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Área do trabalho: nutrição e produção de não-ruminantes

Intestinal histomorphometry of the jejunum of laying hens fed diets containing organic acids and microencapsulated phenolic compounds

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Organic acids and phenolic compounds are used in bird nutrition to maintain intestinal health by regulating the presence of pathogens and improving intestinal morphology, consequently the use of nutrients. Microencapsulation involves these volatile products with a lipid layer forming small capsules, improving viability in processing in the feed factory and targeted delivery to the birds' GIT. The objective was to evaluate the intestinal histomorphometry of the jejunum of laying hens fed diets containing organic acids and microencapsulated phenolic compounds. The experiment was conducted at the Ovo Novo farm for 112 days (four cycles of 28 days), using a total of 600 laying hens of the Novogen Brown line from 30 weeks of age distributed in a completely randomized design with six treatments, 10 repetitions with 10 birds each. The treatments were: DC: control diet, 200AD1: DC + 200 g/t of additive 1, 500AD1: DC + 500 g/t of additive 1, 200AD2: DC + 200 g/t of additive 2, 500AD2: DC + 500 g/t of additive 2 and AD3: DC + 500 g/t of additive 3. The intestinal histomorphometry of the jejunum of birds at 46 weeks of age was evaluated (villus width, villus height, crypt depth, villus:crypt ratio, absorptive area and cells goblets). Treatment means were compared using the Student-Newman-Keuls (SNK) test at 5% probability. The results found were: villus width (157.00; 177.71; 179.89; 178.32; 157.97; 132.65 µm), villa height (1169.88; 955.83; 894.59; 1012.44; 1213.95; 1139.91 µm), crypt depth (80.90; 81.82; 75.52; 69.96; 73.55; 80.80 µm), villus:crypt ratio (14.51; 11.69; 11.85; 14.48; 16.51; 14.16 µm), absorptive area (1839; 1697; 1602; 1805; 1914; 1510 µm²) and goblet cells (47.52; 55.05; 53.35; 54.60; 51.80; 51.65) for treatments DC, 200AD1, 500AD1, 200AD2, 500AD2 and AD3, respectively. The 500AD2 presented interesting results for villus height, villus:crypt ratio and absorptive area. Treatments 200AD1 and 500AD1 had lower mean villus height and villus:crypt ratio when compared to 200AD2 and 500AD2. The crypt depth results show that the control diet, 200AD1, 500AD1 and AD3 obtained higher averages, affecting the villus:crypt ratio and the absorptive area. The inclusion of additives increased the amount of coelomic cells, unlike DC. Additive 2 showed better results in relation to intestinal morphology, especially at the highest dosage (500 g/t). It is concluded that 500 g/t of additive 2 (500AD2) improved the intestinal morphology of laying hens fed with organic acids and microencapsulated phenolic compounds.
Palavras-chave: acidifiers, bioactives, blends, intestinal morphology, natural alternatives

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