

Tassanan Hongsapak 2008: Effects of Dietary Medium Chain Triglycerides (MCTs) Supplementation on Performance, Gut-Mucosal Health and Immunity of Weaned Pigs. Master of Science (Animal Nutrition and Feed Technology), Major Field: Animal Nutrition and Feed Technology, Department of Animal Science. Thesis Advisor: Associate Professor Uthai Kanto, M.S. 85 pages.

The objective of this study was to determine the effect of dietary Medium Chain Triglycerides (MCTs) supplementation on performance, gut-mucosal health and immunity of weaned pigs. One hundred and twenty, 5-week-old, crossbred pigs were studied by using completely randomized experimental design. The animals were divided into 3 groups of five replications with eight weaned pigs per replication each. Each group of the animal was randomly assigned to a dietary treatment as follows: Diet 1- Broken rice and soybean diet supplemented with antibiotic (T1), Diet 2- Diet 1 but the antibiotic was substituted by MCTs 0.32% (T2) and Diet 3 - Diet 1 but the antibiotic was substituted by MCTs 0.32% + lipase 100 ppm (T3). Results of the study indicated that all group had not significantly different in final body weight, weight gain, average daily gain (ADG), feed intake (FI), average daily feed intake (ADFI) and feed conversion ratio (FCR) ($P>0.05$). At day 21 of the experiment, 2 pigs per replication were administered with either 0.9% normal saline or lipopolysaccharide (LPS, 150 $\mu\text{g}/\text{kg}$ BW) via the ear vein. A booster was given at day 35 with LPS but reduced to 75 $\mu\text{g}/\text{kg}$ BW. The results have indicated that the group receiving T2 had significantly higher IgA plasma cell counts and goblet cell count in jejunum than the group receiving T1 and T3 ($P<0.01$). The group receiving T3 had significantly higher serum IgA level ($P<0.05$), IgA plasma cell count in ileum and colon ($P<0.01$), villi height of jejunum and ileum ($P<0.01$), crypt depth of colon ($P<0.05$) and ratio of villi height and crypt depth of ileum ($P<0.01$) than those fed with other diets. Furthermore, the group receiving T3 tended to have the highest crypt depth of jejunum ($P=0.057$) and the highest goblet cell count in colon ($P=0.079$) than those fed with other diets. Results of the study have indicated that animals in every group had no significantly different in crypt depth of ileum, ratio of villi height and crypt depth of jejunum, and goblet cell count in ileum ($P>0.05$). It could be concluded that MCTs can be replaced for antibiotic in weaned pig diet without any adverse effects on the animal performances. In additional, MCTs+lipase supplementation increase immunity and gut-mucosal health of weaned pig too.

Student's signature

Thesis Advisor's signature