



Immune support through algal beta-1.3-glucan and its effect on vaccination efficiency

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Introduction

Vaccination plays a vital role in health management of all poultry species. Most common viral infections in chickens, such as Infectious Bursal Disease (IBD), Avian encephalomyelitis (AE) and Newcastle disease (ND), rely on vaccination for their prevention and control. A new strategy in improving vaccination efficiency, is the use of an in-feed supplementation modulating the immune system. This work describes different (semi-)commercial trials across Europe testing the use of beta-(1,3)-glucans derived from algae, *Euglena gracilis*, in feed, to enhance vaccination efficacy in poultry.

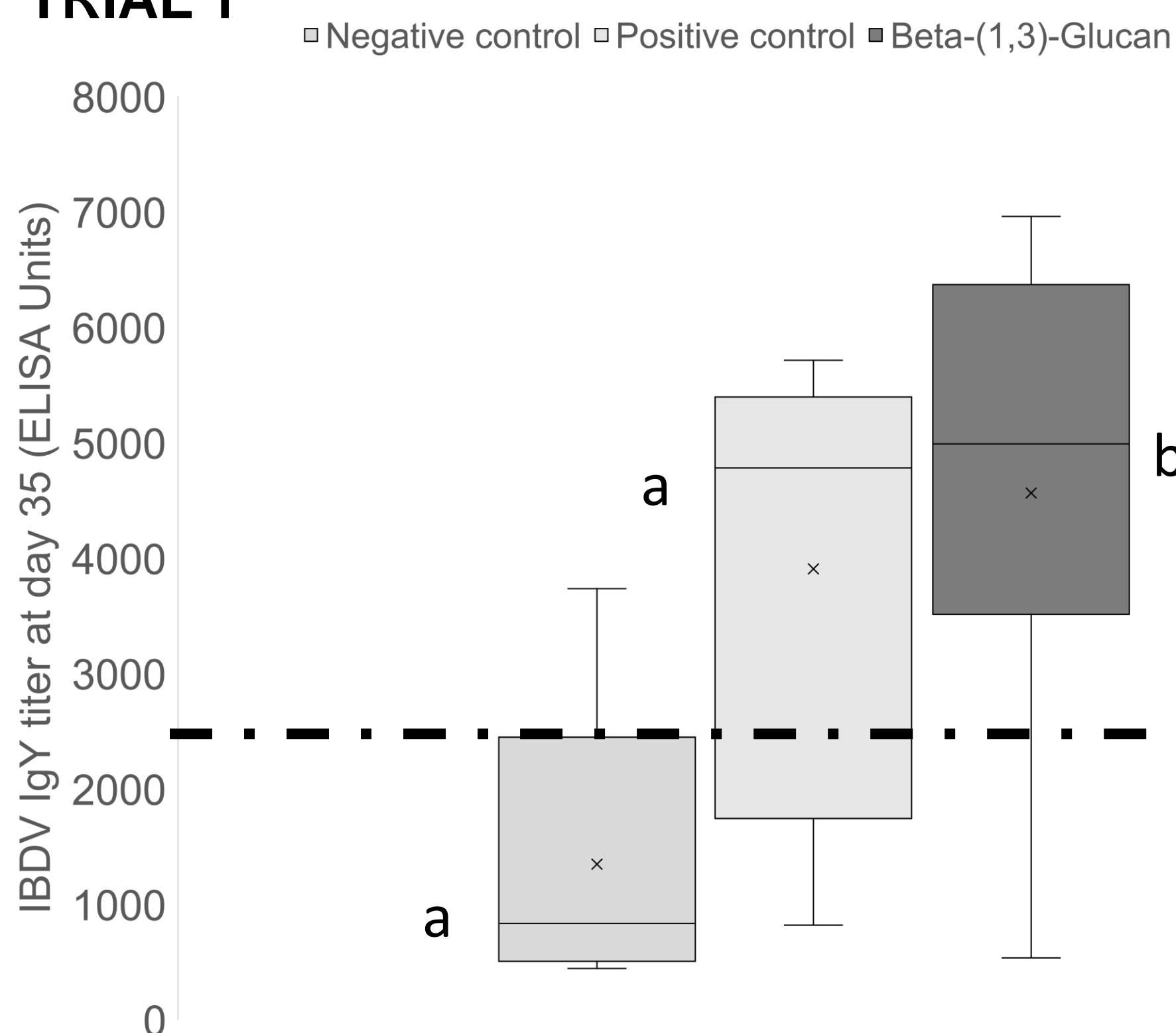
Materials and Methods

PARAMETERS	1 st TRIAL	2 nd TRIAL	3 rd TRIAL
SPECIES	96 male ROSS 308 broilers	42 000 Hyline brown layer pullet	Turkey
DURATIION	35 days	16 weeks	100 days
TREATMENTS	<ol style="list-style-type: none"> Negative control (NC): no vaccination, no treatment Positive control (PC): vaccination, no treatment Algae group (BG): vaccination and treatment with 50g/T β-(1,3)-glucans (Aleta, Kemin) 	<ol style="list-style-type: