

Takawan Sooksridang 2007: Effect of Methionine Hydroxy Analogue on Production Performance, Nutrient Utilization, Lipid Metabolism and Incidence of Ascites Syndrome of Male Broiler Chicken During 1-42 Days of Age. Master of Science (Agriculture), Major Field: Animal Science, Department of Animal Science. Thesis Advisor: Associate Professor Duangsamorn Sinjermsiri, M.S. 124 pages.

Two studies were conducted to investigate the effects of adding DL-methionine hydroxy analogue (DL-Met-OH) as source of DL-methionine (DL-Met) on production performance, nutrient utilization, lipid metabolism and incidence of ascites syndrome during 1-42 days of age. Both studies was completely randomized design of treatments. First experiment was carried out to investigate the effect of DL-Met-OH on production performance , incidence of ascites syndrome and metabolites in blood. Eight hundred and seventhty-five chicks (ROSS strain) were divided into 5 groups; each group consisted of 7 replications of twenty five chicks each, and the chicks were kept in floor pens. The following five experimental diets were provided into 2 phases of feeding: 1) corn-soybean based diet deficient in methionine, 2) based diet with 0.32/0.30 %DL-Met-OH, 3) based diet with 0.33/0.32 %DL-Met-OH, 4) based diet with 0.35/0.33 %DL-Met-OH and 5) based diet with 0.37/0.35 %DL-Met-OH. The results showed that during the starter and grower period, growth performance of chicks fed DL-Met-OH were significantly better than chicks received methionine-deficient diet ($P<0.01$), while addition of DL-Met-OH more than 0.32/0.30 % could not improved growth performance higher as compared to another groups. Adding DL-Met-OH at 0.33/0.32 % and 0.35/0.33 % trends to significantly improved percentage of meat ($P=0.05$) and abdominal fat ($P=0.07$). As for incidence of ascites syndrome, the effects of methionine addition on heart characteristic and hematocrit value were not seen, but adding methionine significantly depressed plasma triiodothyronine (T_3 ; at 21 days of age). In addition, there were no significant differences among groups in serum triglyceride and non-esterified fatty acid but trends to increase in plasma uric acid,. In the second experiment, were conducted for nutrient utilization and lipid metabolism. Chicks were raised in metabolic cage during 14-21 and 35-42 days of age and they were fed the same diet as in the first experiment. Chicks were seperated into 5 groups; each group consisted of 8 replications of one chick each. Adding DL-Met-OH significantly decreased pH value in diet compare to unsupplemented group, but no significant differences among groups in pH of gastrointestinal and fecal samples. Although calcium utilization trends to decrease ($p=0.05$) when supplement with DL-Met-OH and phosphorus utilization was lower than another groups, there was no effect on protein and fat utilization. Adding of DL-Met-OH in the diet had no effects on liver chemical composition and triglyceride in liver. Therefore, the results suggested that supplemented DL-Met-OH to meet requirement could improve production performance and increasing TSAA in diet could not improved either growth performance or carcass quality, but not affected to nutrient utilization.

Student's signature

Thesis Advisor's signature

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