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MICROBIOLOGICAL EVALUATION OF POULTRY LITTER FROM BROWN EGG-TYPE PULLETS WITH USE OF FUNCTIONAL ADDITIVES

AVALIAÇÃO MICROBIOLÓGICA DA CAMA DE FRANGAS SEMIPESADAS COM USO DE ADITIVOS FUNCIONAIS

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The production efficiency and yield of poultry are assured by the use of growth promoters, mainly to control diseases. Such substances added to the feed at low dosages can be antibiotics and chemotherapeutics. Their continuous use is a problem, since they can leave residues in the meat or eggs and promote selection of resistant microorganisms. Functional additives are being used as a substitute for antibiotics, such as probiotics, improving the performance and immune response. The water in the production system is also a concern. Chlorine is used to control bacteria and viruses but it can also leave residues, forming organochlorine compounds, tri halo methane (THM) and halo acetic acids. Ozone can be an efficient agent to control fungi, bacteria, viruses, protozoa and spores. Poultry litter contains feces, feed, feathers and other materials. Knowing the microbiological condition of poultry litter can contribute to good practices. This study evaluated 192 brown egg-type pullets in the rearing phase, raised over litter of wood shavings, distributed in a random design, with four treatments. T1- control feed with antibiotics; T2- feed without antibiotics; T3- feed with probiotics; and T4- feed with no additives and modified water. T1, T2 and T3 used potable water for the birds. Each treatment had six repetitions, eight birds each. The new poultry litter had 10 cm thickness. For microbiological analysis, samples were collected from each of the 24 boxes, far from water and food disposal. Culture media for the microbiological evaluations were PDA (potato 200 g, dextrose 20 g, agar 20g), autoclaved and dispensed in Petri dishes (9 x 1.5 cm), under laminar flow with sterile conditions. Samples of 0.5 g were separated and diluted in 50 mL of distillated water in Falcon tubes. The stock solutions were diluted to 10^{-6}. Inoculations of 0.1 mL were performed with a Drigalski spatula in Petri dishes. Only feed was used as control. Plates were incubated at 25 ^{0}C, for 24 hours, when colonies were observed to count CFU/mL (colony forming unit). The poultry litter contamination was evaluated statistically using the Kruskal-Wallis test and Dunn's multiple comparisons test (1990 – 1993) with Graphpad Instat software. Results of CFU/mL, after 24 hours were Feed, T1, T2, T3 and T4 (0; 0; 2.3 x 10^{7}; 2.9 x 10^{6}; and 9 x10^{8} respectively). There were significant differences between median values for CFC/mL, where lower growth was observed in the litter with feed plus antibiotics. Such treatment impaired the development of microorganisms, probably due to the residual effect. The use of alternative additives (probiotics and modified water) promoted the development of microorganisms in the litter, which allows fast decomposition and reuse of the litter, contributing to the sustainability of the system. Those alternative additives can substitute antibiotics, but further studies need to be performed for accurate evaluation of this substitution in poultry systems.

Keywords: antibiotics; modified water; probiotics.

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