

Abstract

Maternal effects are among the most important factors that influence progeny immune system. Mucosal immunity of gastrointestinal tract have been shown to play controlling the incidence of inflammatory responses, immunity and also regulation of animal performance, feed conversion and gut microbial colonization. Therefore, in order to this study was conducted to determine the underlying mechanism of maternal effects on immunity, microbial population, nutritional conversion factor, antibody titer and the level of MHC gene expression in the intestinal tissue through evaluation the effects of in ovo injection of khazak yolk into the yolk of ross eggs on the gut microbiota colonization. For this purpose, 400 fertile Ross 308 eggs were randomly assigned into two equal experimental groups including test (In ovo injection of Khazak yolk) and control (In ovo injection of Ross yolk) group. Experimental groups consisted of 1 sterile water and penicillin injections, 2 injections of 600 μ l of honeysuckle yolk and 100 μ l of penicillin injected into a yolk sac on embryo day 1. On the 14 day of Newcastle vaccine development and on the 28 day, SRBC was injected. At the end of the breeding period, the chicks were slaughtered at 42 days of age, intestinal Jejunum sample was extracted for microbial population count, and carcass weight and immune-related organs weight (liver, spleen, intestine and bursa) were measured. Finally, the relative expression of MHC I and MHC II genes was investigated using Real Time PCR. In order to evaluate the target genes, β -actin gene was used as reference gene and the difference between expression and gene expression pattern was investigated using jmp version 7 software. The results of statistical analysis showed that yolk injection had no significant difference in expression of MHC I and MHC II genes compared to the control group ($p > 0.05$). But body weight at the end of rearing period showed a significant increase compared to the control group ($p < 0.05$). Hemorrhagic immune response (antibody titres against Newcastle virus (HI) and antibody titers against SRBC in the injected group increased ($p < 0.05$). In the injection treatment, the amount of lactic acid bacteria increased, While the total bacterial population decreased ($p < 0.05$), the amount of feed conversion in the injection group decreased compared to control ($p < 0.05$). Based on the results of this study, part of the maternal effects on recovery Immunity, conversion factor and increased growth performance may be due to the effect of increasing the colonization of useful bacteria, such as carcinogens in the intestine.

Keywords: Maternal effect, Yolk component, *MHCI* and *MHCII* Genes expression, Immune system



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**Evaluation the effects of in ovo Khazak yolk injection in to the Ross
egg on the immune responsible and expression pattern of MHC I and
MHC II Genes**

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