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SYNTHESIS, STRUCTURE AND BIOLOGICAL ACTIVITY OF SOME 3D-METAL COMPLEXES OF SOME DERIVATIVES OF SALICYLALDEHYDE 4-ALLYLTHIOSEMICARBAZONES

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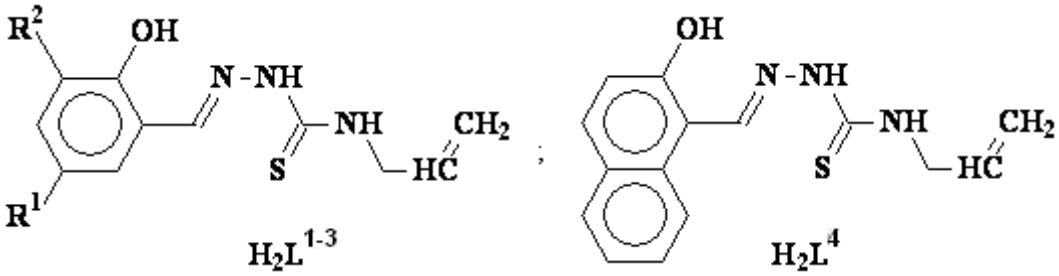
From literature sources it is known that many thiosemicarbazide derivatives are widely used in medical practice as antimicrobial, antituberculous, antifungal, antitumor and other kind of preparations. Their biological activity in many cases is determined by the possibility of formation different coordination 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.

The aim of this work is the synthesis, determination of the composition, structure, antimicrobial, antifungal, and antitumor activity of the coordination compounds of cobalt, nickel, copper and zinc with 4allylthiosemicarbazones (H_2L^{1-4}) of salicylaldehyde, 3-methoxy-, 5-nitro-, and 2-hydroxy-1-naphthaldehyde.



R^1 = H, NO_2; R^2 = H, OCH_3

The experiments showed that chlorides of stated above metals react with thiosemicarbazones HL^{1-4} in ethanol solution in molar ratio 1:1 or 1:2 forming compounds of different coloures and composition. Monocrystals of one coordination compound of cobalt was obtained as a result of recrystallization from dimethylsulfoxide and its crystal structure was determined by X-ray analysis. The composition and structure of the rest of compounds was determined on the basis of data from NMR spectroscopy (^1H and ^{13}C), IR spectroscopy, magnetochemical and thermogravimetric research.

These compounds show selective bacteriostatic and bactericidal activity for some gram-positive (*Staphylococcus aureus, Bacillus cereus*), gram-negative (*Escherichia coli, Salmonella abony*) microorganisms and fungi (*Candida albicans*) in the range of concentration 0.0015-0.5 mg/mL. The copper(II) coordination compouns have a higher activity than other complexes. Synthesized compounds manifest the best activity towards the gram-pozitive microorganisms and *Candida albicans*. In addition sintesized thiosemicarbazones (H_2L^{1-4}) and their coordination compounds inhibid proliferation of the human promyelocytic leukemia HL-60 cells from 80 to 100% in the range of concentration 10^{-5} -10^{-6} mol/L.

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