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Studying of effective hormones and blood metabolites on laying egg process among some native birds populations

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Abstract

In order to study the profile of blood hormones and metabolites associated with egg production cycle in native chickens, 96 fowls (32 fowls per experimental group) from three indigenous chicken populations located in Golpayegan (Colored chicken), Marand (Marandi) and Isfahan (Isfahani), were reared in laying hen cages. All groups were fed a diet with the same metabolizable energy and protein content. Six chickens were randomly selected from each group, and blood samples were taken every three weeks by wings. Blood sampling were repeated 4 times throughout the experiment. Blood sampling began since 5% of the herds have started egg laying (as the age of puberty) and then repeated every 21 days. Blood serum was stored at -20 ° C until analysis. The concentration of serum hormones (estrogen, progesterone and prolactin) by ELIZA method and the concentration of blood metabolites including triglyceride, cholesterol, LDL and HDL were determined by the spectrophotometric method. Also, the age at the beginning of egg laying, the number of eggs and egg weight were recorded. The number of eggs, egg weight, weekly laying rate, egg weight and egg mass in native hens of Isfahan and Golpayegan were higher than Marandi ($P < 0.05$). The feed intake of Isfahan native hens was higher and their feed conversion ratio was less than two other native populations ($P < 0.05$). Among the blood metabolites, only LDL concentration and LDL / HDL ratio showed significant differences among the groups ($P < 0.05$). The concentration of the other metabolites and hormones did not show any significant difference among groups. Overall, the

results showed that the changes in serum metabolites in Isfahan native chicken had a higher order and uniformity than the other two indigenous populations, and these changes are consistent with the laying process in these chickens. In Marandi native chickens, changes in serum hormones were more irregular in shape than the other two groups, indicating that more breeding works are needed for this native chickens.

Key Words: Native chicken, Marandi, Golpayegani, Isfahani, Egg laying, Blood hormones and metabolites