

IMMUNOMODULATION TO SPEED UP PRRS STABILIZATION IN A BREEDING HERD IN THE UK

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INTRODUCTION

Porcine reproductive and respiratory syndrome virus (PRRSv) is present in almost all pig producing countries and is responsible for one of the most economically important diseases in pigs, porcine reproductive and respiratory syndrome (PRRS). Due to its impact in health it results in a huge economic impact, putting at risk the survivability of pig businesses, the cost of production per marketed pig is increased with PRRS from around 4 €/pig in Denmark or Austria to approximately 9 €/pig in Belgium, Spain, Italy and the Netherlands (Xavier de Paz (2022)). Controlling PRRS and reaching stability (weaning negative piglets at weaning) is key to ensure the sustainability of pig businesses affected by PRRS.

MATERIALS AND METHODS

A 1200 sow outdoor breeding herd in East Anglia in the UK had an increased number of piglets born dead, low number of piglets weaned due to the impact of PRRS on born alive and also pre-weaning mortality. The farm broke down with PRRS the previous year and since then, piglets have been weaned viraemic and with low weaning weights, resulting in poor health pre and post-weaning and poor breeding herd performance.

From the 14th October 2020, a β -1,3-glucan derived from algae (*Euglena Gracilis*) (BG) (AletaTM, Kemin) to the 23rd December 2020 was included at 200 g/t in all the sows diets (gestation or dry and lactation diets).

PRRS whole herd vaccination have been carried out previously, starting on the 1st July 2020.

Performance was monitored to assess the impact of adding Aleta on performance and health: number of piglets born, number of piglets weaned and average piglet weaning weight

30 blood samples collected from piglets selected from the weaker piglets at weaning in October 2020, November 2020 and December 2020 to assess the presence of PRRS in the piglets at weaning (viraemia), serum samples were tested with a PRRS PCR, positive results were tested with a differentiating PCR to differentiate from wild virus and vaccine strain.

Piglet weaning weight was only monitored from the 2nd September to 3rd March. Data were analysed in the Fit Model platform of JMP 16.

Results

When assessing the number of piglets born, / litter, it was noticeable the number of piglets was not improving before inclusion of BG, despite PRRS whole herd vaccination, assessing the historical data it could be seen that inclusion of BG in the sows diets, resulted in 0,82 piglets born than in the previous month, 0,57 piglets more than on the previous 3 and 6 months. A summary of the impact of BG on the number of piglets born can be seen on table 1.

When comparing the same periods for the number of piglets weaned per litter, adding BG to the sows diets resulted in 2.39 piglets weaned per litter than in the previous month, 3.25 and 2.26 piglets weaned more than on the previous 3 and 6 months, respectively. A summary of the impact of BG on the number of piglets weaned / litter can be seen on table 2

Table 1. Number of piglets born, before and after inclusion of BG, different superscripts (a,b) indicate P<0.05

	6 months pre BG	3 months before BG	month before BG	Period with BG
N ^o piglets born / litter	11.18 ^a	11.17 ^a	10.92 ^a	11.75 ^b

Table 2. Number of piglets weaned / litter, before and after inclusion of Aleta, different superscripts (a,b) indicate P<0.05

	6 months pre BG	3 months before BG	month before BG	Period with BG
N ^o piglets weaned / litter	7.54 ^a	6.55 ^a	7.41 ^a	9.80 ^b

Comparing the weight of piglets at weaning, supplementation of BG to the sows diets resulted in piglets weaned from sows being fed BG being 1.95 kg heavier than piglets weaned before BG was included in the diet. A summary of the average weaning weight can be seen on Table 3.

The results of the PRRSv PCR carried for the blood samples can be seen on Figure 2, where the % of positive piglets for wild PRRSv went from 83% for the period before to 0% wild PRRSv positive for the period with BG.

