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STUDY OF STRUCTURE COORDINATION COMPOUNDS PALLADIUM (II) BASED ON 3-(2-PYRIDYL)-5-CYCLOPROPYL-1,2,4-TRIAZOLE

This article describes synthesis and characterization of novel ligand, 3-(2-pyridyl)-5-cyclopropyl-1,2,4-triazole (HL) and palladium(II) complex, Pd(HL)Cl₂. The crystal and molecular structure of the complex was determined by X-ray diffraction analysis. Both compounds were characterized by means of UV-VIS, IR- and ¹H NMR-spectroscopy.

The synthesis of ligand (HL) based on thermal cyclization of amidrazons obtained by acylation of hydrazides with imidoesters. One of the features of 1,2,4-triazoles is that they can exist in three tautomeric forms. As a result we observe doubling and tripling of signals of protons in NMR spectra of the corresponding compounds.

On the basis of obtained ligand we synthesized coordination compound in the metal to ligand molar ratio 1 to 1 Pd(HL)Cl₂: PdCl₂·2CH₃CN + HL => Pd(HL)Cl₂

Adduced to NMR-spectra of obtained complex, compared with non coordinated ligand there is no doubling of signal of the N-H triazole proton, which is explained by stabilization of some conformation by chelation. It is necessary to highlight that after complexation protons of pyridine and triazole fragments undergo low-field shift because of decrease in electron density in the corresponding heterocyclic. The results of NMR-spectra were confirmed by the results of X-ray analysis.

It became known, that complexation process leads to increase of optical density and appearance of second maximum in a long-wave area in absorption-spectra.

Key words: 1,2,4-triazole, NMR-spectroscopy, palladium.