

## P25. Synthesis, structure and antimicrobial activity of some 3d-metal coordination compounds with 2-hydroxy-3-methoxybenzaldehyde 4-(dimethylphenyl)thiosemicarbazones

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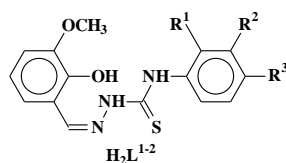
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The aim of this work is the synthesis, determination of the composition, structure, physicochemical, antimicrobial and antifungal properties of 2-hydroxy-3-methoxybenzaldehyde 4-(2,4-dimethylphenyl)thiosemicarbazone ( $H_2L^1$ ) and 4-(3,4-dimethylphenyl)thiosemicarbazone ( $H_2L^2$ ) as well as iron(III), cobalt(III), nickel(II), and copper(II) coordination compounds with these ligands.

The thiosemicarbazones  $H_2L^{1-2}$  react with chlorides, bromides, nitrates and perchlorates of stated above metals forming colored solutions. Upon cooling the precipitates of coordination compounds are formed:  $Cu(HL^{1-2})X \cdot nH_2O$  ( $X = Cl^-, Br^-, ClO_4^-, NO_3^-, n = 0, 4$ ),  $Co(HL^{1-2})_2X$  ( $X = Cl^-, NO_3^-, n = 0, 4$ ),  $Cu(L^{1-2})H_2O$ ,  $Fe(HL^1)_2X \cdot nH_2O$  ( $X = Cl^-, NO_3^-, n = 0, 2$ ),  $Ni(L^{1-2})H_2O$ .



$H_2L^1$ :  $R^1 = R^3 = CH_3, R^2 = H$ ;  
 $H_2L^2$ :  $R^2 = R^3 = CH_3, R^1 = H$ .

The composition and structure of these compounds were determined using elemental analysis, magnetochemical research and IR-spectroscopy. It was determined that all coordination compounds have monomeric structure. The thiosemicarbazones  $H_2L^{1-2}$  act as tridentate

ligands with O, N, S set of donor atoms.

Synthesized coordination compounds show selective antimicrobial activity towards a series of standard strains of *Staphylococcus aureus*, *Escherichia coli*, and *Candida albicans* in the range of concentration 0.0039-0.5 mg/mL. It was shown that the nature of the central atom has a main influence on the antimicrobial activity of these complexes. For the homotypic complexes the activity diminishes in the following way:  $Cu > Ni > Co \geq Fe$ . The nature of thiosemicarbazone and acid residue also has an influence on antimicrobial activity. The antimicrobial activity reduces in the following way:  $H_2L^1 > H_2L^2$  and  $NO_3^- > ClO_4^- > Cl^- \geq Br^-$ . Synthesized compounds manifest the best activity towards the standard strains of *Staphylococcus aureus* and *Candida albicans*.

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