none"> Negative control (NC): no vaccination, no treatment Algae group (BG): vaccination and treatment with 100g/T β-(1,3)-glucans (Aleta, Kemin) 	<ol style="list-style-type: none"> Negative control (NC): no vaccination, no treatment Algae group (BG): vaccination and treatment with 100g/T β-(1,3)-glucans (Aleta, Kemin)
VACCINATION	Oral vaccination on day 18 with a live IBD vaccine (Nobilis® Gumboro D78, MSD)	Oral vaccination at 13 weeks of age with a live AE vaccine (Avipro AE, Elanco)	Oral vaccination at 2, 7 and 13 weeks of age with a live ND vaccine (Avipro ND, Elanco)
MEASUREMENTS	Blood samples at day 35 for IBD titers with a commercial IBD ELISA kit (Biochek, United Kingdom) of all birds.	Blood samples (n=50) for AE titers with a commercial AE ELISA kit (Biochek, United Kingdom) 3 weeks after vaccination (16 weeks)	Blood samples (n=24) at 15 weeks of age for NDV titers by a commercial NDV ELISA kit (Biochek, United Kingdom)

Results

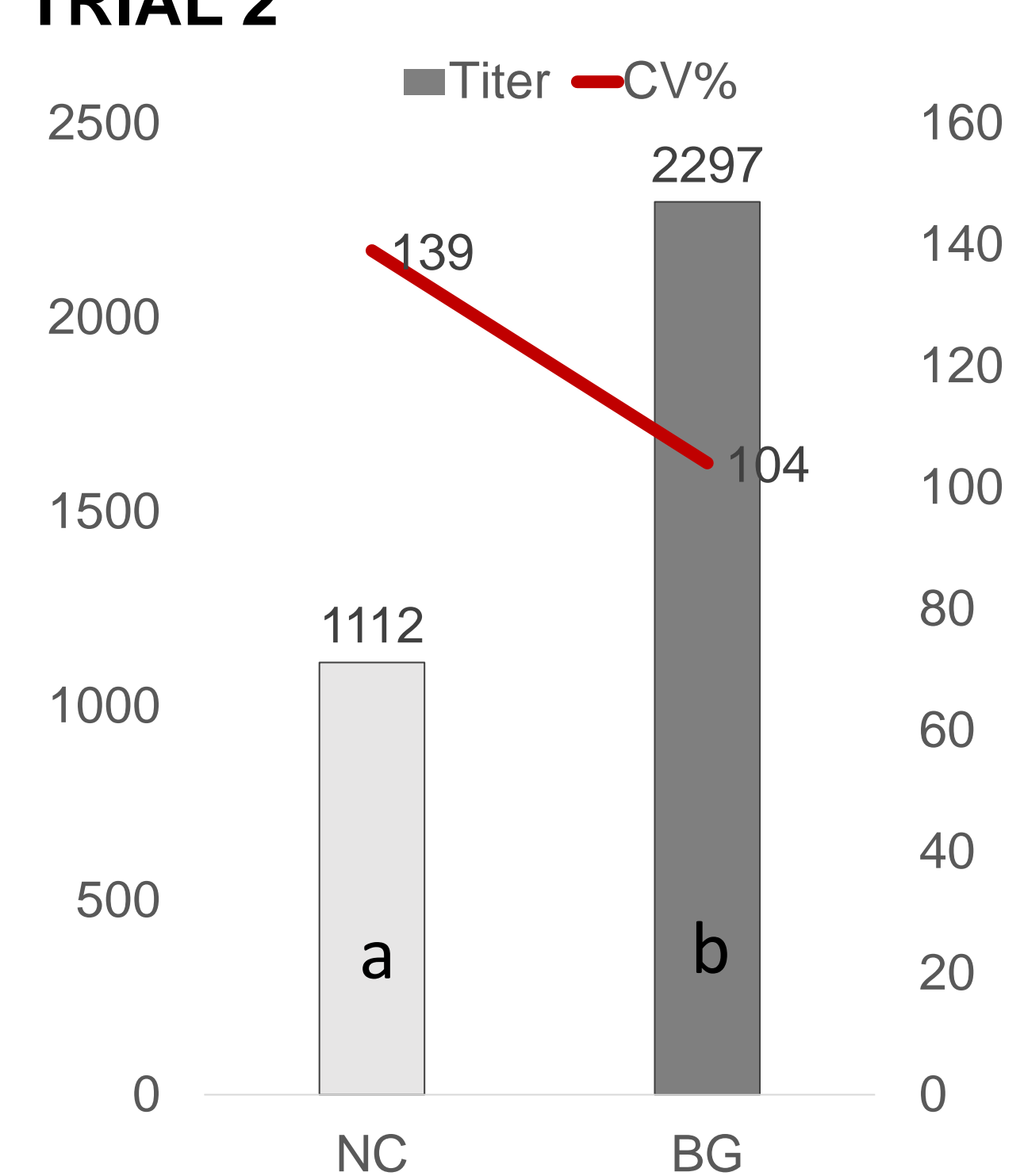
Graphs are representing the serological response to vaccination for all treatment groups. Tables are showing the seroconversion rate and the coefficient of variation (CV%). a,b indicates significant differences (p<0,05).

