Synthesis of Oligoglucosamine Analogues Equipped with Trimethylammonium Glycoside

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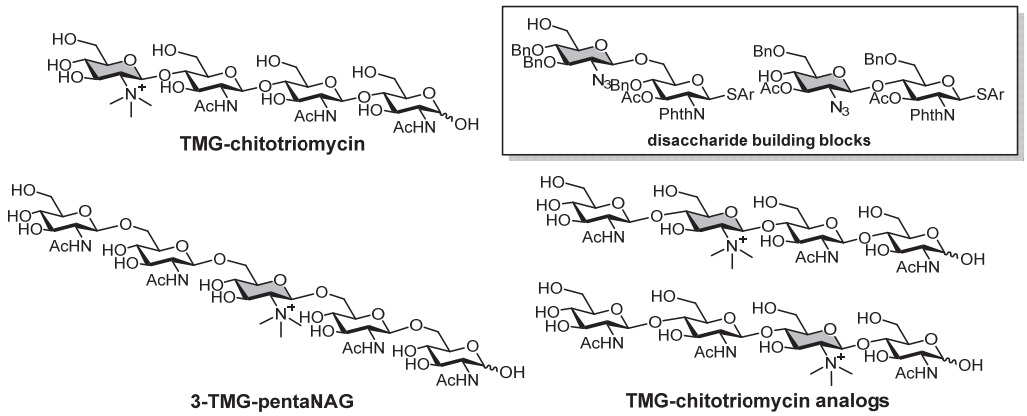
Oligoglucosamins are abundant and important oligosaccharides for living things such as plants, fungi, insects, and other organisms. **TMG-chitotriomycin** with the *N*,*N*,*N*-Trimethyl-D-glucosaminyl (TMG) unit showed potent and selective inhibition of insect and fungal GlcNAcases with no inhibition of mammalian and plant GlcNAcases.[1] Synthesis of TMG-chitotriomycin has been achieved by us using an automated electrochemical synthesizer.[2] We have been interested in the inhibitory activity of oligoglucosamine analogs with the TMG unit.

Initially, we synthesized two disaccharide building blocks under conventional and mixed-electrolyte conditions.[3] We obtained the precursor **3-TMG-pentaNAG**, which is a β-1,6-oligoglucosamine, using the [1+1+2+1] strategy for automated electrochemical assembly. The precursor was converted to **3-TMG-pentaNAG** by conventional manipulation of functional groups. For the preparation of TMG chitotriomycin analogs another disaccharide building block with β-1,4-glycosidic linkage was used. Positions of the TMG unit in precursors of TMG-chitotriomycin analogs can be changed by changing strategies for automated electrochemical assembly. These precursors tetrasaccharide can be synthesized by [1+2+1] and [1+1+2] strategies in reasonable yields and converted into TMG-chitotriomycin analogs by global deprotection according to the reported method.[2b]



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