

EFFECT OF AN ALGAE BETA-1,3-GLUCAN ON PIGLET PRE WEANING HEALTH

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INTRODUCTION

Hyper prolific sows bring new challenges in the management of colostrum intake. Large litters induce competition at the udder, resulting in lower colostrum intakes which can lead to poorer piglet performance and survivability. Increasing the immunoglobulin content in the colostrum can be very beneficial, as it allows large litters which have lower colostrum intake per piglet to have better maternally derived immunity and consequently, better health and improved piglet quality at weaning. A strategy that has been shown to improve colostrum quality thereby improving piglet performance is the addition of algal β -1,3-glucans in the sow's diet.

OBJECTIVES

The objective of this study was to assess the impact of supplementing the lactation diet of hyper prolific sows with a unique immune modulating solution based on β -1,3-glucan derived from algae, *Euglena gracilis*, on colostrum quality (immunoglobulin concentrations), piglet performance and health under commercial conditions.

METHODS

- Farm type: multiplication farm with 190 hyper prolific sows (pure lines)
- Animals: 37 sows
- Treatments:



- Management: Piglets were fostered to homogenize litter size at 24h within treatment.
- Measurements:
 - Litter weight at birth, 24 h and 28 days of age
 - Deaths
 - Occurrences of diarrhoea
 - Pre-weaning mortality
 - Colostrum samples for IgG and IgA
 - Faecal samples (piglets) at 21 days of age and tested for Calprotectin.
- Data were analysed in the Fit Model function of JMP 16. Differences were considered a trend at $P > 0.05$ and < 0.1 due to the high variation seen under commercial conditions.

RESULTS

At birth, no significant differences were seen between both groups for average parity (3.53 (BG) & 3.78 (C)), born alive, born dead, farrowing length, as shown in Table 1.

Table 1. Performance results at birth for both groups

	Average Born Alive (n=)	Average Born Dead (n=)	% born dead	Average Mummified (n=)	Average Birth weight (kg)
BG	17.32	0.68	4.0%	0.21	1.34
Control	15.56	0.89	5.0%	0.22	1.44

Pre-weaning mortality was lower in the BG group than in the C group ($P=0.078$). A summary of the results for mortality and diarrhoea incidence can be seen on Figure 1.

