Abstract

The syntheses of various oligosaccharides corresponding to parts of the lipopolysaccharides (LPS) or capsular polysaccharides (CPS) of *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Vibrio cholerae* are described in this thesis.

The first section reports the construction of a tetrasaccharide donor corresponding to the repeating unit of *S. pneumoniae* type 14 CPS and elongation of this into spacer equipped di- and trimer. Protein conjugates of these will be used to investigate the oligosaccharide length necessary to induce an immunological response towards these glycoconjugates.

In the second part, synthesis of a pentasaccharide as well as the phosphoethanolamine substituted derivative of this, corresponding to a non-typable *H. influenzae* outer core structure, is described. Human serum albumin (HSA) and tetanus toxoid (TT) glycoconjugates of these compounds have been assembled.

The third chapter describes the synthesis of the cyclic phosphate- and colitose-containing non-reducing end tetrasaccharide corresponding to part of *V. cholerae* O139 LPS and CPS hexasaccharide repeating unit. The spacer-armed tetrasaccharide will be conjugated to various proteins and utilized, as well as the *H. influenzae* glycoconjugates, in investigations of their immunological properties and potential as vaccine candidates.

The last section discusses a new, simple method for the selective cleavage of allyl ethers employing a SmI_2/water/amine reagent system.

Keywords: oligosaccharide synthesis, block synthesis, glycoconjugate vaccines, *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Vibrio cholerae*, allyl deprotection

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