

Effect of Feeding Broilers on Diets Enriching With Omega-3 Fatty Acids Sources

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Abstract : In human diets , ω -6 and ω -3 are important essential fatty acids for immunity and health. However, considerable alteration in dietary patterns and contents has resulted in change of the consumption of such fatty acids ,with subsequent increase in the consumption of ω -6 fatty acids and a marked decrease in the consumption of ω -3 fatty acids. This dietary alteration has led to an imbalance in the ratio for ω -6/ ω -3, which at 20:1 now differs considerably from the original ratio (1:1). Therefore, dietary supplements such as eggs and meat enriched with omega 3 are necessary to increase the consumption of ω -3 to meet the recommended need for ω -3. Foods that supply ω -6 fatty acids include soybean, palm , sunflower, and rapeseed oils, whereas foods that supply ω -3 fatty acids such as linseed and fish oils. Lin seed oils contain Alpha - linolenic acid (ALA), which can be converted to DHA and EPA in the birds body, with linseed oil containing more than 50% ALA. On the other hand, high doses of omega 6 sources in the diet may have deleterious effects on humans. Maintaining an optimum ratio of ω -3 and ω -6fatty acids not only improves performance but also prevents these health risks. The ratio of n-6: ω -3 fatty acids also plays an important role in the immune response, production performance of broilers and designing meat enriched with ω -3 polyunsaturated fatty acids (PUFAs). Birds of three experimental groups fed on basal starter (0-2nd weeks), grower (3rd -4th weeks) and finisher (5th week) rations. The first is control group fed during the grower-finisher periods on basic diet with two replicate (one fed on basic diet contain vegetable oil and the other don't) without any additives. The three experimental groups (T1 - T2 -T3) fed during the grower- finisher periods on diets free from vegetable oils and contain of 5% of extruded mixture of soybean and linseed (60%:40%). The second (T2) and third (T3) experimental groups supplemented with vitamin B12 and enzyme mixture. The first experimental groups don't receive vitamins or enzymes. The obtained results showed a significant increased growth performance, immune response, highest antioxidant activity and serum HDL with lowest serum LDL and triglycerides levels in all experimental groups compared with control group, which was highly significant in group fed on vitamin B6.

Keywords : omega fatty acids, broiler, feeding, human health, growth performance, immunity

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