



The effects of nano-silver on performance, carcass characteristics, immune system and intestinal microflora of broiler chickens

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Objectives: Nano-silver is much more efficient as an antimicrobial than bulk silver (Marambio-Jones and Hoek, 2010). The rate of ion release is generally proportional to the surface area of a particle; nano-silver appears to be more efficient than bulk silver at generating silver ions (Wijnhoven et al., 2009). In this study the effects of nano-silver on performance, carcass characteristics, immune system and intestinal microflora of broiler chickens (Ross commercial strain) was studied.

Materials & Methods: This experiment was conducted in a completely randomized design with 5 treatments, 4 replicates and 20 chicks in each replicate. Experimental treatments were control group (without vaccine, drug, nano-silver), group that receive vaccine and drug commonly, nano-silver fed groups (without vaccine, drug) with different doses of nano-silver in starter (0.5, 1.0, 1.5 ppm) and grower period (1, 2, 3 ppm), respectively. Experimental diets were formulated in according to national research company recommendations (NRC, 1994). In order to measure blood parameters relating to bird's immune system (number of white cells, lymphocytes and antibiogram test), the chicken's blood were taken from their wing vein, on 12 and 21 d. Incubate bacteria from ileal content were done with using special incubate environment, on 21 d.

Results & Conclusion: Mean feed intake, body weight gain, feed conversion ratio and mortality were not significant between birds fed with nano-silver and the group that received vaccine and drug ($P>0.05$), and nano-silver treatment improved intestinal microflora since the highest number of lactobacillus bacteria colonies were seen in nano-silver treatments ($P<0.05$). Results of present study showed that we can use nano-silver supplement up to 1.5 and 3 ppm in starter and grower periods of broiler chickens respectively, since the number of white blood cells were higher in birds fed with nano-silver treatments compared with control group and nano-silver treatments decreased *E. Coli* and increased lactobacillus bacteria in intestinal content, in addition to the fact that nano-silver had not any adverse effect on bird's performance.

Keywords: Nano-Silver, Immune System, Performance, Carcass Characteristics, Broiler Chickens