

Chiewcharn Petnin 2010: Effects of Dietary Supplementation of Crude Rice Bran Oil and Turmeric Meal Mixation on Productive Performance, Yolk and Plasma Lipid and Hematological Values in Laying Hens. Master of Science (Agriculture), Major Field: Animal Science, Department of Animal Science. Thesis Advisor: Associate Professor Duangsmorn Sinchermsiri, M.Sc. 110 pages.

An investigation was conducted to determine the effect of dietary supplementation of crude rice bran oil and turmeric meal mixture on productive performance, yolk and plasma lipids and hematological values in laying hens. Two hundred and eighty eight of Hisex Brown hens, 28 weeks of age, were raised in cages (4 birds per cage) situated in an evaporative cooling system laying shed. The birds were divided into 6 groups, each group represented by 3 replications, consisting of 16 birds each, and exposed to a sixteen hour photoperiod daily (16L:8D). Group 1 served as the control group, was allocated with a standard commercial layer diet. Group 2 (3%RBO) was placed on the control diet added with 3% crude rice bran oil whereas group 3 (3%RBO+BHT) was provided with the control diet supplemented with the mixture of 3% crude rice bran oil and 125 ppm of butyrate hydroxytoluene. The birds in groups 4 (3%RBO+2%TM), 5 (3%RBO+4%TM) and 6 (3%RBO+6%TM) received the control diet contained the mixture of 3% crude rice bran oil and turmeric meal that varied in turmeric meal concentrations at the level of 2%, 4% and 6 % in the diet, respectively. Feed and drinking water were available at all times. Throughout the trial, egg and eggshell quality was not affected by the experimental diets. However, a significant reduction in body weight and egg production were observed in the 3%RBO+2%TM, 3%RBO+4%TM, and 3%RBO+6%TM groups as compared to those of the control group ( $P<0.05$ ). Plasma level of cholesterol, triglyceride and low density lipoprotein including of yolk cholesterol of the birds in the three groups were comparable to those of the control bird group ( $P>0.05$ ). Inclusion of crude rice bran oil and turmeric meal mixture in the diet did not have deleterious effects on heterophil and lymphocyte ratios, hematocrit and plasma ionized calcium. Nevertheless, feed consumption, feed conversion ratios and plasma malondialdehyde concentrations of the birds in the 3%RBO+6%TM group were significantly greater than those of the control birds ( $P<0.05$ ). In addition, yolk and plasma phospholipids of the birds in the 3%RBO+2%TM group were significantly increased whereas an increase in plasma high density lipoproteins was found in the 3%RBO+4%TM group ( $P<0.05$ ).

In conclusion, supplementation of crude rice bran oil and turmeric meal mixture in layer rations adversely affects body weight, feed intake, egg production and plasma malondialdehyde concentrations, except for egg and eggshell quality, yolk cholesterol and immunity status.

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Thesis Advisor's signature