Concurrent vaccination against *Mycoplasma hyopneumoniae* and Oedema Disease in piglets effectuate similar serological response under field conditions

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Introduction

E. coli Oedema Disease and enzootic pneumonia caused by *Mycoplasma hyopneumoniae* (*M.hyo*) are causative agents for economic losses in swine production worldwide. Both pathogens are expansively spread and there are commercially available vaccines in the European Union which are designed to be administered on the 3rd day of life. Considering individual infection dynamics on farms, it can be useful to do simultaneous vaccinations as many vaccinations are designed to be administered during the suckling period.

The aim of this study was to evaluate the immune response after a single vaccination against *Mycoplasma hyopneumoniae* (Stellamune® One) to simultaneous administration with a vaccine against Oedema Disease (ECOPORC SHIGA) in the first week of life under field conditions.

Materials and Methods

The study was performed in 3 consecutive farrowing batches in a commercial 180 sow farrow-to-finish farm in the southern part of Germany from December 2013 until August 2014. The piglets were randomly assigned to 3 vaccination groups receiving different vaccination schedules in the first week of life (4th – 7th day of life): VG1 (n = 135) Stellamune® One, i.m.; VG2 (n = 135) ECOPORC SHIGA and Stellamune® One, i.m.; VG3 (n = 135): ECOPORC SHIGA, i.m.

Every four weeks, blood samples were collected from 25 % of the study animals. Prior to sampling, all pigs were individually eartagged for identification. Sampling was initiated during the first week of life and continued until the 24th week using a commercial ELISA-Kit ("Mycoplasma hyopneumoniae Antibody Test Kit", IDEXX Laboratories, USA). In order to measure antibodies referring to Oedema Disease, an inhouse SNT-Test (IDT Biologica GmbH, Dessau) was used before vaccination and in weeks 4 and 8 of life.

Results

The mean antibody values against *M.hyo* (in SP-ratio) of VG2 were significantly higher than VG3 at 8th, 12th, 16th and 20th week of life. VG1 and VG2 did not differ significantly. The percentage of pigs being seropositive against *M.hyo* (cut off: 0.4) in week 8 was 24.2 % for VG1, 18.8 % for VG2 and 0 % for VG3 ($p < 0.025$). By week 12, 42.2 % for VG1, 37.5 % for VG2 and 13.3 % for VG3 ($p > 0.025$), and by week 16, 75.8 % of pigs of VG1, 65.6 % of VG2 and 36.7 % of VG3 ($p > 0.025$) seroconverted.

Concerning the development of antibodies referring to Oedema Disease, neutralizing antibodies were developed by week 4 in 100 % of pigs of VG2 and 85.7 % of VG3, respectively. By week 8 96.4 % of VG2 and 96.9 % of VG3 had developed antibodies. None of the animals in VG1 developed neutralizing antibodies ($p < 0.025$).

Conclusion

The present study shows that a concurrent vaccination with Stellamune® One and ECOPORC SHIGA did not affect the development of antibodies against *M.hyo* in comparison to the single administration of the *M.hyo* vaccine. Simultaneously vaccinated pigs developed equal values of neutralizing antibodies concerning Oedema Disease and equal values of antibodies concerning *M.hyo*. These results indicate that a concurrent piglet-vaccination with ECOPORC SHIGA and Stellamune® One achieves a similar humoral immune response in comparison to single vaccinations. ▪