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Effects of Dietary Selenium Supplementation on Seminiferous Tubules and SelW, GPx4, LHCGR, and ACE Expression in Chicken Testis

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Abstract

We investigated the effects of dietary selenium (Se) supplementation on the development of chicken testis and the expression of selenoprotein W (SelW), glutathione peroxidase4 (GPx4), luteinizing hormone/choriogonadotropin receptor (LHCGR), and angiotensin converting enzyme (ACE). Sixty roosters were assigned randomly into the control group fed with a basic diet (containing 0.3 mg Se/kg) and the experimental group fed with a diet (containing 0.6 mg Se/kg). The testes were collected individually at age of 6, 9, and 12 weeks. Se was supplemented in chicken feed for 15 days before sampling. The results indicated that dietary Se affected the number of cells in the seminiferous tubules and viability of Sertoli cells in vitro culture. SelW and GPx4 expression in the testes increased significantly in the experimental group compared to that in the control group. LHCGR expression in the testes increased significantly in the experimental group after 12 weeks compared to that in the control group. In contrast, ACE expression was inhibited in the experimental group compared to that in the control group. These results suggest that dietary supplementation with Se improved development of the seminiferous tubules at the cellular level and that SelW, GPx4, LHCGR, and ACE are involved.