

Effects of dietary inclusion of two stage mix-probiotics fermented feedstuff on growth performances and immune response of growing pigs⁽¹⁾

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Abstract

The study was conducted to determine the effects of dietary supplementation of two stage fermented feedstuff (TSFF) supplemented on growth performance and immune response of growing Duroc × KHAPS (Kaohsiung Animal Propagation Station) black pigs. *Bacillus subtilis natto* (N21), a selected strain with higher fibrin proteolytic capacity was supplemented at the initial fermentation stage. The specific strain of *Lactobacillus sporogenes* (L12) with higher acidic capacity was added in the following fermentation stage. The raw ingredients used as substrate for the fermentation was a mixture of 60% soybean meal and 40% hydrolyzed feather meal. Four different dietary treatments were formulated into iso-crude protein (CP = 18.0%) and iso-metabolizable energy diets (ME = 3,265 Kcal/Kg). A total of 64 Duroc × KHAPS black pigs with initial body weight of 27.71 ± 1.26 kg were randomly assigned into 4 treatment groups of both genders. Control diet was formulated with 5% fish meal (control group) and treatment groups used to replace fish meal 5, 10 or 15% TSFF. The feeding duration was 9-wks. Our results showed that the feeding, 5-10% TSFF could improve growth performance. The feeding of 15% TSFF showed that the daily feed intake, weight gain and feed conversion ratio became worst ($P < 0.05$). The immunity competence results showed, the 5% and 10% TSFF were significantly higher ($P < 0.05$) than the 5% fish meal and 15% TSFF group on gamma interferon (IFN- γ), secretion, lymphoblastogenesis and oxygen burst activity of granulocytes. There were no significant difference in phagocytosis activity. The 10% TSFF had significantly increased ($P < 0.05$) IgA concentration in comparison with control group and 15% TSFF. The comparisons of IgG level, Furthermore, the 10% TSFF group was significantly higher in IgG level ($P < 0.05$) among treatment groups. In conclusion, the fed 5% TSFF had similar to growth performance and the better immune response than 5% fish meal during the growing stage.

Key words: Growing pigs, Growth, Immune, Fermented feedstuff.

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