Synthetic Studies of Oligosaccharides Related to Avian Influenza Virus Inhibitors (Ⅲ): Investigation of Linker Chain Length between Sugar Chain and Main Polymer Chain

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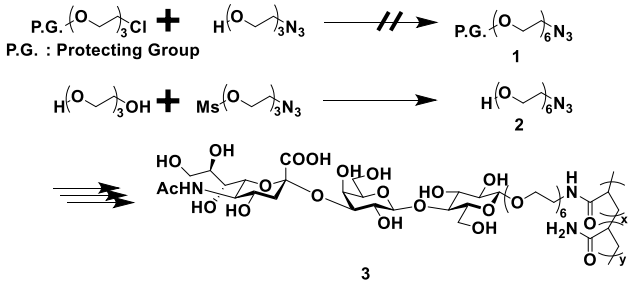
It is known that a trisaccharide, sialyl-α(2,3)- lactose (3SLac), binds to hemagglutinin (HA) of the avian influenza virus (AIV)[1)] and inhibits HA function. In order to enhance the binding affinities, multivalent-type 3SLac derivatives were used as an inhibitor for HA[2)]. In this study, we synthesized 3SLac monomers having various methylene lengths on polymerizable aglycon, and the glycosyl monomers were polymerized to form the corresponding glycopolymers showing multivalent-type 3SLac moieties. Since each glycopolymer has unique degree of freedom of sugar moieties, the glycopolymers could act as AIV inhibitors with higher inhibitory activities than those of known glycopolymers.

In this study, preparation of a hexaethylene glycol-type linker was mainly focused on because of our previous accomplishment of the preparation of a triethylene glycol-type linker. Thus, a protecting group was introduced into 2-[2-(2-Chloroethoxy)ethoxy]ethanol to attempt etherification between the chloride and an alcohol. The target product **1** was, however, not obtained. Therefore, we tried direct etherification using triethylene glycol. The etherification proceeded smoothly between a mesylate and the diol under basic conditions to afford the desired compound **2** in 56% yield.

Given the success of the preparation of hexaethylene glycol-type alcohol as a functional linker, the alcohol was condensed with 3SLac derivative, followed by deprotection to yield the corresponding glycomonomer, which was polymerized with acrylamide to give four types of glycopolymers **3** having multivalent-type 3SLac moieties.



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