



23rd European Symposium
on Poultry Nutrition

ESPN
2023

RIMINI/ITALY
JUNE 21 - 24

BOOK OF ABSTRACTS

PS1 - Nutrition for sustainability in broiler, layer and turkey production**PS1-020 Digestibility of standard and low-input diets in chicken commercial hybrids, local breeds, and crossbreds**

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Sustainability in alternative poultry meat production chains implies the use of local chicken breeds and low-input diets based on raw materials with low environmental impact. The present study evaluated the diet digestibility of a fast-growing commercial hybrid (Ross 308), two local breeds (Bionda Piemontese, BP; Robusta Maculata, RM) and their crosses with a moderate-growth strain (Sasso, SA). A total of 228 male chickens were housed in 20 collective pens (9-13 animals/pen) according to a bi-factorial design with 5 genotypes (Ross 308, n = 49; BP, n = 38; RM, n = 46; BP×SA, n = 48; RM×SA, n = 47) and 2 grower diets differing for apparent metabolizable energy (AME) and crude protein (CP) content (Standard diet, ST: AME 14.2 MJ/kg; CP 18.7% vs. Low-input diet, LI: AME 13.0 MJ/kg; CP 16.7%). In the LI diet, soybean meal from GMO imported soybean was replaced with soybean meal from local GMO-free soybean and faba bean (*Vicia faba* L. minor) meal. From hatching to 19 d of age, all birds received the same starter diet (AME 14.4 MJ/kg; CP 24.0%); the experimental grower diets were administered from 20 d of age until slaughtering (47 d for Ross 308 and 105 d for other genotypes). From 34 to 40 d of age samples of feces were collected from each pen, dried, and analysed for dry matter (DM), CP, ether extract (EE), gross energy (GE) and acid-insoluble ash (AIA) content. AIA was used as a marker to determine the apparent digestibility coefficient (ADC) of the dietary DM, CP, EE, and GE. The ADC of DM was equal to 0.70 on average, without significant differences among genotypes as it was for the ADC of CP, EE, and GE. The use of LI diet decreased the ADC of DM (P<0.01), CP (P<0.001), and GE (P<0.01). No significant interaction was detected between genotype and diet effects. In conclusion, the use of a low-input diet reduced the apparent digestibility of protein and energy in growing chickens, regardless of the genotype. However, a wider evaluation of the animal response in terms of growth performance, welfare, slaughter yield, and meat quality traits is required to establish the chicken genotype that better fit with the rearing conditions of alternative production systems. Acknowledgements: The present research was funded by PRIN project (Prot. 2017S229WC; year 2017).

PS1 - Nutrition for sustainability in broiler, layer and turkey production**PS1-021 Distribution of intestinal intraepithelial and lamina propria lymphocytes influenced by feed additives and host-related factors of broilers**

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Intestinal T cells provide a first line of immune defense. This study examined the effect of age, breed, sex and probiotic or phytobiotic supplementation on CD3+ T cell density in the ileum and caecum of broilers. A total of 2,880 one-day-old male and female broiler chicks from two breeds, Ross-308 and Cobb-500, were randomly allocated to 72 pens. Each pen consisted of 40 chicks of each sex and each breed. Broilers were offered 3 experimental diets including a standard wheat-soybean based diet without or with supplementation of either a probiotic (2.4 × 10⁹ CFU/kg diet; *Bacillus subtilis* DSM32324 and DSM32325 and *B. amyloliquefaciens* DSM25840) or a phytobiotic (165 ppm procyanidins and 585 ppm polyphenols) product. At day 7, 21, and 35 of age, one chicken per pen was sacrificed to dissect the middle part of the ileum and the distal part of the caecum. The intestinal tissue was stained with an anti-CD3 antibody. The density of positive cells (CD3+, number per 10,000 μm²) was measured in the lamina epithelialis (LE) and propria (LP) of the ileal villus (upper and lower part) and crypt as well as caecal crypt. Data were subjected to ANOVA using GLM procedure with a 3 (diet) × 3 (age) × 2 (breed) × 2 (sex) factorial arrangement. Overall, the CD3+ density was greater in the LP than LE of all investigated regions (ileal villus and crypt and caecal crypt). Age affected CD3+ density (p < 0.05), but no impacts for breed, sex and diet were observed in both intestinal locations (p > 0.05). CD3+ density in the tip of ileal villi increased from day 7 to 21 by 125 and 96 % in the LE and LP respectively, but at the base of villi these increases were 105 and 65% (p < 0.05). From day 21 to 35, CD3+ density decreased by 23 and 41 % in the LE and LP at the villi tip and by 32 and 47 % at the base, respectively (p < 0.05). In contrast, CD3+ density in the ileal crypt increased from day 7 to 35 by 87 and 185% in the LE and LP, respectively (p < 0.05). In the caecal crypt, CD3+ density increased from day 7 to 35, by 111 and 76 % in the LE and LP, respectively (p < 0.05). There was an interaction between age, dietary treatment and sex on CD3+ density in the LP of the caecal crypt (p < 0.05). In conclusion, breed, sex, and diet had no effect on CD3+ density in the gut. This study showed age-dependent variations in CD3+ T cell density along the crypt-villus axis of the ileum and caecum. This could be a result of the immunological responses to various luminal stimuli.