

Effects of in Ovo Injection of Royal Jelly on Hatchability, One-Day Old Chickens Quality, Total Antioxidant Status and Blood Lipoproteins

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Abstract : Background and purpose: Royal jelly (RJ) is a natural product with anti-hyperlipidemic and antioxidant properties. In ovo administration of RJ may improve lipid profile and antioxidant properties. This study was conducted to evaluate, for first time, the effects of in ovo injection of the RJ on hatchability, one-day old chick quality, total antioxidant status and blood lipoproteins. Methods: 400 incubating eggs produced by Ross 308 strain (52 weeks of age in first stage of production) were prepared and assigned into 4 groups (n=100) and 4 replications per group (n=25). These 4 groups were injected by the following pattern: 1) 0.1 ml normal saline (control), 2) 0.1 mg RJ+0.1 ml normal saline, 3) 0.2 mg RJ+0.1 ml normal saline, and 4) 0.3 mg RJ+0.1 ml normal saline. Injections were performed using a laminar flow system. Lipid profile, antioxidant properties, hatchability, and one-day old chicken quality were assessed. Results: The administration of RJ at concentration of 0.1 increased the percentage of hatchability compared to concentration of 0.2 and control, significant differences have not been observed among groups for quality scores ($P>0.05$). The results showed that in ovo injection of the RJ did not have any significant effects on lipid profile; but administration of the RJ only decreased High-density lipoprotein (HDL cholesterol, HDL-C) ($P<0.05$). The results showed that injection of the RJ at concentration of 0.3 increased total antioxidant capacity (TAC) compared to control group ($p<0.05$). Injection of the RJ progressively increased glutathione peroxidase (GPx) activity ($p<0.05$). The results showed that injection of the RJ decreased superoxide dismutase (SOD) compared to control group ($p<0.05$). Conclusion: In ovo injection of the RJ at the highest concentration increased TAC and GPx, but it did not have significant effects on lipid profile. Future studies are needed to investigate the effects of the RJ on the above-mentioned mechanisms.

Keywords : antioxidant enzymes, chicken quality, hatchability, royal jelly

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