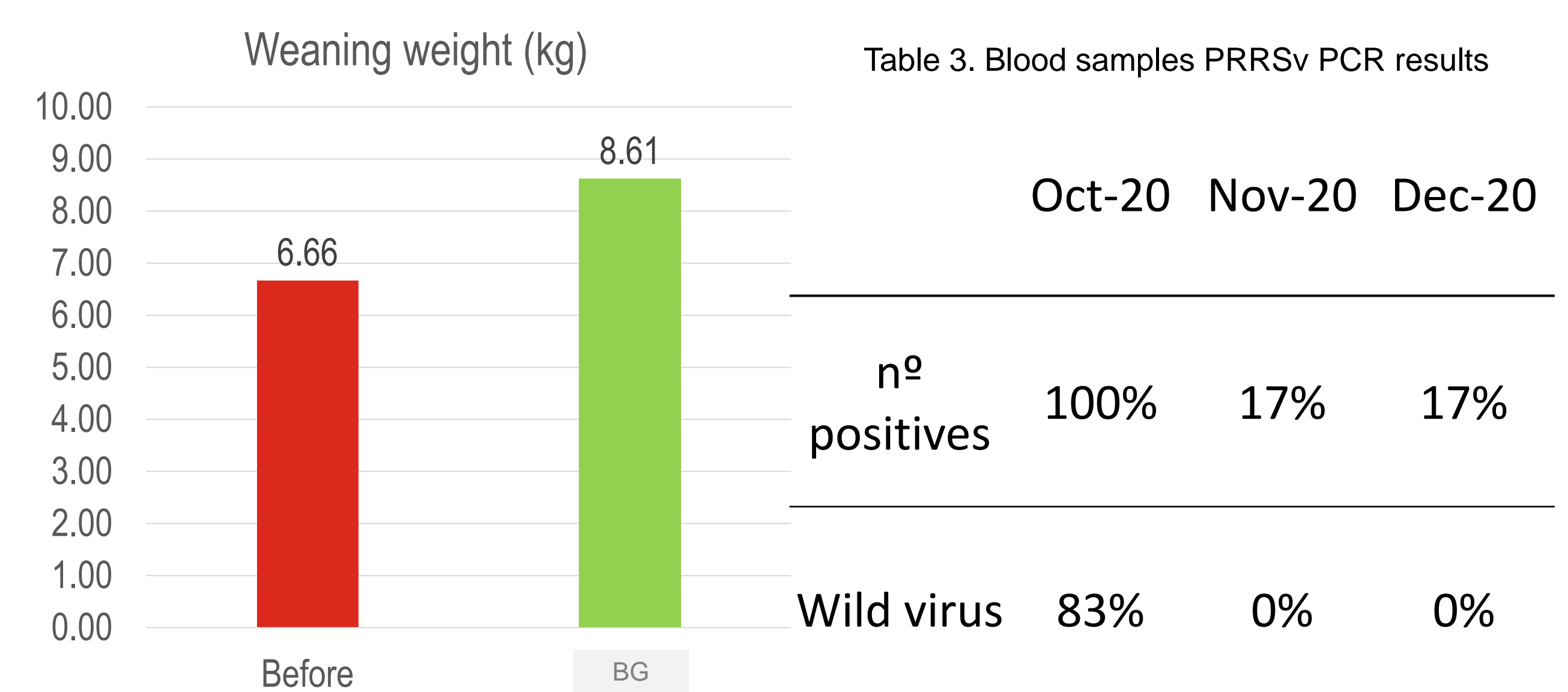


Figure 1. average weaning weight before and after inclusion of Aleta. different superscripts (a,b) indicate P<0.05

Discussion and conclusion

Through improved PRRS vaccinal response as previously observed and better quality of the colostrum (Hidalgo M. (2022)) of sows supplemented with Aleta an improved immune response of the piglets, and a better control of PRRS is achieved. In-vitro algal β -1,3-glucan also have been shown to have a dose-dependent inhibition of PRRSv infection and replication in PAMs

In the conditions of this study, in an outdoor pig breeding herd acutely affected by PRRS, supplementation of the sows diets with an algal β -1,3-glucan resulted in not only improved number of pigs born, weaned and piglets weaning weights, but also in a very significant economic benefit, contributing to the sustainability of pig businesses but also resulted in achieving the weaning of wild PRRS negative piglets.

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