# EFFICACY OF A NOVEL ONE-SHOT PCV2 VACCINE UNDER JAPANESE FIELD CONDITIONS

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## Introduction

Porcine Circovirus type 2 (PCV2) was detected in Japan as early as 1989 (1). An epidemiological study conducted in Japan showed that in 2001 62,5% of farms were suffering from PMWS (1). The field trial presented in this paper was performed to evaluate the efficacy of a one-shot PCV2 vaccine under Japanese field conditions.

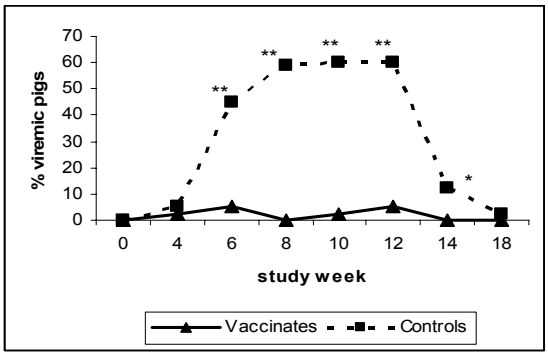
## Materials and Methods

The study was conducted in a PCV2 infected pig herd with a historic wean-to-finish mortality rate of 18.4%. A total of 630 piglets aged 3-4 weeks were included in the trial and received either Ingelvac CircoFLEX® (n=314) or placebo (n=316) at a dose of 1 ml i.m. Vaccinated and control pigs were kept in the same pens, buildings, feeding and management conditions until the end of the study 18 weeks later. Viremia was determined by real time PCR (bioScreen, Germany) in 40 samples of each treatment group. Mortality rate was recorded weekly, clinical signs every other week, and body weight at start of the trial, study week 4 and 18. Clinical signs included behaviour, dyspnoea, coughing, skin findings, gait posture, diarrhea and were scored on a scale from 0-2. A pig was defined as being clinically abnormal when it showed a score of at least one in any of the observation items. Post mortem examination (PME) was carried out on all dead pigs and those being euthanized for welfare reasons wherever possible. PCV2 viremia, mortality rate, and rate of clinically abnormal pigs were analyzed using Chi-Square-Test, body weight using the two-sided t-test.

## Results

All serum samples were PCV2 negative at start of the trial. The first pigs tested PCR-positive in serum at study week 4, (1/40 vaccinated and 2/40 control pigs). The incidence of viremia was lower between 6 and 12 weeks in the vaccinated at 5% or less whereas it ranged from 45 to 60% in the placebo group during the same time frame ($p<0.05$). At both 14 and 18 weeks viremia was absent from the vaccinated group but was present in the placebo treated group with a frequency of 12.5 and 2.5 %, respectively (Fig. 1). Before study week 6 all organ samples from PME were negative in PCV2 PCR, thereafter PCV2 was detected only in samples from control animals. From study week 6 to study week 18 twenty-one out of 310 pigs died in the control group, compared to only 11 out of 306 in the vaccinated group. In the period of peak viremia (study week 6-12) the difference in mortality was statistically significant ($p<0.05$). From study week 6 onwards the number of clinically abnormal pigs was significantly lower in the vaccinated group at each time point ($p<0.05$). The mean ADG (average daily gain in kg/day) from study week 4 to 18 was higher ($p<0.001$) for the vaccinated group (0.82) than for the placebo group (0.78) and this was also reflected in final bodyweight for the two groups (96.9 vs. 92.9 kg; $p<0.001$) (Table 1). Pigs with a bodyweight of less than 75% of the mean at 18 weeks (i.e. less than 71.2 kg) were classified as runts. The frequency of such animals was 1.7 and 6.2 % in the vaccinated and control groups, respectively ($p<0.01$).

Figure 1: Viremia (% PCR positive pigs)




**: significantly different at $p<0.001$, * $p<0.05$

Table 1. Body weight (kg)

| Study Week | Vaccinate | Control | P value |
|---|---|---|---|
| 0 | 6.8 ± 1.3 | 6.7 ± 1.3 | P=0.652 |
| 4 | 16.5 ± 3.4 | 16.3 ± 3.2 | P=0.577 |
| 18 | 96.9 ± 11.0 | 92.9 ± 13.3 | P ≤ 0.001 |

## Discussion

A significant reduction in viremia, mortality, and clinically abnormal pigs as well as a significant improvement of body weight was observed in vaccinated pigs after onset of viremia which occurred in a considerable number of control animals at study week 6. In addition to that the number of runts was significantly reduced. Concluding, this trial demonstrated the excellent efficacy of Ingelvac CircoFLEX® under field conditions in Japan.

**References** 1.Kawashima K. et al. 2003; Proc 1st Asian Porcine Veterinary Society, Korea , 45-53.