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P R O C E E D I N G S

ABSTRACT #3

IS IT POSSIBLE TO GET A PROTECTIVE IMMUNITY AGAINST FELINE LEUKEMIA VIRUS INFECTION BY IMMUNIZATION WITH ITS TRANSMEMBRANE ENVELOPE PROTEIN? J Huebner¹, S Langhammer², I Langbein-Detsch¹, R Kurth, J Denner² 1. LABOKLIN, Bad Kissingen, Germany. 2. Robert-Koch-Institute, Berlin, Germany.

The importance of neutralizing antibodies specific for retrovirus infections like Feline Leukaemia Virus (FeLV) became recently a focus in feline medicine. Since retroviruses integrate their genome in the genome of the infected cell, where they may persist undetected from cellular immunity, the induction of neutralizing antibodies is therefore of great advantage in preventing infection of cells early after exposure of an individual to the virus. Owing to its conserved domains, the transmembrane (TM) envelope protein is a suitable target. We showed recently induction of neutralizing antibodies specific for FeLV using their TM protein p15E. The feline leukaemia virus (FeLV) vaccines that are currently in wide use are generally poor inducers of virus-neutralizing antibodies, although such antibodies appear after recovering from challenge. However, the presence of neutralizing antibodies in cats recovering from natural FeLV infection clearly correlates with resistance to subsequent infection and passive transfer of antibodies can protect other animals. Cats immunized with the transmembrane envelope protein p15E of FeLV developed high titres of neutralizing antibodies specific for FeLV. The ability of p15E to induce neutralizing antibodies in cats leads to the suggestion that it might be reasonable to be included in the next generation of vaccines.

To study whether vaccinating with the TM protein could protect cats against FeLV infection, cats were immunized with the TM protein p15E of FeLV-A, with the commercial vaccine Leucogen® comprising the unglycosylated surface envelope protein p45 of FeLV-A, or with a combination of both and were subsequently challenged oronasally with 4 doses of 1x10⁶ ffu/ml FeLV-A Glasgow-1 strain.

All of the cats in the present experiment became provirus positive by real time PCR after FeLV challenge, indicating that neither the commercial vaccine, Leucogen®, p15E nor the combination of both protected from provirus acquisition and minimal viral replication. But animals immunized with Leucogen® or the combination of Leucogen® and p15E had the lowest provirus load and were always p27 antigen negative using a commercial ELISA test.

So in contrast to non-immunized cats, characterized by provirus load and p27 antigenaemia, protection was achieved in all animals immunized with Leucogen® and with the combination. Interestingly 3 of 6 animals immunized with p15E alone showed a successful immunisation regarding proviral load and p27 antigenaemia. This is the first report showing protection from retrovirus infection in vivo by immunization with a TM protein. However, in none of the animals immunized with p15E or the commercial vaccine or both was sterilizing immunity observed. These data may have an impact on the generation of vaccines against other retroviruses, including HIV.