

## PC 6 - Synthesis of Novel Polysaccharides Having Amino Sugar Branches from Cellulose

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Some branched polysaccharides exhibit distinctive properties such as immunoadjuvant and antitumor activities. For example, lentinan, a branched polysaccharide extracted from a mushroom, has  $\beta$ -1,6-glucoside branches on a linear  $\beta$ -1,3-glucan, and it is interesting as an immunoadjuvant. The linear  $\beta$ -1,3-gulcan, curdlan, has no such activity, indicating the importance of the branched structure. Cellulose, a  $\beta$ -1,4-glucan, is structurally similar to chitosan, and it is worthwhile to synthesize cellulose-based branched polysaccharides to discuss the structure-property relationship. In order to introduce glucosamine and N-acetylglucosamine branches regioselectively at C-6 of cellulose, a derivative having a reactive group only at C-6 was prepared by a series of reactions: triphenylmethylation at C-6, phenylcarbamylation at C-2 and C-3, detriphenylmethylation, and trimethylsilylation at C-6. Glycosylation of the cellulose derivative with an oxazoline derived from glucosamine resulted in the formation of branched cellulose. The structures of the products were confirmed by IR, <sup>1</sup>H-NMR, and elemental analysis. The degree of substitution of the products could be controlled by the amount of oxazoline. The branched cellulose exhibited high solubility in water.