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PHD-PROGRAM INFLAMMATION AND IMMUNITY

Ce-M-M- Research Center for Molecular Medicine of the Austrian Academy of Sciences

FWF Der Wissenschaf

PROGRAM AND ABSTRACT BOOK

IAI PhD SYMPOSIUM 2019

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Characterization of the immune response against hepatitis B preS antigen induced upon vaccination with preS-based grass pollen allergy vaccine BM32

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Hepatitis B infection (HBV) is a major public health problem. HBV virions contain three surface proteins: preS1, preS2 and HBsAg. Available HBV vaccines are based mainly on the HBsAg although preS1 has been shown to be crucial for the entrance of the virus into hepatocytes. More than 10% of the population does not respond to HBsAg-based vaccines and no therapeutic vaccines are available for the treatment of chronic HBV infections. We recently found that immunotherapy with the preS1- and preS2-containing recombinant grass pollen allergy vaccine BM32 induced antibodies in immunized subjects which inhibit HBV infection *in vitro*. We expressed preS in *E. coli* and purified it to homogeneity. Furthermore, we synthesized three preS-derived peptides, peptide A comprising the epitope, involved in liver cell attachment, peptide B the epitope, thought to be required for inhibition of infection and peptide C including both regions. Sera from 130 grass pollen allergic patients, who had received 3, 4 or 5 injections of BM32 or placebo in monthly intervals were tested. Serum levels of IgG_1 and IgG_4 antibodies against preS, preS-derived peptides were measured in a quantitative ELISA assay. We detected the induction of a robust preS-specific IgG antibody response consisting of an early induction of IgG_1 and a sustained IgG_4 response. PreS-specific IgG_1 and IgG_4 antibodies reacted with all three peptides and thus were directed against the sequences important for liver cell attachment and inhibition of infection which indicated that BM32 indeed may protect against HBV infection.

Organizing Committee

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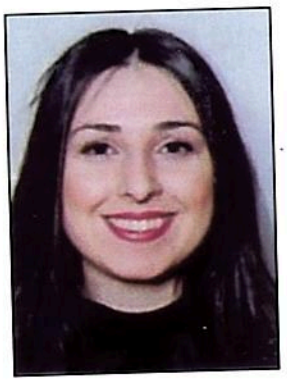
Tommaso Gastaldi

Patricia Hamminger

Klara Klein

Stefan Moritsch

Daniela Prinz



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