Title: Bifunctional ligands for copper(II) complexation

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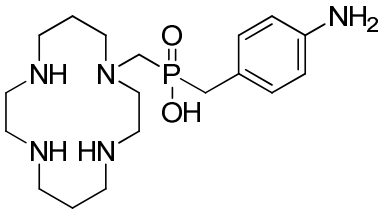
ABSTRACT

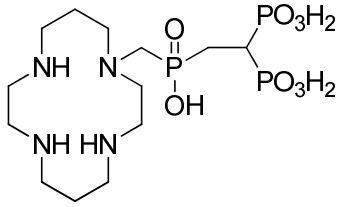
The main aim of this thesis was preparation of macrocyclic ligands based on 1,4,8,11-tetraazacyclotetradecane skeleton, which is suitable for selective complexation of divalent copper, and study of their properties. These ligands are suggested for potential utilization in nuclear medicine.

Cyclam macrocycle was modified to bear one coordinating aminobenzylphospinate pendant arm (compound **L_1**) or monophosphinate-bis(phosphonate) pendant arm (compound **L_2**). During the synthesis, the skeleton was protected in positions 1, 4 and 8.

In the frame of this work the synthesis of both targeted products was developed. Furthermore, a study of the thermodynamic, kinetic and coordination properties of ligand **L_2** was investigated by UV/VIS spectrophotometry and potentiometric titrations. A model bioconjugation of ligand **L_1** with primary amine was also studied.



L_1



L_2

KEYWORDS

Cyclam, phosphinates, phosphonates, nuclear medicine, copper(II) complexes, kinetic inertness, thermodynamic stability.