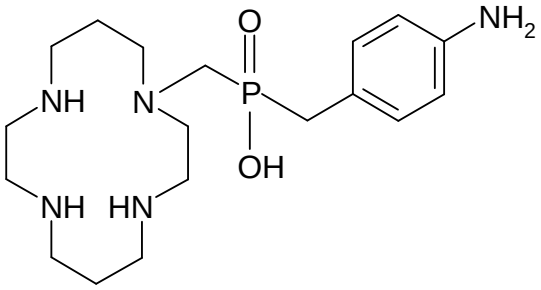
ABSTRACT

The main aim of this thesis was preparation of makrocyclic ligand based on 1,4,8,11-tetraazacyklotetradecane skeleton, which is suitable for selective complexation of divalent copper. Cyclam macrocycle bears one weakly coordinating aminobenzylphospinate pendant arm (compound **L**). During the synthesis was the skeleton asymmetrically protected in positions 1,4 and 8.

Attachment of phospinate pendant arm was tried with the corresponding Mannich reaction of ethyl or bis(trimethylsilyl) esters 4-nitrobenzylphosphinic acid and alkylation using mesyl ester derived from hydroxomethyl(4-nitrobenzyl)phosphinic acid (benzyl *O*-methylsulfonylhydroxymethyl(4-nitrobenzyl)phosphinate).

In the frame of this work the synthesis of the targeted product was developed. Reproducibility was also verified for synthesis of cyclam and its asymmetrical protection in three positions.

Furthermore, a study of the kinetics of de-protection of cyclam skeleton and pendant arm using basic and acid hydrolysis was done.



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KEYWORDS

Cyclam, phosphinates, nuclear medicine, copper(II) complexes.