

Effect of *in ovo* and early feeding with probiotic and honey on performance, immune system and gut microbial population in broiler chickens

Abstract:

This experiment was conducted in two trials to examine the effect of probiotics and honey *in ovo* and early feeding on performance, immune system and intestinal microbiota of broiler chicks. The first trial was carried out in a completely randomized design as a 2×2 factorial arrangement with two levels of probiotics (0 and 0.1% in distilled water) and two levels of honey (0 and 16% in distilled water). On day 18 of incubation, 0.5 ml of experimental solutions were injected into the eggs. After hatching, chicks were without access to feed and water for 48 h. Experimental groups in the second trial were as follows: 1-control (without access to feed and water in 48 h after hatch) 2- feeding with water containing 10 gr probiotics per L in 48 h after hatch 3- feeding with water containing 5 percent honey in 48 h after hatch 4- feeding with water containing 10 gr probiotics per L and 5 percent honey in 48 h after hatch. Both trials had four treatments, three replicates and 12 fertile eggs in each replicate and hatched chicks were raised for 49 days. Results of the first trial showed that injection of experimental solutions had no or negative effects on feed intake ($P < 0.05$). Injection of a solution containing 0.1 percent probiotics and 0 percent honey improved weight gain and FCR in the whole experiment (1-49 d). Injection of probiotics increased antibody titer against the first and second challenges with sheep red blood cells. Main effects of neither probiotics nor honey were significant against NDV ($P > 0.05$). In the second trial, feeding with experimental solutions had no effect on feed intake ($P > 0.05$) but birds receiving probiotics, honey and probiotics+honey had higher weight gain, antibody titer against sheep red blood cells and ileal lactic acid bacterial population ($P < 0.05$).

Key Words: Broiler, *In ovo* feeding, Early feeding, Probiotics, Honey, Performance, Immunity



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**The Thesis Submitted for the Degree of M.Sc
In the Field of Poultry Production and Management**

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December 2014