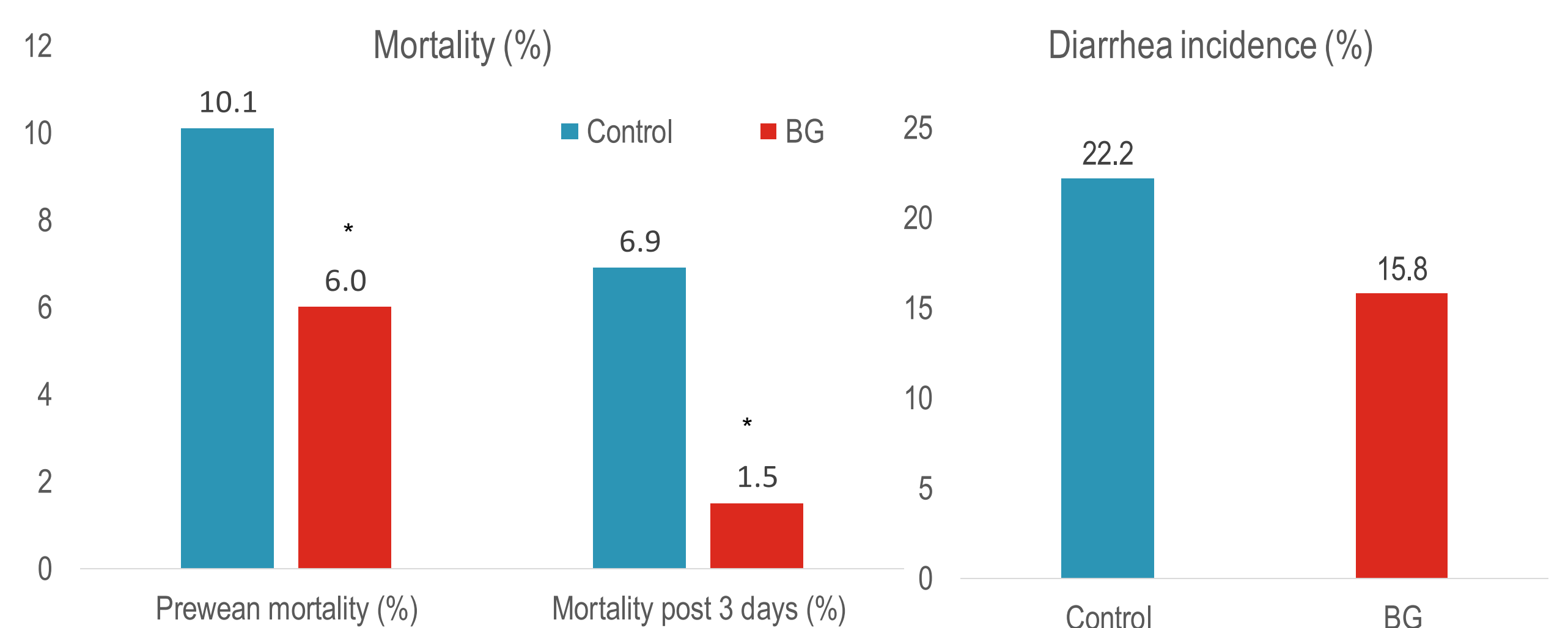


Figure 1. Pre-weaning mortality (%) and diarrhoea incidence during the trial. *Indicates a trend ($P=0.078$).

Weaning weights per litter were numerically higher for the BG group, and no difference was observed between both groups for piglet weight at weaning, despite a numerically higher number of piglets / litter. A summary can be seen on Figure 2.

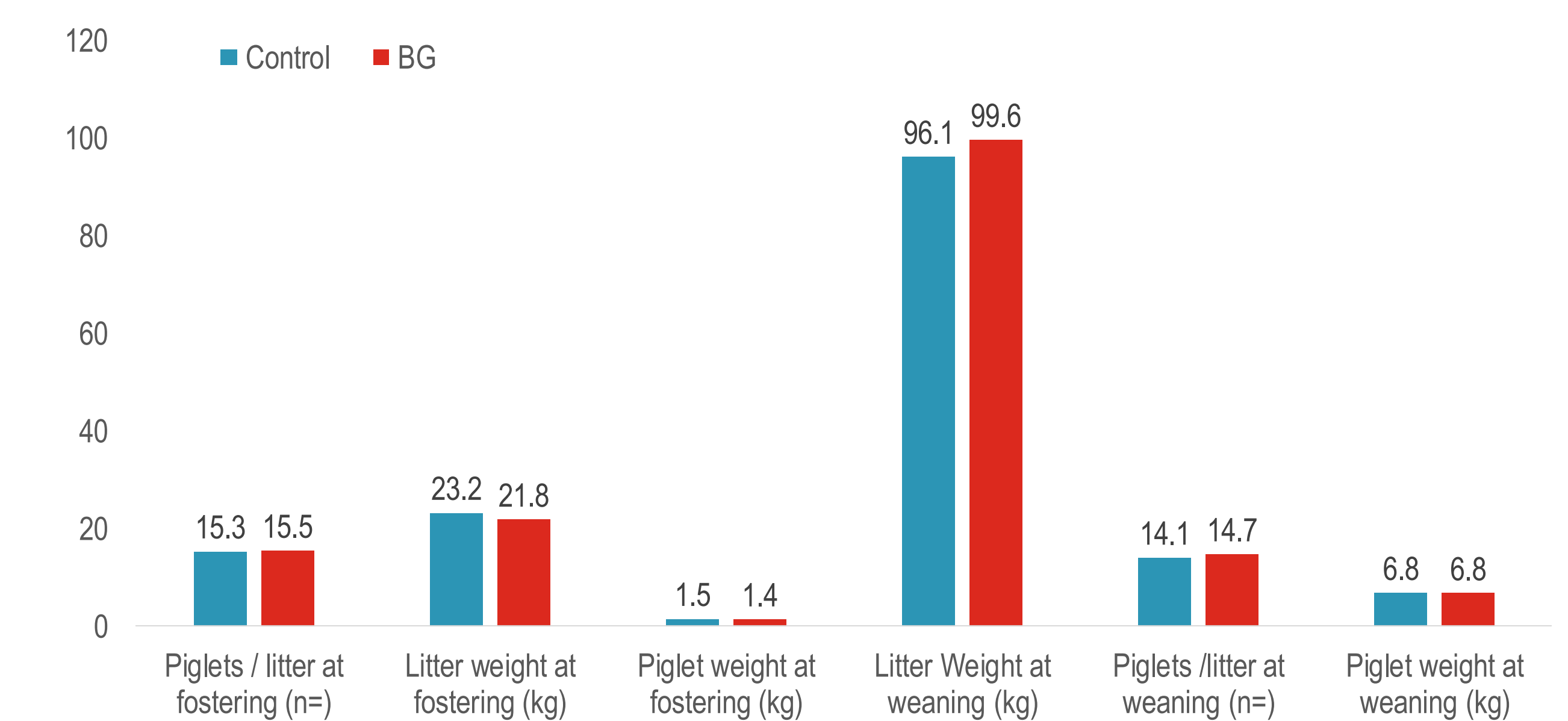


Figure 2. Number of piglets / litter and litter and piglet weights at fostering and weaning.

