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Impact of Saline Water and Water Restriction in Laying Hens

Authors : Reza Vakili

Abstract : This experiment was conducted to investigate the effect of duration water restriction of drinking water and salinity level on production performance, egg quality and biochemical and hematological blood indices of laying hens. A total of 240 Hy-Line laying hens were used in a completely randomized design with a 2 × 2 factorial arrangement of treatments. Experimental treatments were: 1) free access to drinking water and a low level of salinity (TDS below 500 mg/L) (FAW+LS), 2) free access to water and a high level of salinity (TDS above 1500 mg/L), (FAW+HS), 3) 12 h nightly water restriction and a low level of salinity (LAW+LS), and 4) 12 h water restriction and a high level of salinity (LAW+HS). Intake of feed, percentage of egg production and egg weight and mass were not affected by water restriction or salinity level ($P > 0.05$), however, a trend ($P < 0.01$) for lower water consumption was detected in water-restricted hens, regardless of salinity level (213 vs 187). A tendency for lower eggshell and yolk weights was observed in hens that had limited access to water with high salinity compared to those had free access to high saline water ($P = 0.08$). Serum total protein and glucose concentrations significantly reduced ($P < 0.05$) in hens drank high salinity water, regardless of water restriction. Moreover, saline water increased the concentration of uric acid, creatinine, and cholesterol when compared to low salinity drank-hens ($P < 0.05$). The concentrations of ALT and AST increased with salinity level ($P < 0.05$) and water restriction caused an increment in AST content ($P < 0.05$). In conclusion, Hy-Line laying hens could withstand water restriction, whilst could not tolerate water salinity of about 1500 mg/L.

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