IMM-PP-38

TITLE

IMMUNE RESPONSES TO VACCINATION OF 1-DAY-OLD NAïVE PIGS WITH A PORCINE REPRODUCTIVE AND RESPIRATORY SYNDROME-1 BASED MODIFIED LIVE VIRUS VACCINE

Monica Balasch[1], Lucas Taylor[1], Ivan Díaz[2], Enric Mateu[2], Jay Calvert[1]

[1] *Zoetis*
[2] *CReSA, IRTA-UAB*

CONTENT

Introduction
The study assessed innate and adaptive immune responses to vaccination of 1 day-old pigs with a PRRSV-1 based MLV vaccine by IM and IN routes, challenged 18 weeks later with a heterologous PRRSV-1 isolate.
Materials and methods
Twenty-five, 1 day old, PRRSV-naive piglets were given Suvaxyn PRRS MLV by IM (n=10) or IN route (n=10), or saline (n=5). Post-vaccination all pigs were bled at days 3, 7, 28, 56, 83, 113 and 125. Assays were performed for cytokines IL-10, IL-8, interferon-? (IFN-?) (all ELISA on serum); tumor necrosis factor alpha (TNF-?) and IFN-? (from stimulated peripheral blood mononuclear cells, ELISA and ELISPOT respectively) and vaccine strain serum neutralizing antibodies (NA).
Results
Induction of IL-10 was rare, indicating that IL-10 mediated immunomodulation/immune dysfunction was not a feature of vaccine or challenge virus. IL-8 was detected in only two pigs post-vaccination but most pigs after challenge, indicating a non-impaired ability to produce an innate immune response. TNF-? was not detected in any vaccinated pigs until day 83. After challenge, only a minority of pigs produced TNF-?. IFN-? was detected in all vaccinated pigs post-vaccination, indicating potential for an effective Th1 adaptive immune response. IFN-?-secreting cells were detected in all vaccinated pigs after vaccination. NA were first detected at day 56 in pigs vaccinated by both routes and remained until challenge. Post-challenge, a boost in NA was observed. Vaccine efficacy was demonstrated by reduction of viremia and nasal shedding post-challenge.
Conclusions
Following administration of a PRRSV-1 based MLV vaccine at 1 day of age, by either IM or IN routes, piglets were competent to mount an effective immune response characterized by: (1) undetectable/low levels of IL-10, IL-8 and TNF-?, (2) increased IFN-? expression within the first seven days, (3) a gradual increase in antigen-specific IFN-?-secreting cells, and (4) induction of detectable NA.