S35-7 Effect of supplement of marine algae , β-glucan, yeast on immunity traits of growing pigs

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INTRODUCTION

Addition of antibacterial substances to domestic animal feed will increase the resistance to antibiotics of bacterium. Such practices present the dangerous possibility of bacterium infection of humans. Corresponding to such a situation, the additives to the feed that activates pig's immunity and can be substituted with the antibacterial addition material were demanded.

OBJECT

In order to evaluate the effect of the additive to the feed that activates pig's immunity, **marine algae, β-glucan, and yeast were added to feed from 20 to 70kg body weight of the piglet and the influence on the pig growth and immunity were examined.**

MATERIALS AND METHOD

1) *Animals*：16 Duroc pigs from three litters

2) *Experimental design*：

Group	Feed content	Number
Control	Grower ration without antibacterial substances	Gilts 2 Barrow 2
Marine algae	Grower ration + 0.8% marine algae (160g/20kg)	Gilts 2 Barrow 2
β-glucan	Grower ration + 0.1% β-glucan (20g/20kg)	Gilts 2 Barrow 2
Yeast	Grower ration + 0.5% yeast (100/20kg)	Gilts 2 Barrow 2

3) *Blood collecting and body weight measurement schedule*

9w	11w	13w	15w	16w	17w
Collect blood Measure BW	Collect blood Measure BW	Collect blood Measure BW	**1st SRBC inoculation** Collect blood Measure BW	**2nd SRBC inoculation**	Collect blood Measure BW

4) *Measurement growth and immune traits:* To compare antibody production to a specific antigen, every group of pigs was inoculated sheep red blood cell (SRBC) at 15 and 16w of age. Phagocyte activity **(PA),** complement alternative pathway activity **(CAPA),** total leukocyte **(WBC),** ratio of granular leukocytes to lymph cells **(RGL)** and Sheep Red Blood Cell (SRBC) specific IgG **(sIgG)** were measured.

RESULTS

1) Growth traits: There was no significant difference in body weight among groups. But, the feed intake was lower in Marine algae group than other group.

2) Immune traits:

(i) At 17w of age, **sIgG** and **WBC** of the marine algae group were significantly higher than the control group.

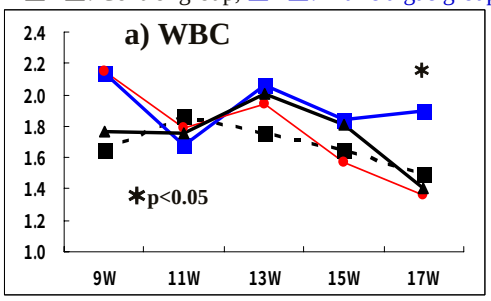
(ii) RGL of the marine algae and β-glucan groups was significantly higher than the control group at 17w of age.

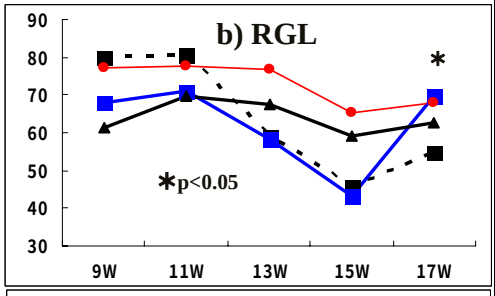
(iii) PA of the β-glucan group was higher than that of the control group at 11w and 13w, however, there were no significant differences among groups.

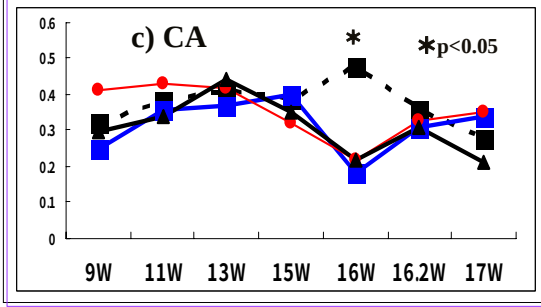
Table 1. Body weight and feed intake of each group from 9w to 17w

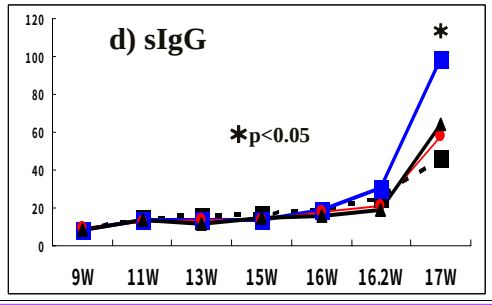
Group	9w	11w	13w	15w	16w	17w	DG: g/d	FID:kg/pig
Control	15.4	19.7	27.4	38.4	51.0	63.7	786	101.9
Marine algae	15.7	19.6	28.6	39.1	51.2	64.5	803	99.1
β glucan	15.3	19.7	29.6	39.6	51.9	64.8	807	101.3
Yeast	15.8	19.8	29.9	40.2	52.1	65.5	815	103.1

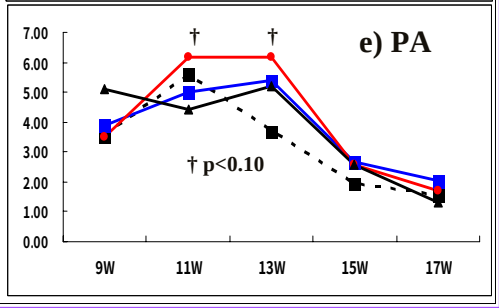
■--■: Control group, ■--■: Marie algae group, ●--●: β-glucan group, ▲--▲: Yeast group











CONCLUSION

These results suggest that addition of the marine algae to feed activate the pig's immune function. Usually, marine algae is not digested in pig's intestine. So, we postulated that the bacillus in small and large intestine digest the marine algae and the produced organic acids activated the mucosal immunity and the entire immunity consequently. Now, we have the plan to compare the organic acids composition and the amount of IgA in contents of intestines and the anatomical comparison of intestine tissue.