The Effects of Different Levels of Watermelon Skin With and Without Enzyme, on Performance, Carcass Traits, Blood Biochemical Parameters and Immune Status of Broilers

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Introduction Watermelon is a fruit that is usually produced in large scales in many reigns of Iran. The annual production of watermelon in Iran is more than 3 million tons. Watermelon not only is a rich source of some vitamins and essential minerals, but also it contains considerable levels of secondary materials such as antioxidants. More than 25% of watermelon is skin and most of nutrients and secondary substances that present in whole watermelon, can be find in watermelon skin. In our country we usually do not use in all circumstances and change to garbage and discharge to environment and increase the environmental problems. As, watermelon skin is a valuable source of some essential nutrients and secondary substances and has low price, so it thought that using it in broiler diets not only can improve their performance and body health status, but also can solve some of environmental problems. The present study was conducted to evaluate the effects of different levels of watermelon skin powder with and without using enzyme on performance, carcass traits, blood biochemical parameters and immunity system of broilers.

Materials and Methods This experiment was conducted as a (4*2) factorial arrangement included 4 levels (0, 2, 4 and 6% watermelon skin) and two levels (0 and 0.025% enzyme) with 384 Ross-308 broilers in 8 treatments, 4 replicates and 12 chicks in each replicate in two experiment period (grower from 11 to 24 days and finisher from 25 to 42 days) in a completely randomized design. Chicks were fed from 1 to 10 days with a common starter diet that recommended by Ross company. During experiment birds had free access to water and feed. Measuring of weight gain and feed intake were done at the end of experiment periods and feed conversion ratio was calculating by dividing the amount of feed intake to the amount of weight gain.

Results and Discussion Different levels of watermelon skin powder and enzyme had significant effects on performance of broilers (P<0.05). Use of watermelon skin in 2% in diet increased the amounts of daily weight gain and final live weight of chicks and improved their feed conversion ratio (P>0.05). Different levels of watermelon skin powder had no effects on the amount of daily feed intake (P>0.05). Feeding enzyme in diet increased the amount of chicks final live weight (P>0.05). Different levels of watermelon skin powder and enzyme had no significant effects on carcass traits and immune condition (P>0.05). Watermelon skin could not significantly change the values of blood biochemical parameters, but using enzyme in diet, significantly reduce the amount of blood low density lipoprotein (LDL) (P<0.05). Without LDL, other blood biochemical parameters did not significantly change by using watermelon powder (P>0.05). Improving of performance by using watermelon skin powder can be having some reasons. As previously mentioned, watermelon skin is a valuable source of some essential nutrients such as vitamins and minerals and useful secondary substances such as antioxidants. These matters can supply sufficient amounts of essential nutrients those need for health and growth of broilers and upgrade body health condition. Watermelon skin is a main source of diet potassium. Potassium is an effective nutrient in heat stress. As, the present study was done in summer, so this element may be had good effects on broiler performance. As watermelon skin contain highly amount of crude dietary fiber and birds especially broilers cannot tolerate highly level of crude fiber in their diets, so, using enzyme in broiler diets can degrade the crude fiber physical structure and improve the digestion efficiency of broilers. As seen in the present study, enzyme with watermelon skin in contrast to diets did not contain enzyme, improved the amounts of daily weight gain, final live weight and feed conversion ratio ofbroilers and reduced the amount of feed price for one kilogram of body weight gain.

Conclusion The overall results showed that in broilers, using 6% of watermelon skin not only do not make any adverse effects on broiler performance, but also in contrast to diet with no watermelon skin, can improve some of them. However in absent of enzyme, the best result was obtained with diet contained 2% watermelon skin.
skin powder. More than 2% increased the amount of feed price for one kilogram of weight gain. Using enzyme with watermelon skin not only reduced the feed price, but also improved the final weight of chicks.

**Keywords:** Blood metabolites, Broilers, Enzyme, Performance, Watermelon skin.