

Abstract

Fast spread of MRI technique has brought new demands for MRI contrast agents. They are required to be nontoxic, kinetically inert, thermodynamically stable, biologically inactive complexes Gd(III) with high relaxivity (the ability of magnetic compounds to increase the relaxation rates of the surrounding water proton spins), removable from body in unchanged form. This bachelor thesis resumes basic theory for contrast agents, synthesis of new ligand and its Gd(III) complex coordinating one molecule of water and with ability of the non-covalent interaction of benzylic group with serum albumine resulting in increase in relaxivity. Luminiscence were measured for Eu(III) and Tb(III) complexes and relaxivity of Gd(III) complex in and without the presence of bovine serum albumine *in vitro*. The novel contrast agent was tested *in vivo* on rat model.

Keywords

MRI, gadolinium, macrocyclic ligands, macrocyclic complexes