

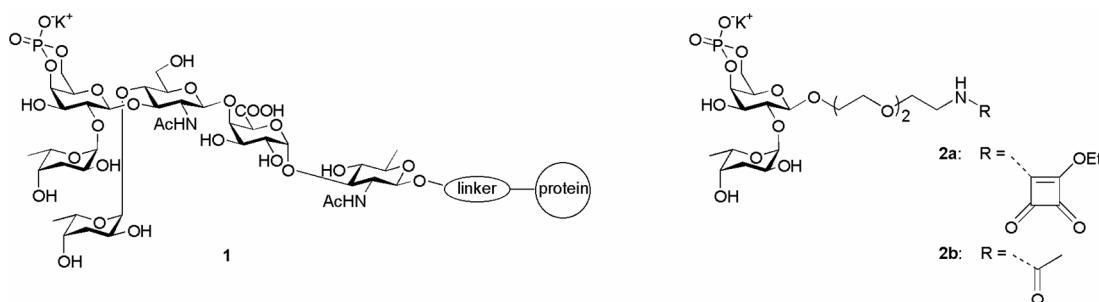
## STUDIES TOWARDS PREPARATION OF A CONJUGATE VACCINE AGAINST CHOLERA FROM SYNTHETIC O-PS FRAGMENTS OF *V. CHOLERAE* O139: SYNTHESIS OF A PHOSPHORYLATED UPSTREAM DISACCHARIDE FRAGMENT

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Since its appearance in India in 1992, *Vibrio cholerae* O139 has emerged as a serious threat to public health.<sup>[1]</sup> The population in *V. cholerae* O1 endemic regions has no protective immunity against this new strain, and a vaccine is needed to subdue its epidemic and pandemic potential. Research indicates that serotype O139 has evolved from serotype O1, the main difference being the replacement of the O-chain perosamine homopolymer by a capsular polysaccharide (CPS) whose repeating unit is identical to the O-specific oligosaccharide.<sup>[2]</sup> The O-specific hexasaccharide of *V. cholerae* O139 contains five different monosaccharide units,<sup>[3]</sup> colitose, galactose 4,6-cyclic phosphate, N-acetyl-glucosamine, galacturonic acid and N-acetyl-quinovosamine, and its synthesis is a formidable challenge. Synthesis of tri- and tetrasaccharide fragments lacking the arduous phosphate has been reported.<sup>[4]</sup> As a first step towards preparation of a synthetic conjugate vaccine for cholera (**1**) based on the O139 O-PS hexasaccharide, we synthesized phosphorylated disaccharide **2a**. This terminal upstream disaccharide derivative was equipped with a functionalized linker for conjugation with a carrier protein by squaric acid diester methodology.<sup>[5]</sup> Compound **2b** was prepared for binding studies with anti-O139 antibodies. The synthesis of both disaccharides will be presented.

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