

Kanookarn Poosuwan 2006: Effect of Dietary Protein and Methionine Levels on Production Performance, Immunity and Fatty Liver Syndrome in Laying Hens. Master of Science (Agriculture), Major Field: Animal Science, Department of Animal Science. Thesis Advisor: Assistant Professor Chaiyapoom Bunchasak, Ph.D. 119 pages.
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This study was conducted to determine the effect of dietary protein and methionine on production performance, immunity and fatty liver syndrome in laying hens during 32 and 48 weeks of age. In experiment 1, hens were divided into 3 groups in order to study the effect of protein levels (14, 16 and 18% CP) using completely randomized design. The results showed that the hens consumed high protein diet had significantly improved production performance ($p<0.05$). At 32 weeks old, protein levels affected to the immune system, hens received 14% CP diet had lower liver weight than those of 16 and 18% CP groups ($p<0.05$) but did not affect to spleen weight. Liver triglyceride (mg/liver weight) was significantly elevated by increase of protein levels, however, there was no evidence of fatty liver syndrome. NEFA tended to increase, while tendency of decrease of body weight was found. Serum beta globulin of the 16% CP group was lower than the 18% CP, although the 14% CP was not different from the 16 and 18% CP. At 48 weeks old, moreover, spleen weight and body weight of the hens received 14% CP were lower than those of 16 and 18% CP ($p<0.05$), even though NEFA tended to increase. At 32 and 48 weeks of age, ND-Titer were significantly enhanced when protein level was increased ($p<0.05$). Protein levels did not affect to alpha gamma globulin and total serum protein, however, dietary protein seem to increase gamma globulin and total serum protein. In experiment 2, hens were allotted into 4 groups in order to study the effect of methionine (Met) levels by using completely randomized design. Low-protein diet (14% CP) contained Met at 0.28 (unsupplemented group), 0.30, 0.38 or 0.44% of diet were used. The results indicated that supplementing Met induced better production performance than the unsupplementing groups. At 32 weeks of age, Met levels slightly affected to the immune system, while liver weight and liver triglyceride were significantly increased by the Met supplementation ($p<0.05$). Although, evidence of fatty liver syndrome was not shown. The result indicated that low-protein diet (14% CP) contained Met around 0.30-0.44% was able to improved productivities and maintained normal health status.

Student's signature

Thesis Advisor's signature