

Multivalent Prophylactic Vaccine for HCV and HBV infection

Strong immune responses in animal model systems & Neutralizing activities in sera of immunized animals against both HCV and HBV

Summary

Indication:

Hepatitis C and B infection

Development Stage:

Chimpanzee challenge test scheduled in 2005

Intellectual Property:

Patent applied

Partnering Interests:

Co-development and Licensing out

Interested in this technology?

Ask for more information.

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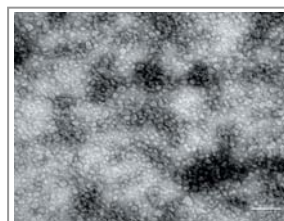
Introduction

Hepatitis C virus (HCV) infection is a serious cause of liver disease, with more than 170 million people now chronically infected worldwide and at risk of developing liver cirrhosis and hepatocellular carcinoma. Our fundamental knowledge of HCV replication and pathogenesis still remains poor, however, primarily due to a lack of *in vitro* culture systems and experimental animal models, with the exception of the chimpanzee.

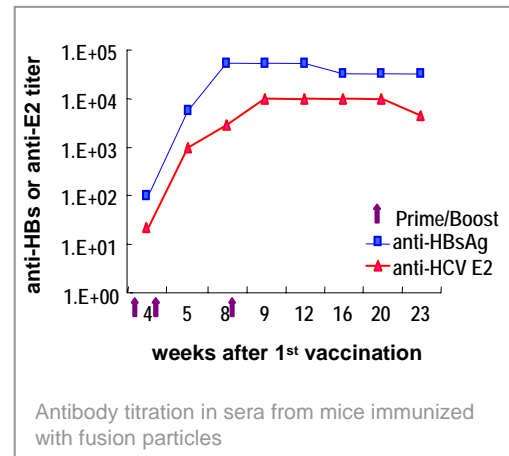
Although there are existing treatments using interferon and chemical agents, the effectiveness of these classical therapies is limited. Hence, the development of effective vaccines is imperative. Envelope proteins are regarded as important targets for HCV vaccine development as they are likely to be involved in virus-host recognition by which the antibodies directed against these proteins can neutralize the virus. Although there have been several trials to utilize a recombinant subunit vaccine against HCV infection, some serious obstacles exist, such as difficulties in the production and purification of recombinant HCV envelope proteins..

Approaches

To overcome these problems, we made an attempt to generate the fusion construct which was efficiently expressed and purified in the form of fusion particles of HCV glycoproteins with HBV surface antigen, by applying the extensive expertise and technology we previously developed for the HBV recombinant subunit vaccine, Hepavax-Gene®.



Electron micrograph of the purified virus-like particles of HCV



Results

The results to date demonstrate that the purified fusion particles elicit the robust immune responses to both HBV and HCV in small animal model systems. More importantly, our surrogate neutralization assay using HBV- or HCV-pseudotype virus indicates that the fusion particle-induced antibodies can neutralize both HCV and HBV.

These results will be further confirmed by the chimpanzee challenge test within this year.

Potential Benefits

- Efficient production and purification of HCV/HBV fusion particle in yeast system
- HCV/HBV fusion particles can induce the long-lasting HCV-specific immune responses comparable to those of HBsAg
- Potential use of HCV/HBV fusion particle as a multivalent prophylactic vaccine against viral hepatitis B & C

Development

- Chimpanzee challenge test scheduled in 2005
- In collaboration with Green Cross Corp., a leading pharmaceutical company in Korea