A. pleuropneumoniae serotype 2, vaccination with a vaccine based on the serotype

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Introduction

The prevalence of pleuritis recorded at Swedish abattoirs decreased from 8% in 1988 to 5% in 2002 due to a more prompt implementation of age segregated rearing systems [1]. However, during the last decade the incidence of outbreaks of actinobacillosis have increased and vaccination against *Actinobacillus pleuropneumoniae* (*App*) have had limited effect [2]. In 2012, pleuritis was recorded in 13% of the pigs slaughtered. *App* in Sweden has generally been associated with serotype 2 (***App2***) [3].

Materials and Methods

The trial was conducted in an age segregated system. A piglet producing herd with 900 sows and 43 farrowings each week delivered growers at the age of 11 weeks to a specialised fattening herd. Acute actinobacillosis caused by ***App2*** had occasionally been diagnosed, and the prevalence of pleuritis registered at slaughter had ranged between 20 and 40 % during the last years. Pigs in two consecutive batches were divided into two groups. One group was vaccinated with a vaccine based on ***App2*** (Hyobac App2; Salfarm, Kolding, Denmark) at the age of 6-7 and 10 weeks of age. The other group was kept as an unvaccinated control. Blood samples were collected every third week from the age of 6 weeks and onwards. Serum was analysed for the presence of antibodies to ***App2*** with an indirect ELISA [4].

Table 1. Productivity and recordings for pleuritis at slaughter

	Batch I		Batch II	
	Contr	Vacc	Contr	Vacc
Allocated, 11 w	172	182	316	252
Slaughtered	169	178	309	246
Mortality (%)	1.7	2.3	2.2	2.4
DWG (g/day)	893	875	793	813
F-conv (MJ/kg)	32.5	32.5	37.7	35.9
Pleuritis (%)	28.0	28.0	35.6	22.0

Results

No clear differences between the groups were recorded with respect to mortality and weight gain (Table 1).

The vaccinated pigs seroconverted to ***App2*** between 9 and 12 weeks of age in both batches. In contrast, the control pigs seroconverted between 15 and 18 weeks of age in the first batch and between 12 and 15 weeks of age in the second batch (figure 1). In the first batch, the prevalence of pleuritis recorded at slaughter was equal in both groups (28%). In the second batch, the prevalence of pleuritis recorded at slaughter was lower in the vaccinated group (22% vs 35.6%; $\chi^2 = 11.6$, $p<0.01$; Table 1).

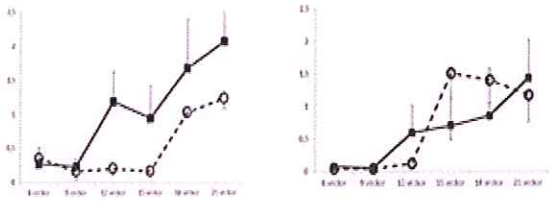

Figure 1. Serum concentrations of antibodies to ***App2*** in batch I (left) and batch II (right) in vaccinated (■) and non-vaccinated (○) pigs.

Conclusions and Discussion

A protective role of antibody-mediated immunity following ***App2***-infection has been demonstrated [5, 6], and the ***App2***-based vaccine apparently stimulated the immune system as indicated by the earlier seroconversion to ***App2*** in the vaccinated groups. Despite that, the prevalence of pleuritis at slaughter was equally high (28%) in both groups during the first batch. In the second batch, when the pathogen load was higher as indicated by a lower weight gain and an earlier seroconversion to ***App2*** in non-vaccinated pigs, the prevalence of pleuritis at slaughter was lower in the vaccinated group. That indicated a protective immunity induced by the vaccine, but only partially since pleuritis was recorded in 22% of the vaccinated pigs. Nor did the DWG differ significantly between the groups. This trial only included data from two batches, and a balance between infectious load and immunity maybe could arise with time. A longer evaluation period would therefore have been of interest.

References

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