TRIAL 1



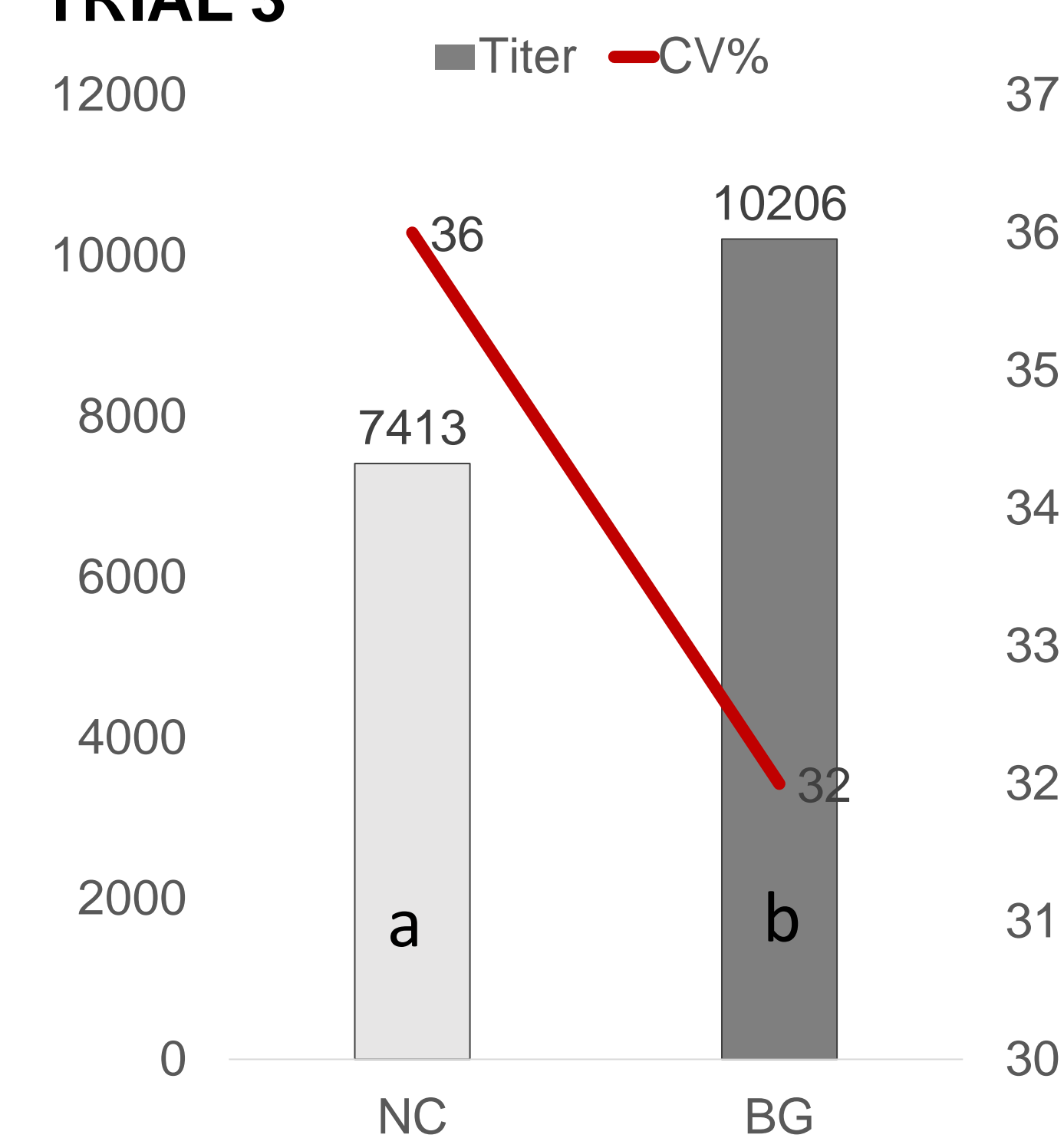
	NC	PC	BG
% Seroconversion	24%	25%	52%
CV%	101%	51%	47%

TRIAL 2



	NC	BG
% Seroconversion	32%	52%
CV%	139%	104%

TRIAL 3



	NC	BG
% Seroconversion	100%	100%
CV%	36%	32%

Results of these trials show that algae beta-1,3-glucan can **increase seroconversion and serological response** to different vaccines and **decrease the coefficient of variation**. These data prove that algae beta-1,3-glucan supplementation can increase the success rate for an efficient vaccination.