

Abstract

Some Breed-related differences in metabolism rate could be explained by differences in maternal effects. However, as maternal effects in birds was shown to, in part, mediated through adjustment of egg yolk component, therefore some breed-related variation in metabolism and growth rate could be related to the breed genetic effects on the egg yolk composition. Therefore, in the present study, maternal effects on both growth traits and expression pattern of the ghrelin gene were assessed through injection of khazak yolk into the ROSS yolk sac. In this study, One hundred and fifty fertile eggs (Ross 308 Broiler Breeder), obtained from a commercial hatchery were divided into the two experimental groups. Experimental groups including those injected with sterile water as a control group, or those injected with 300 µl Khazak yolk at the first day of embryonic life. Thereafter all eggs were transferred into the incubator and incubated under optimal conditions for 21 days. Newborn chickens were raised for the 42 days in floor pens under simulated commercial conditions according to the recommendations given for the Ross broiler; The chickens were also weighed weekly and slaughtered on day 27 and day 42 respectively. The relative expression of ghrelin mRNA in target tissue was also investigated using real-time PCR method. The significance of difference in relative expression levels of ghrelin and growth traits were respectively analyzed using REST and JMP V7.0 software. The results indicated that, compare to the control ones, injection of khazak yolk into the ROSS eggs not only cause significant reduction in expression levels of ghrelin in the brain and intestine of treated groups but also causes significantly reduction in feed intake levels ($P < 0.05$). Besides, these results imply that the significance of yolk injection on enhancement of feed efficiency and weight gain ($P < 0.05$). According to the results of this study, it could be concluded that the maternal effects has a pivotal and long lasting effects on bird's offspring development and these effects, in part, could be mediated through maternal adjustment of egg yolk component.

Keywords: In ovo injection, Maternal effects, Yolk combinations, Gene expression, *Gherlin*



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**Effects of in ovo Khazak yolk injection into the Ross eggs on growth
performance and relative expression of ghrelin gene**

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