The levels of IgG in colostrum were significantly higher in the BG group 87.7 mg/mL (Std Error = 8.1) than in the C group, 62.8 mg/mL (Std Error = 8.6), ($P= 0.043$), the results are summarised in Figure 3. Levels of IgA and calprotectin were similar between the BG and C group, 8.7 and 8.0 mg/mL ($P= 0.39$) and 9.1 and 8.5 mg/mL for calprotectin ($P= 0.53$) for the BG and C group respectively.

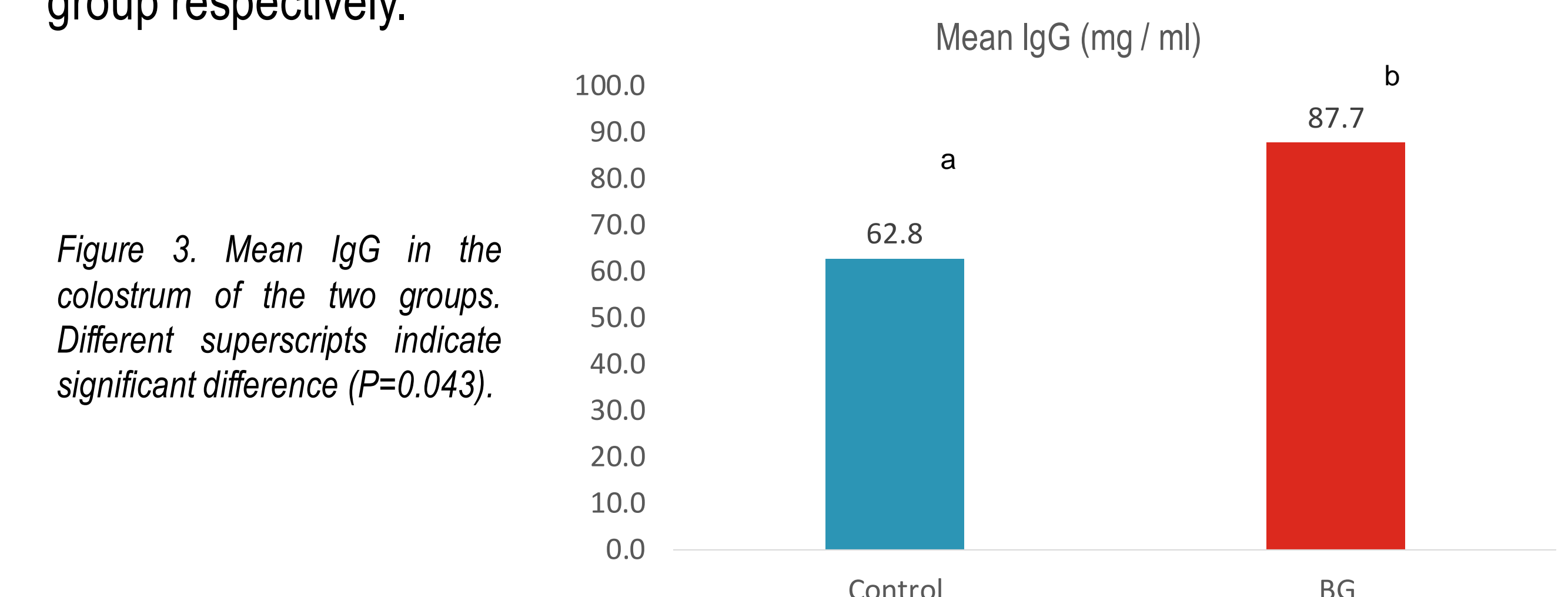


Figure 3. Mean IgG in the colostrum of the two groups. Different superscripts indicate significant difference ($P=0.043$).

CONCLUSIONS AND DISCUSSION

In the conditions of this study, supplementation of sows' lactation diet with an algal β -1,3-glucan resulted in a trend for **lower pre-weaning mortality**. It can be hypothesized that the lower pre-weaning mortality may have been a result of **improved passive immunity**, resulting in better survivability. With similar piglet weaning weights this may contribute to increased litter weights at weaning without compromising mean weaning weights.