MUTAGENESIS AND NON-CANONICAL AMINO ACID INCORPORATION FOR THE PREPARATION OF HOMOGENEOUS GLYCOCONJUGATE VACCINES

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Glycoconjugate vaccines have proven their efficacy and safety in combating bacterial infections, particularly in young children. They are composed of a carbohydrate antigen covalently linked to a protein referred to as a carrier protein [1]. Mutagenesis and non-canonical amino acid incorporation strategies, applied alone or in combination, offer a unique opportunity to control the sites at which the carbohydrate antigen is linked to the carrier. These approaches lead to easily-characterized, homogeneous glycoconjugates (in comparison with ill-defined, randomly synthesized current glycoconjugate vaccine generation). Most importantly, these methodologies prove invaluable to master the shape and the structure-immunogenicity relationships of the conjugates [2,3].

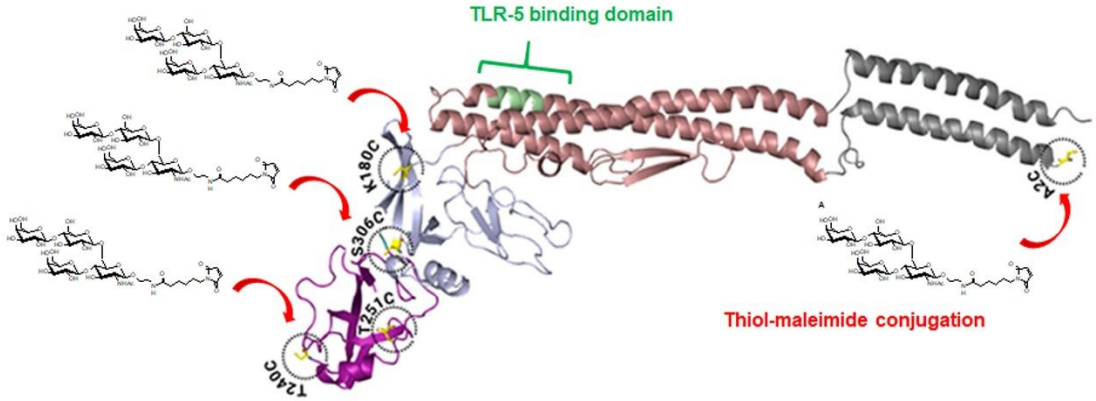

Figure 1. Cysteine mutagenesis is used to orient carbohydrate hapten conjugation and preserve adjuvant properties of flagellin used as a carrier protein [3].

Examples illustrating these aspects will be given based on pneumococcal infection as model disease.

References:

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