $R^1 = R^5 = CH_3$; $R^2 = R^3 = R^4 = H$; X = Cl; n = 4
II : $R^1 = R^5 = CH_3$; $R^2 = R^3 = R^4 = H$; $X = NO_3$; n = 4.
III : $R^1 = R^4 = CH_3$; $R^2 = R^3 = R^5 = H$; X = Cl; n = 2.
IV : $R^1 = R^4 = CH_3$; $R^2 = R^3 = R^5 = H$; $X = NO_3$; n = 4.
V : $R^2 = R^3 = CH_3$; $R^1 = R^4 = R^5 = H$; $X = NO_3$; n = 4.
VI : $R^1 = R^3 = CH_3$; $R^2 = R^4 = R^5 = H$; $X = NO_3$; n = 4.

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