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Development of a carbohydrate-based vaccine against meningococcal serogroup X infection

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Neisseria meningitidis is a major cause of bacterial meningitis worldwide, especially in the African meningitis belt, and has a high associated mortality. Prior to the introduction of the MenAfriVac™ serogroup A conjugate vaccine in September 2010, serogroup A was the major epidemic disease-causing meningococcal serogroup in the African Meningitis Belt. However, recently serogroup X meningococcal (MenX) disease has received increased attention because of outbreaks recorded in this region, with increased endemic levels of MenX disease over the past two years. Currently no vaccine is available for protection against MenX infections. Candidate conjugate vaccines against MenX were developed at research scale and tested in pre-clinical mouse model. Following optimization of growth conditions of our seed MenX strain for capsular polysaccharide (CPS) production, a scalable purification process was developed yielding high amounts of pure MenX CPS. Different conjugates were synthesized using CRM197 as carrier protein. Analytical methods were developed for in-process control of intermediates and the characterization of the final vaccines. All conjugates induced high anti-MenX PS IgG titers in mice and the antibodies were strongly bactericidal against African MenX isolates. These findings support the further development of conjugate vaccines against MenX and their assessment in clinical trials to produce a vaccine against the one cause of epidemic meningococcal meningitis that currently cannot be prevented by available vaccines.

Biography

Francesco Berti got a PhD in Chemical Sciences from the University of Siena, Italy in 2002. He moved to Novartis Vaccines in 2001 where he has been working on research and development of carbohydrate-based vaccines, particularly focusing on glycoconjugates against *Neisseria meningitidis*, group B *Streptococcus*, group A *Streptococcus, Staphylococcus aureus, Salmonella typhi* Vi, *Candida albicans* and other bacterial and fungal infectious diseases. His current role is Head of Vaccine Chemistry and Formulation Department (Research - Novartis Vaccines).

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