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FEEDING BROILER CHICKENS MOIST BY-PRODUCTS: EFFECTS ON PERFORMANCE AND INTESTINAL HEALTH

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One of the major developments is the gastrointestinal tract (GIT) of broiler chickens post hatch. Previous studies on moist feeding strategies in broilers show positive results on several production parameters, morphology of the GIT and immune parameters. However, there is a large gap of knowledge on providing broiler chickens a moist diet based on non-human edible by-products. Increasing the usage of by-products in broiler feed can reduce the pressure on the competition over agricultural land for either feed or food production. This project is aimed to develop a moist feeding strategy based on moist by-products (fresh brewers spent grain and wheat yeast concentrate) for broilers. This moist by-product-based feed will be used as a novel and sustainable way to enhance feed intake and potentially modulate the GIT in early life. A total of 382 male Ross 308 broilers were divided over 4 different treatments (T1 to T4), with 8 repetitions. T1 birds were fed a commercial dry pelleted feed (control), T2 and T3 birds were fed a moist diet, including 20% brewers spent grain (T2) or 20% wheat yeast concentrate (T3) and water, and T4 birds were fed a moist non-pelletized commercial feed moisturized by adding water. All moist diets were designed in a 1:1 water to feed ratio. Body weight gain of birds during the 1st week on the moist diets (T2, T3 and T4) were significantly ($P < 0.001$) higher (6.03, 6.03, and 6.90% for T2, T3, and T4 respectively) as compared to those of the dry fed birds (T1). Body weight gain of the broilers who were fed the brewers spent grain diet (T2) was significantly higher than those fed the wheat yeast concentrate (+12.1%; $P < 0.0001$) or the moist mash diet (+7.43%; $P = 0.013$). The diet had no significant effect on the blood levels of NK-cells, B-cells and T-cells on day 7, 14 and 35. The villi length was found to be significantly longer for T2 compared to T1 on day 7 ($P = 0.023$). On day 35 all treatment groups were found to significantly differ in villi length except between T1 and T3, both representing the shortest villi ($P < 0.001$). The crypt depth on day 14, was found to be significant ($P < 0.001$) different for all groups except between T1 and T2, from small to large; T3, T1 and T2, T4. At day 35 only the crypt depth of T1 is significantly smaller ($P < 0.038$) compared to T4. Pending analysis on IL6, IL22 and microbiota will be presented at the congress.

Keywords: moist feeding, by-product, intestinal health, gut development, broiler, sustainability.