Field study comparing two vaccines used in the control of the Porcine Circovirus type 2 (PCV2)

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INTRODUCTION

Several PCV2 vaccines are available on the market. The selection of a vaccine is based on efficacy but also on its impact on growth performances during the time after vaccination. The aim of this side-by-side field study was to compare two PCV2 vaccines by assessing their effect on weight gain and mortality.

MATERIALS AND METHODS

This trial was conducted in a 1,400-sow farm and in one fattening site located in the west of France. From weaning to slaughter the mortality rate in this farm was around 6 %. It was decided to start PCV2 vaccination following the occurrence of clinical signs associated with PCV2 infection such as wasting, pallor and digestive disorders. PCV2 PCRs on sera (pools of 3) confirmed PCV2 viremia (table 1).

Table 1: Viral load before PCV2 vaccination (No. of viral copies/ml serum)

	Pool 1	Pool 2	Pool 3
90-day old pigs	8.8×10^6	3.0×10^7	4.1×10^6
110-day old pigs	6.1×10^6	3.1×10^6	1.2×10^7
140-day old pigs	1.4×10^6	1.3×10^6	1.5×10^6

Overall 1187 piglets, from 2 consecutive batches were included in the study. The day before weaning (at around 25 days of age), piglets were weighed, identified individually and randomly allocated to one of the 2 vaccination groups. Animals in group C were vaccinated with 1 ml of Ingelvac CircoFLEX®. Animals in group S were vaccinated with 2 ml of Suvaxyn PCV®. Ten non-vaccinated sentinel piglets per batch were included to assess the PCV2 infection status. From weaning to slaughter both treatment groups were kept commingled.
Average Daily Gain (ADG) from weaning to Day 39 of age was calculated by weighing all piglets individually 14 days after vaccination. ADG from weaning to slaughter was calculated using the slaughter data. Mortality was recorded during the whole study period. Data was analyzed using the statistical software Mintitab® (version 17). ADGs and mortality rates were compared between groups using a t-test and a Chi-square test respectively.

RESULTS

At inclusion, the mean age of the piglets was 25 days. Mean body weights and sex ratio were similar between the two treatment groups (Table 2). The PCV2 circulation was confirmed by PCR (pools of 3 sera) on blood samples from sentinel animals from the middle to the end of fattening (viral load up to 1.2×10^6 copies / ml).

Table 2: Population characteristics at inclusion

		Group C	Group S
N at inclusion		583	584
Treatment		Ingelvac CircoFLEX®	Suvaxyn PCV®
Gender	No. of males	305	294
	No. of females	278	290
Mean weight (kg)		6.89	6.94

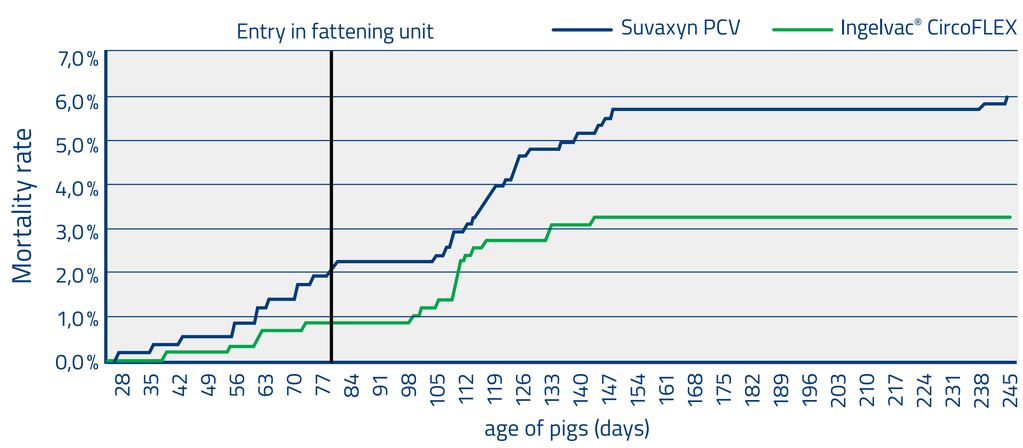
Fourteen days after vaccination, ADG in Group C was significantly higher than in group S ($p = 0.026$). Also from inclusion to slaughter, ADG in group C was higher than in Group S but the difference was not significant. The mortality rate in Group C was significantly lower than in Group S ($p = 0.037$). The difference in mortality occurred mainly during finishing (figure 1). All results are summarized in table 3.

Table 3: Performance results of the 2 treatment groups

	Group C	Group S
14 Days post vaccination		
N	580	581
ADG Weaning-39days (g/d)	184.4^a	176.2^b
At slaughter		
N	535	520
ADG Weaning-Slaughter (g/d)	634.8^c	629.8^c
Mortality rate (%)	$3,3^d$	$6,0^e$

Different superscript within the same row indicate a statistical significant difference ($P < 0.05$)

Figure 1: Mortality Rate in the 2 treatment groups



DISCUSSION AND CONCLUSION

The difference in ADG shortly after vaccination suggests that different PCV2 vaccines do not induce the same level of local and systemic reactions as already showed in previous trials[1,2]. In the conditions of this trial, the significant diefference in mortality, while the circulation of PCV2 was confirmed on sentinel animals, indicates that the vaccines differ in terms of efficacy.

REFERENCES

1. *Hernandez-Caravaca I. et al., Research in Veterinary Science, 2017.*
2. *Streckel E. et al, IPVS 2016.*

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