

PVAC-407**A new recombinant Orf virus protects rabbits against lethal infection with rabbit hemorrhagic disease virus (RHDV)**

Rohde Jörg¹, Schirmer Horst², Granzow Harald³, Rziha Hanns-Joachim¹

¹Friedrich-Loeffler-Institute, Federal Research Institute for Animal Health, Institute of Immunology, Tübingen

²Friedrich-Loeffler-Institute, Federal Research Institute for Animal Health, Institute of Diagnostic Virology, Island of Riems

³Friedrich-Loeffler-Institute, Federal Research Institute for Animal Health, Institute of Infectology, Island of Riems

The Parapoxvirus Orf virus (ORFV) represents a promising candidate for novel vector vaccines with extraordinary immune stimulating properties. Rabbit hemorrhagic disease virus (RHDV; Lagovirus of Caliciviridae) causes an acute, highly contagious disease with high mortality in wild and domestic rabbits. Existing commercial vaccines are prepared from the liver of experimentally infected rabbits, because RHDV cannot be propagated in vitro cell culture systems. This report now describes the generation of a new ORFV recombinant (D1701-V-VP1) expressing the major capsid protein VP1 (VP60) of RHDV. Correct expression of VP1, which also self-assembled to empty calicivirus-like particles (VLP), could be demonstrated from recombinant-infected cells without the need of production of infectious ORFV progeny. Already a single immunization of rabbits with 10⁵ PFU of D1701-V-VP1 mediated complete protection against lethal RHDV challenge infection. Notably, protection did not strictly correlate with the induced specific serum antibody titers measured by RHDV-ELISA. Determination of cytokines in the sera of immunized rabbits indicates a possible contribution of T-cells for the induced protective immunity.

This work adds another example of the successful use of the ORFV vector system for the generation of a recombinant vaccine, and demonstrates its potential as an alternate vaccine to protect rabbits against RHDV infection.