



MINISTRY OF JIHAD-E-AGRICULTURE

Agricultural Research, Education and Extension Organization

Agriculture and Natural Resources Research

Center of Khorasan razavi

**The effect of acidifier base on citric acid (with feed and drinking water) and comparison with commercial sample on performance, carcass characteristics, intestinal morphology and immune response of broiler chicks**

**Research worker :Alireza Hesabi nameghi**

**Abstract**

This experiment was conducted to the effect of different levels of acidifier in the water and broiler diets on performance, blood parameters, carcass characteristics and intestinal morphology of broilers in two experiments. 400 one-day-old Ross broiler chicks are used in each of the two experiments. A completely randomized design with 5 treatments, 4 replications and 20 chicks per replicate was performed. Experimental treatments in the first experiment included a control diet with adding 0.5%, 1% and 1.5% produced acidifiers (with carrier). The second experiment consisted of a control diet with adding 250, 500 and 750 g/1000L of water from produced acidifiers. The commercial acidifiers were used in water and feed by recommended doses. The results of the first experiment indicated that feed intake (FI) increased at broiler chickens received 1 and 1.5% acidifier comparison with the control group at the starter period ( $p < 0.05$ ). The body weight gain (BWG) and feed conversion ratio (FCR) improved with a 0.5% acidifier comparison with control groups at the starter and the entire rearing periods ( $p < 0.05$ ). The 1% of produced acidifier decreased BWG and increased FCR compared to the control at the starter and whole periods ( $p < 0.05$ ). Whereas, commercial acidifier improved performance during the grower and whole periods compared to the control ( $p < 0.05$ ). The 1.5% level of produced acidifier increased FCR compared to the control at the starter period ( $p < 0.05$ ). The Serum HDL of broiler chicken received acidifier was not

significantly different from the control group and the lowest LDL was found in the 0.5% acidifier. There was a decrease in serum level of alkaline phosphatase (ALP) in diets containing 1.5 and 1% of produced and commercial acidifiers compared with control groups ( $p < 0.05$ ). Gastrointestinal pH in the duodenum and jejunum decreased numerically in diets containing acidifier compared with control at 28 and 42 days of age. The acidifier did not affect carcass and organ weight but it improved the traits of intestinal morphology ( $p < 0.05$ ). It is recommended 0.5% produced acidifier according to the improvement of performance. Results of the second experiment indicated that FI and FCR decreased in broiler chickens received 500g produced acidifier compared with control groups in the grower period ( $p < 0.05$ ). BWG increased in diets containing 750 g produced acidifier in the grower period and also, it increased by imported acidifier in the starter and entire rearing period compared with control groups ( $p < 0.05$ ). There was a decrease in serum triglyceride of treatments including acidifier and an increase in serum high-density lipoprotein (HDL) in treatments containing commercial acidifiers ( $p < 0.05$ ) compared with control. ALP decreased in the treatments containing acidifiers ( $p < 0.05$ ). Gastrointestinal pH in the duodenum and jejunum decreased at 28 and 42 days of age ( $p < 0.05$ ). The acidifier did not affect carcass and organ weight but it improved the traits of intestinal morphology ( $p < 0.05$ ). It is recommended 500g/1000L of water from produced acidifiers according to the improvement of performance.

**Keywords:** acidifier, broiler chicken, performance, blood parameters, intestinal morphology, carcass characteristics