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Development and Evaluation of a Bivalent Vaccine Candidate for the Protection of Pigs against Infections with Pseudorabies and Nipah Virus

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Nipah virus (NiV) infections pose a serious health risk to humans and livestock in Southeast Asia (SEA). Due to its high fatality rate in humans, the absence of licensed vaccines or therapies, and its likelihood to cause severe outbreaks, NiV has been added to WHO's Blueprint list of 'priority diseases'. Here, we developed a bivalent vaccine candidate to protect pigs simultaneously from infections with pseudorabies virus (causing Aujeszky' s disease) and NiV, both circulating in SEA, by engineering the live attenuated PrV vaccine strain Bartha K61 to co-express NiV F and G glycoproteins. Immunogenicity in pigs has been successfully demonstrated by analysis of NiV- and PrV-specific T-cell and antibody responses.
Based on these data, the protective effect in pigs against infections with PrV and NiV will now be assessed. First, the NiV infection model in pigs was established in the high containment animal unit at the FLI. Twelve pigs at the age of 10-12 weeks were infected oronasally with NiV, and were observed for up to 22 days. No severe clinical signs were monitored, confirming findings from published studies. Animals were sampled daily until 10 days post infection (dpi) to assess viremia, viral shedding and immune responses. Necropsies of two pigs each were performed at 4,5,7,8,21 and 22 dpi to analyze the progression of viral dissemination especially at early time point after inoculation. These data will allow a targeted sampling during the planned vaccine efficacy studies.

Keywords

Nipah virus, Pseudorabies virus, bivalent vaccine, pigs

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Professional Status of the Speaker

Senior Scientist

Junior Scientist Status

No, I am not a Junior Scientist.

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