

Supplementing broiler diet with a new generation emulsifier: effects on performances, nutrient absorption, and cost optimization.

L.Marchetti¹, C.Piantoni¹, E.Ruggeri¹, V.Bontempo¹.

¹Department of Veterinary and Animal Science (DIVAS), Università degli Studi di Milano, Via dell'Università 6, 29600 Lodi, Italy

The administration of emulsifiers is useful in diets for commercial hybrids of broiler chickens that require feeds with a high energy content. Lipid energy sources, such as oils, are commonly included in diets for their capacity of easily raising the caloric content of feed. On the other hand, the reduction of complex energy sources could be an ideal strategy to increase the sustainability of the feed production chain. Given that, we decided to investigate the effects of a novel emulsifier (Nutriemul P, Sevecom part of Barentz) on broiler ROSS 308 chickens performances and apparent total tract digestibility (ATTD) in a low-energy diet. Immediately after hatching, a total of 720 broiler ROSS 308 male chicks were randomly divided into 4 homogeneous experimental groups: a positive control group (PC) fed with a normal energy content in diet, a negative control group (NC), fed a basal diet formulated with a reduction of 70 kcal in terms of energy based on the modulation of soybean oil inclusion levels, and two treatment groups, T1 and T2, where the same low-energy diet was characterized by the inclusion of two different levels of emulsifier, 250 and 500 g/ton respectively. Homogeneity of the feed mixture was assessed through Micro Tracer system, including inert iron particles coated with food coloring at 0.5 % of complete feed. Performances were evaluated on day 0, 10, 21 and 42 of trial. Celite 535® was included at 0.5% of complete feed in finisher diet to enhance the acid-insoluble ash (AIA) content. Faecal samples were collected on day 21 and 42 on trial to further establish DM, OM, CP, EE, AME, ASH, and AIA content and calculate the total tract digestibility (ATTD) of the considered nutrients. Performances were evaluated through a MIXED procedure of SAS. ATTD of nutrients was analyzed by a GLM procedure of SAS. The MT evaluation revealed an excellent quality of the mixing process. At the end of the trial BW was markedly higher in T1 and T2 group comparing both with NC and PC (2845.67 ± 90.69 g and 2773.83 ± 93.56 g vs 2557.52 ± 83.68 g and 2608.97 ± 95.64 g; $p < 0.01$). ADG was significantly higher from 0 d to 42 d in T1 and T2 if compared to NC and PC groups (68.37 ± 2.21 g and 66.63 ± 2.29 g vs 61.34 ± 2.05 g and 62.60 ± 2.33 g; $p < 0.01$). ATTD of DM and OM was enhanced by the inclusion of emulsifier in T1 and T2 ($p < 0.05$). Ash digestibility was better at the end of the trial in T1 and T2 ($p < 0.01$) while CP ATTD depicted a more pronounced digestibility rate in the treatment groups at 21 d ($p < 0.05$) and 42 d ($p < 0.01$). Furthermore, EE and AME ATTD were increased by both dosages of emulsifier ($p < 0.05$). These results suggested the possibility to improve the performances of broiler ROSS 308 through the administration of a new generation emulsifier which increases the digestibility rate of dietary nutrients contributing to the reduction of the use of complex energy sources in favor of a more sustainable approach to animal nutrition.