Synthetic studies of glycosylated dendrimers (V): synthesis and evaluation of GlcNAc-containing dendrimers.

([1]*Graduate School of Science & Engineering*, *Saitama University*, [2]*Advanced Institute of Innovative Technology*, *Saitama University*, [3]*Strategic Research Center*, *Saitama University*)
○ Aya Tomiyama[1], Takahiko Matsushita[1,2,3], Tetsuo Koyama[1], Ken Hatano[1,2,3], Koji Matsuoka[1,2,3]

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In general, the accumulation of sugar chains *in vivo* results in a strong interaction for proteins, and the interaction is expected to be applied to drug delivery systems (DDS). In DDS, by binding a substance that specifically binds to sugar chains to a drug, it is possible to inhibit viruses' entry into the cells and other substances from binding to the sugar chains. To accomplish the objective, combine of a substance that specifically binds to the sugar chain and the drug is one of the methods.

In this study, we focus on carbosilane dendrimers, which have been rarely used, as a method for densifying sugar chains (Fig. 1). The carbosilane dendrimers have high stability and low toxicity to the human body, and we believe that the dendrimers can be used in pharmaceuticals.[1)] In this report, α-glycosidic GlcNAc (α-glycosidic *N*-acetyl-D-glucosamine), which has few findings among functional sugar chains, was selected as the sugar chain to be introduced into the carbosilane dendrimer (Fig.2).

A scaffold was synthesized from tetrachlorosilane, and α-glycosidic GlcNAc with propargylic moiety was prepared by means of Fischer glycosidation. Coupling reaction of these compounds gave the desired compound successfully, albeit in low yield. The biological evaluation of the multivalent-type compound with lectins was conducted. The results of these syntheses and evaluations will be presented.

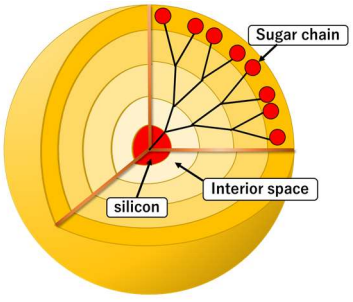

Fig. 1. Structure of carbosilane dendrimers

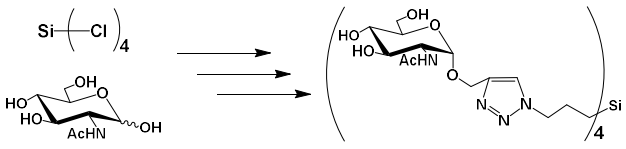

Fig.2. Synthesized compounds

1) 土田隆樹, 島崎智恵美, 幡野健, 松岡浩司, 青木良夫, 野平博之, 江角保明, 照沼大陽, *高分子論文集*, **60**, pp. 561-568, **2003**.