

EFFECTS OF A ALGAE -1,3-GLUCAN ON THE INCIDENCE OF TAIL LESIONS IN A FINISHING HERD IN FRANCE

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INTRODUCTION

Tail biting is a behavioural problem that can be associated with different risk factors (management, disease, feed etc) or a combination of them that can lead some pigs to start manipulating other pigs tails with their mouths, leading to injury.

Economically this is an important problem, as it leads to a number of animals having to be euthanised to prevent further suffering, or rejection of carcasses at the slaughterhouse due to abscesses in the medullar canal and suppurative infections disseminated throughout the carcasses due to iatrogenic infections.

As most factors leading to tail biting can be related to inflammatory reactions and the inflammatory cascade, it would be important to assess the impact of a potent immunomodulator in the development of this abnormal behaviour.

OBJECTIVES

Since most if not all multifactorial problems can result in inflammatory paths, and these lead ultimately to tail biting, the objective of this study is to assess the impact of a potent immunomodulator in the occurrence of tail biting. To this end a highly bioavailable source of 1-3 β -glucan from algae (*Euglena gracilis*) was chosen, the hypothesis being that by controlling inflammation we might reduce the start of tail biting outbreaks

METHODS

A grower / finishing unit in France was selected to carry out this study. This farm historically experienced high prevalence of tail biting with severe lesions.

Growers with an age of 75 days and 30.5 kg body weight on average (n= 628) were allocated to one of two diets as described later, with two rooms per treatment groups. The study had a duration of 70 days.

A control group (C) (n=316) received a commercial diet and group BG (BG) (n=312) received a diet supplemented with β -1,3-glucan (BG) (AletaTM) (200 g/ton). Tail lesions were scored approximately every 15 days starting the day the pigs arrived in their finishing rooms, by the same investigator all along and using a scoring system adapted from Honeck et al. (2019). All pigs were assessed in each pen. Initial and final average pen body weights (BW) and pig mortalities were measured. Data were analysed with R free statistical software using Chi-square test.

RESULTS

The average percentage of pigs with tail biting lesions in group C was significantly higher than for pigs in group BG for the whole duration of the trial (16.1 and 12.9 % respectively, p<0,005) and for the 3rd (15.4 and 8.33% respectively, p<0,005) assessment. The results can be observed in Figure 1.

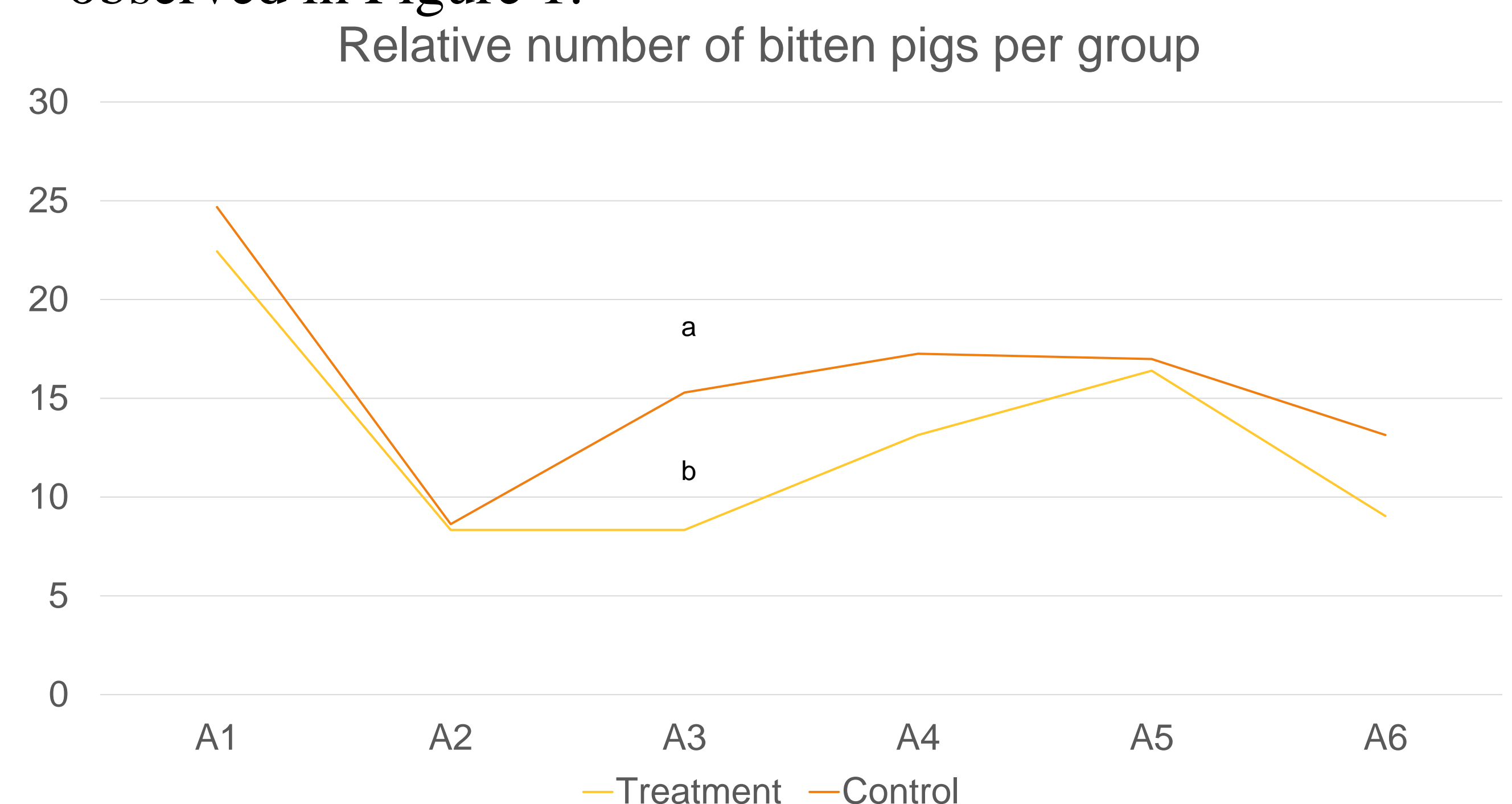


Figure 1. Percentage of pigs presenting tail biting lesions at the different assessment points (A1 to A6). Different superscripts (a,b) indicate P < 0.005.

As expected in absence of a challenge, no significant difference was observed between the groups on the final body weight or mortality, 93.0kg vs 94.8 kg and 0.6% vs 1.3 % for the BG and C groups respectively (P>0,1)

Conclusions and discussion

Pro-inflammatory cytokines like TNF- α and IFN- γ which are associated with many of the risk factors that may lead to tail biting increase the expression of the enzyme indoleamine 2, 3 deoxygenase 1 (IDO), which will in its turn increase the production of kynurenine from tryptophan, tryptophane supplementation has in some studies lead to lower tail biting incidence (Nordgreen J. et al (2020).

Supplementing the diet of growing and finishing pigs with an algal β -1,3-glucan may be a beneficial intervention to support the health of the animals through modulation of inflammatory processes that may lead to tail biting. In the conditions of this study, β -1,3-glucan resulted in a lower percentage of pigs suffering from tail biting lesions

References:

Nordgreen J, Edwards SA, Boyle LA, Bolhuis JE, Veit C, Sayyari A, Marin DE, Dimitrov I, Janczak AM and Valros A (2020) A Proposed Role for Pro-Inflammatory Cytokines in Damaging Behavior in Pigs. *Front. Vet. Sci.* 7:646. doi: 10.3389/fvets.2020.00646

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