Monitoring of physiological responses in piglets to different vaccines against PCV2 and M. hyo

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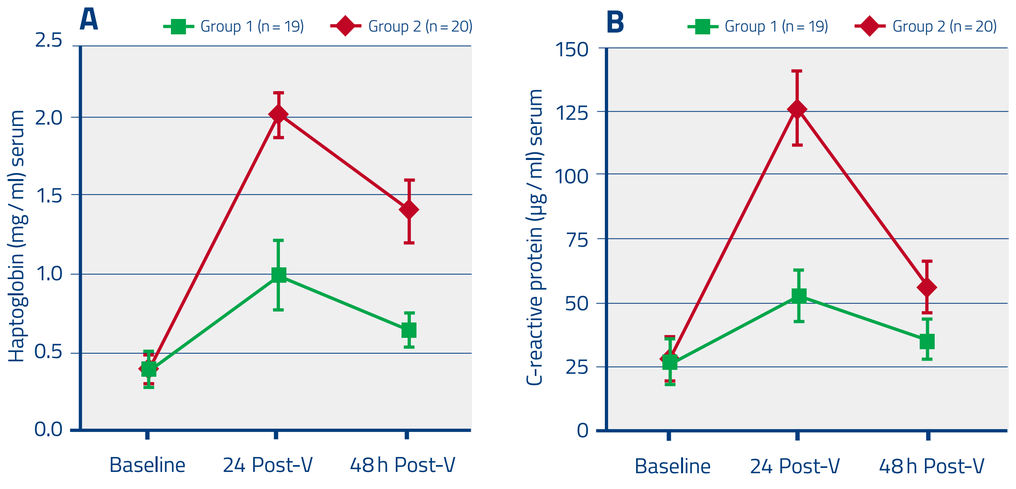
INTRODUCTION

Porcine circovirus type 2 (PCV2) and *Mycoplasma hyopneumonia* (M. hyo) have high prevalence within swine production systems globally and are involved in the development of severe infections. For that reason, vaccination protocols against these two pathogens have become standard practice in the modern pig industry. The perfect vaccine in this case should be as effective as possible and at the same time be as safe as possible. The aim of this study was the investigation of the physiological response of piglets to vaccination with two commercially available vaccines against PCV2 and M. hyo by means of acute phase proteins, body temperature and weight development.

MATERIALS AND METHODS

Overall 79 pigs out of one farrowing batch in a commercial herd in Germany were randomly assigned to two treatment groups. Group 1 (n = 37) was vaccinated with 2 ml freshly prepared mixture of Ingelvac CircoFLEX® and Ingelvac MycoFLEX® (Boehringer Ingelheim Vetmedica GmbH). Group 2 (n = 42) was vaccinated with 2 ml Porcilis® PCV M hyo (Intervet Deutschland GmbH). Both vaccines were brought to room temperature before use and injected intramuscularly into the right neck muscles at 21 days of age. Body temperature was measured prior to vaccination and 6, 24 and 48 hours post vaccination in all study animals. A subset of 19 (group 1) and 20 (group 2) piglets was subjected to blood sampling prior to vaccination as well as 25 and 48 hours post vaccination for determination of the acute phase proteins haptoglobin and C-reactive protein. Body weight was measured in all animals at the day of vaccination and at the end of the nursery period at 10 weeks of age. Statistical analyses were performed by two-way ANOVA.

Figure 1: Acute phase proteins: Serum (A) haptoglobin and (B) C-reactive protein levels in piglets prior to (baseline) as well as 24 and 48 hours after vaccination; data are means ± SEM, significant interaction of vaccination group and time (two-way ANOVA).



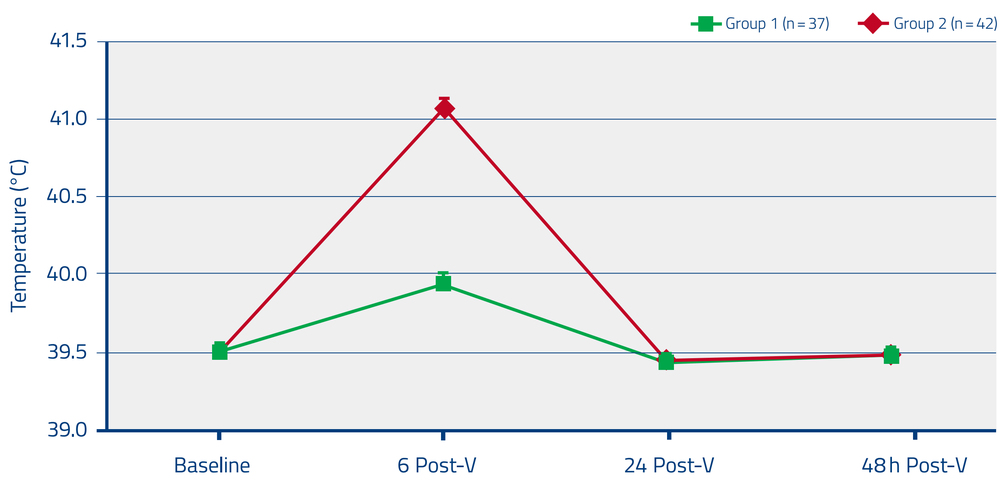
RESULTS

Both treatment groups showed an increase of acute phase proteins in serum as well as rectal temperature compared to basal levels. However, this increase in both acute phase proteins and temperature was much more pronounced in the group vaccinated with Porcilis® PCV M hyo and thereby significantly higher compared to the group vaccinated with the mixture of Ingelvac CircoFLEX® and Ingelvac MycoFLEX®. During nursery, Ingelvac CircoFLEX® and Ingelvac MycoFLEX® vaccinated pigs showed a 1.2 kg higher weight gain compared to the other vaccination protocol (17.4 kg ± 0.54 vs. 16.2 kg ± 0.60, p > 0.05).

Table 1: Weight gain: in piglets from vaccination until the end of nursery, data are means ± SEM, n.s. = not significant

	Group 1 (n = 37)		Group 2 (n = 42)		p-value
	Means	SEM	Means	SEM	
Weight (kg) at vaccination (3 weeks of age)	5.5	0.22	5.6	0.19	n.s.
Weight (kg) at end of nursery (10 weeks of age)	22.9	0.69	21.8	0.72	n.s.
Weight gain (3 – 10 weeks of age)	17.4	0.54	16.2	0.60	n.s.

Figure 2: Rectal temperature: in piglets prior to (baseline) as well as 6, 24 and 48 hours after vaccination, data are means ± SEM, significant interaction of vaccination group and time (two-way ANOVA)



CONCLUSION

The development of a vaccine with perfect interaction of adjuvans, antigen, target species and indication can be challenging. In piglets energy depots are rare and should be kept as high as possible for the time of weaning. The vaccines should provide high protection against disease and at the same time be as safe as possible for the piglet with regard to side effects. Beside efficacy, also the tolerability of the vaccine should be kept in mind.