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Ileal digestibility of guava waste from the manufacture of candies and juices in broiler chickens

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Waste from the fruit processing industry is responsible for generating large quantities of waste from industrial treatment and has great potential for poultry diets, reducing feed costs. Guava is a fruit from tropical America, between Mexico and Peru, sold in various forms, fresh or processed, which consequently provides waste from processing and tends to have a varied composition, depending on the final product generated. The research aimed to nutritionally evaluate guava waste from agro-industries that process guava juice and sweets. Two metabolism trials were carried out during the following periods (ages): 1 to 8 days and 16 to 23 days of age. 240 male broiler chicks of the Cobb 500 strain were used, distributed in a completely randomized design, consisting of four treatments and six replicates of 6 and 4 birds/repetition/trial. The treatments consisted of a control diet (CD), two diets with a 20% substitution of CD with guava residue meal from juice production (GWJ) and 20% of sweet guava residue from candies production (GWC) in each trial, as well as a protein-free diet (PFD) to quantify endogenous and metabolic losses. The methodology used was ileal collection using the Celite® indicator (acid-insoluble ash). On the last day of each experimental phase, the animals were euthanized, and the ileal contents were collected. The variables analyzed were, ileal digestibility coefficients of dry matter (CDIMS), apparent crude protein (CDIPBap), true protein (CDIPBv) and apparent digestible protein (PDap), and true digestible protein (PDv) values. The waste samples were evaluated for dry matter (DM), crude protein (CP), ether extract (EE), ash (CZ), crude fiber (CF), crude energy (CE), and amino acids (aa) and the ileal content only for DM and CP. The data was submitted to analysis of variance followed by the student's t-test at 5% probability. The chemical composition of FGS and FGD were: 91.54 and 92.52% DM; 6.61 and 9.93% CP; 5.15 and 5.16 kcal/kg crude energy; 7.22 and 11.12% EE; and 62.36 and 59.74% fiber, respectively, as well as the amino acid contents, 0.09 and 0.15% methionine; and 0.11 and 0.14% lysine. As for ileal digestibility in broiler chickens in the pre-starter phase (1 to 8 days), the GWC showed higher apparent and true crude protein digestibility (83.61% CDIPBap and 84.86% CDIPBv) when compared to the GWJ, but for the starter phase (16 to 23 days), the digestibility results showed no significant differences. The difference found between the phases can be explained by factors related to digestion, influenced by age, maturation of organs and enzymes, as well as the availability of nutrients to be absorbed. The experimental results showed that the waste from the juice industry showed higher protein utilization in the pre-initial phase of broiler chickens when compared to GWC, which may be associated with the processing of the waste in the industry.

Keywords: agro-industry, alternative feed, poultry science, protein

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