

COORDINATION COMPOUNDS OF COBALT, NICKEL, AND COPPER OF SOME 1,3-DIPHENYLPYRAZOLE-4-CARBALDEHYDE THIOSEMICARBAZONES

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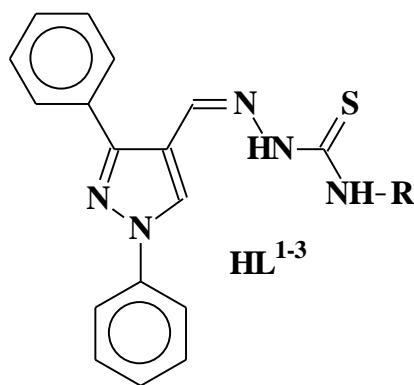
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The number of resistant pathogenic microorganisms has increased as a result of widespread use of antibiotics in medical practice. Therefore, despite some progress in the synthesis and study of biologically active compounds, preparation and study of new unconventional medical compounds, that manifest biological activity, remain actual problems. These kind of substances include many organic substances that contain in their composition atoms of sulfur, nitrogen, and oxygen. All of them are able to form coordination compounds with transition metals. In many cases coordination results in augmentation of their biological activity. Therefore, the synthesis and study of new substances of this class are of scientific interest.

The aim of this work is the synthesis, determination of the composition, structure, physicochemical properties, and biological activity of cobalt, nickel, and copper coordination compounds of 1,3-diphenylpyrazole-4-carbaldehyde thiosemicarbazone (HL^1), 4-allylthiosemicarbazone (HL^2), and 4-phenylthiosemicarbazone (HL^3).

Thiosemicarbazones HL^{1-3} were obtained by condensation of 1,3-diphenylpyrazole-4-carbaldehyde with corresponding thiosemicarbazide. Coordination compounds of mentioned above metals were synthesized by reaction between acetates and chlorides of these metals and thiosemicarbazones HL^{1-3} or using template reactions. The composition of these compounds was determined using elemental analysis: $Cu(HL^{1-2})Cl_2 \cdot nH_2O$, $Cu(L^1)(CH_3COO)_2 \cdot H_2O$, $Cu(L^3)Cl \cdot 2H_2O$, $Ni(L^{1-3})_2Cl_2$, $Co^{III}(L^{1-3})_2Cl_3 \cdot nH_2O$. The structures of these coordination compounds were determined using magnetchemistry and IR spectroscopy.



**R=H (HL^1), $-CH_2-CH=CH_2$ (HL^2),
 $-C_6H_5$ (HL^3).**

Synthesized substances manifest antioxidative activity against cation-radical ABTS (2,2-azinobis-3-ethylbenzotiazolină-6-sulfonat). It was determined that coordination compounds of 4-phenylthiosemicarbazone HL^3 and copper and nickel chlorides doesn't show antioxidant activity against this radical. Coordination compound of copper acetate with HL^3 manifests the maximum activity. This compounds deactivates half of these free ligands at the concentration 7 μM which is four times better than the activity of Trolox that is used in medical practice as a standard antioxidant.

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