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VVX001: A promising novel hepatitis B vaccine candidate

Rainer Henning[1] and Carolin Cornelius[3], Katrin Schöneweis[2], Stephan Urban[2] and **Rudolf Valenta[3]**
[1]Viravaxx AG, Austria
[2]University Hospital Heidelberg, Germany
[3]University of Vienna, Austria

Background: HBV infection remains a serious global health challenge. 5-10% of vaccines with available vaccines do not achieve seroconversion. 350 million patients worldwide live with chronic HBV infections. New vaccine designs are required to tackle these important challenges.

Aim: Characterization of the protective effect of HBV PreS fusion proteins contained in the clinical stage allergy vaccine BM32 with respect to protection against infection with HBV.

Methods: Epitope mapping of the antibody response elicited by BM32 in rabbits and patients was performed using a collection of overlapping 30-mer peptides derived from PreS1. The sera from these animals and patients were also tested for their ability to protect HepG2-NTCP cells against infection in cell culture. Outcome measures were the secretion of HBsAg and expression of HBeAg.

Results: Sera from patients and animals immunized with BM32 demonstrated selectivity towards the NTCP binding site of the large HBV surface antigen. The selectivity was stronger in humans than in rabbits. These sera protect HepG2-NTCP cells from HBV infection to a similar extent as sera from subjects vaccinated with Engerix- B. The anti HBV activity in BM32 resides predominantly in one fusion protein component, which will be developed as VVX001.

Conclusion: BM32, containing fusion proteins with PreS from HBV capped with peptides at both termini elicits a neutralizing IgG antibody response in immunized individuals. This immune response is focused on the virus attachment site and prevents virus entry into target cells. One of the components of BM32 is responsible for this effect and may be a promising HBV vaccine candidate.

Biography

Rainer Henning holds a PhD Degree in Organic Chemistry at Justus-Liebig-University in Giessen, Germany. He had Post-doctoral training at Colorado State University, Ft. Collins, CO, USA. He combines extensive experience in medicinal chemistry in academic and pharmaceutical industry settings with managerial achievements in the biopharmaceutical industry. His field of interest includes Medicinal Chemistry, Molecular Biotechnology with therapeutic applications in cardiology, emergency medicine, allergy and immunology and viral diseases. He is an author of 39 publications in peer reviewed journals and has given numerous presentations at chemistry and medical conferences. At Viravaxx, he serves as a CEO and directs all research activities by the company.

r.henning@viravaxx.com

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