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PS1 - Nutrition for sustainability in broiler, layer and turkey production

PS1-007 Bakery by-products in poultry diet: effects on performance, blood parameters and fatty acid profile of meat

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Feed-food competition is one of the most debated aspects of livestock. A change in feed resources is needed to increase sustainability and meet consumers' demands. The estimated 5 million tons of former foodstuffs produced annually in Europe could represent a resource. Efforts have been made to recover the potential nutritional value of ex-food that longer suitable for human consumption. Among them, bakery by-products (BBP) have been proven to be effective in ruminants' and pigs' diets, but few studies evaluated their effects on poultry diet. The aim of this study was to evaluate the effect of different levels of BBP in broiler diet as a substitute for both corn and soybean meals on growth performance, blood parameters, and fatty acid profile (FA) of meat. In total, 200 one-day-old male ROSS-308 chicks were assigned to four dietary treatments according to their average live weight (LW 38.0 g ± 0.11) (5 replicates, 10 birds/pen). The 4 dietary treatments were: Control (CTR: commercial feed), L-BBP (6.25% BBP), M-BBP (12.5% BBP), and H-BBP (25% BBP). Growth performance was evaluated throughout the trial. Blood samples were collected on day 33 for biochemical analysis. The fatty acid profile (FA) of the thigh and breast meat was determined by gas chromatography. The data showed no differences in LW and average daily gain among groups, although the inclusion of BBP in the diet decreased the average daily feed intake (g/d) and positively affected ($p<0.05$) feed conversion ratio at 1-33 days (CTR: 62.5 g/d, 1.57 and H-BBP: 57.5 g/d, 1.39 respectively). The fatty acid profile of breast and thigh meat showed a linear increase for saturated FA (SFA), monounsaturated FA, and the ω -6 to ω -3 ratio while polyunsaturated FA (PUFA) and the ratio of PUFA to SFA decreased linearly with increasing BBP levels ($p<0.05$). A linear increase in blood cholesterol, triglycerides, and serum glutamic-pyruvic transaminase ($p<0.05$) was also registered. This can be described as an impact of the fat raw material that is used in bakery products. Taken together, the results show that dietary raw materials could be partially substituted with up to 25%, BBP improving performance in terms of feed intake and efficacy. However, the results recorded in blood lipid metabolism and meat FA profile are worth of attention, considering human health and the balance between SFA and PUFA.