STUDIES ON NOVEL MRI CONTRAST AGENTS FOR TARGETING ORGANS AND BLOOD VESSELS

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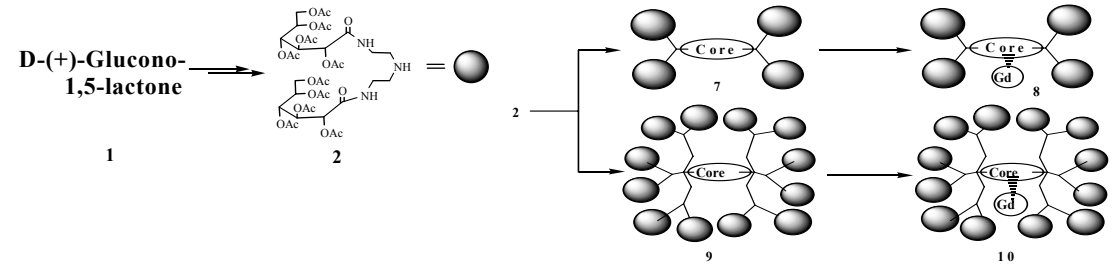
Gd-DTPA derivatives are widely used for MRI contrast agent, however, the agent has no targeting property for organs and also no storage property in blood vessel. To improve these properties, DTPA dendritic derivatives with four and twelve sugars, dendrimer 7 (D1) and 10 (D2), respectively, were prepared and the ligands were converted into the Gd complexes, dendrimer 8 (Gd-D1) and dendrimer 10 (Gd-D2), respectively, as shown in Scheme [1].



Scheme. Preparation of dendrimers 7, 8, 9, and 10. (Here, the sugar is glucose residue)

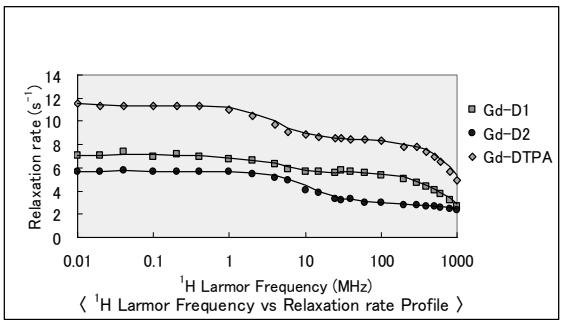


Figure. ^{1}H Larmor frequency vs. relaxation rate.

The image intensity in ^{1}H NMR signal of water protons linked with Gd(III) is dependent on nuclear relaxation times [2]. The profiles of ^{1}H Larmor frequency vs. relaxation rate for Gd-DTPA, Gd-D1, and Gd-D2 were obtained and are shown in Figure.

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[2] H. Lammers, M. Frederic, R. N. Muller, et.al., *Inorg. Chem.,* 36 (1997) 2527-2538.

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