

Abstract

Radiopharmaceuticals containing copper isotopes can be used as diagnostic tools (methods PET, SPECT) or agents for tumour treatment. Copper radionuclides must be applied into the organism in the form of a coordination compound with suitable ligand. Derivatives of 1,4,8,11-tetraazacyclotetradecane (cyclam) are some of the most suitable ligands for Cu (II). A coordination compound must be thermodynamically stable and kinetically inert, the ligand must coordinate the metal ion as quickly as possible. In this Diploma thesis, one of the first unsymmetrically substituted derivatives of cyclam has been synthesized using two methods of orthogonal protection. The synthesized ligand contains one phosphonate and one methylene bis(phosphinate) pendant arm. Copper complex of the ligand was prepared, and its acid assisted dissociation kinetics were studied.