MODE OF COORDINATION OF COMPLEXES FORMED IN THE COPPER(II)/DOPAMINE AND COPPER(II)/DOPAMINE/ADENOSINE NUCLEOTIDES SYSTEMS

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Organic compounds with high biological activity such as catecholamines and nucleotides are among the most important groups of compounds that have a significant impact on the processes of living organisms and, consequently, on their proper functioning [1,2]. Dopamine (Dop)(Fig.1a) is a bioenergetic catecholamine, which acts as a neurotransmitter in the central nervous system [3] and its abnormal levels in the body are responsible for the occurrence of pathological conditions such as Parkinson's disease and schizophrenia [2]. Nucleotides are biologically important multifunctional ligands involved in the storage and transmission of genetic information and in protein biosynthesis [4]. Adenosine 5'-triphosphate (ATP), adenosine 5'-diphosphate (ADP) and adenosine 5'-monophosphate (AMP)(Fig.1b) are also used in intramolecular energy transfer and are considered the main energy store in the cell [5,6]. Given the biological importance of the above compounds, the study of the reaction of their complexation, with Cu(II) ions is part of the current trends in the chemical research.

Complexation reactions in the given systems were studied in aqueous solution. On the basis of computer analysis of potentiometric data (HYPERQUAD program), the composition and values of overall stability constants (logβ) of complexes formed in the investigated systems were determined. Spectroscopic measurements (UV-Vis, EPR) made it possible to determine which ligand active centers are involved in the interactions.

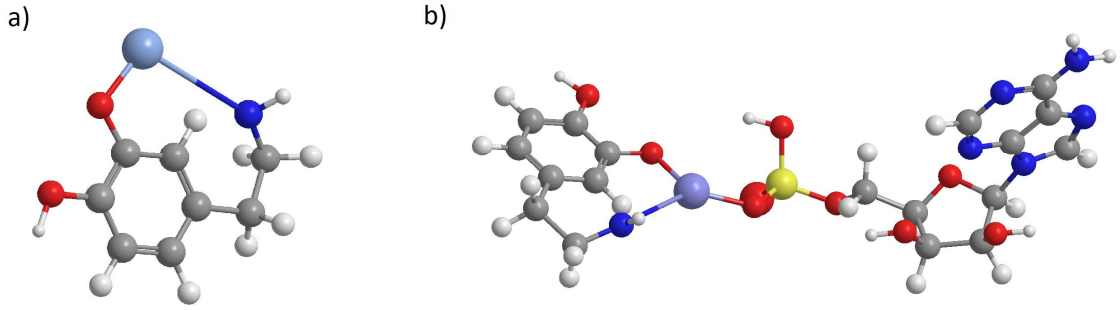

Figure 1. Tentative mode of coordination in the a) CuH(Dop) and b) Cu(AMP)H(Dop) complexes.

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