Synthesis and comparative study of the antibacterial activity of tetrazole-containing Schiff base and its organometallic complex with $CoCl_2$

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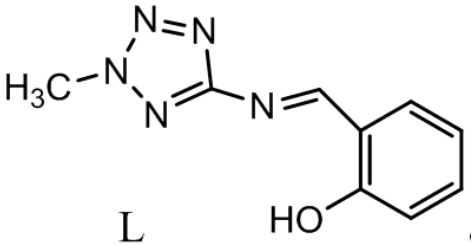
Schiff bases are known as polydentate ligands to obtain coordination compounds of various compositions and properties. The obtained by direct synthesis tetrazole-containing Schiff base is an interesting material that can be used as starting compound for the creation of biologically active substances and other functional materials [1]. Here we report synthesis and some properties of biologically active metal-containing structure of tetrazole-containing Schiff base with $CoCl_2$. It was found that the reaction of $CoCl_2$ and 2-(((2-methyl-1H-tetrazol-5-yl)imino)methyl)phenol (L) in a mixture of ethyl alcohol and acetonitrile (1:1) under heat (65-70 ℃) gave rise to a novel organometallic tetrazole derivative $CoCl_2L$ of light b



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The precipitated in 10 days microcrystalline complex compound (CC) was separated and was washed with a mixture of diethyl ether and ethyl alcohol (5:1). The composition and structure of the synthesized complex compound was investigated by elemental analysis, X-ray phase analysis, X-ray diffraction analysis and IR spectroscopy in the range of 40 – 4000 cm^{-1}. Biological activity of the obtained organometallic tetrazole derivative $CoCl_2L$, as well as pure ligand L was determined against ten bacteria and four fungi strains. It was found that in majority antibacterial and fungicidal activity of the complex compound is much higher (almost two times) in comparison with pure tetrazole-containing Schiff base L. However, organometallic derivative showed no inhibition growth of *fungi Aspergillus niger*. The obtained results allow us to conclude that the $CoCl_2L$ complex, as well as CC Co(II) with other Schiff bases, are promising objects for further study of their biological activity.

References:

[1] M.M. Degtyarik et al. Proceedings NAS of Belarus. Chem. Ser. (2015) 2: 43.