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Newcastle disease vaccination does not prevent changes in serum calcium and phosphorus levels that lead to drop egg production in laying hens infected with velogenic Newcastle disease virus

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Statement of the Problem: Newcastle disease (ND) is a viral disease of poultry caused by a single-stranded, non-segmented, negative-sense RNA virus known as avian paramyxovirus serotype 1, genus *Avulavirus*, subfamily *Paramyxovirinae*, family *Paramyxoviridae* and order *Mononegavirales*. ND is worldwide in distribution and remains a constant threat to poultry producers in spite of the availability and employment of ND vaccinations. ND belongs to the notifiable diseases of list A of Office International Epizootics. ND is associated with sudden and drastic drop in egg production and quality. The purpose of this study is to evaluate the changes that occurred in the serum levels of calcium and phosphorus in laying hens infected with velogenic Newcastle disease (ND) virus (vNDV), and their relationship to the decrease in egg production usually associated with ND. Methodology & Theoretical Orientation: Two hundred and forty laying hens (32 weeks old) were randomly assigned into four groups of 60 each viz: VAI–vaccinated with ND vaccines and intramuscularly inoculated with vNDV, VAU–vaccinated uninfected, UNI–unvaccinated infected and UNU–unvaccinated uninfected. At weekly intervals blood was collected from six randomly selected hens in each group for serum calcium and phosphorus assays. Findings: Groups VAI and UNI showed a significant ($p < .05$) drop in egg production. Serum phosphorus levels of groups VAI and UNI were significantly ($p < .05$) lower than those of groups VAU and UNU. There was a highly positive correlation between serum phosphorus levels and egg production which was highly significant ($r = .74$; $p < .01$). The changes in serum calcium levels of infected groups were only slight, and the relationship between serum calcium levels and egg production was low, positive and not significant ($r = .26$; $p > .05$). Conclusion & Significance: Drop in egg production that occurred in the ND-infected laying hens was positively strongly correlated with the drop in serum phosphorus levels.

Biography

Amarachukwu Olejieme Igwe currently teaches Veterinary Pathology courses, does research in the area of Veterinary diagnostic pathology, at the Michael Okpara University of Agriculture, Umudike (MOUUAU), Umuahia, Abia State, Nigeria. Amarachukwu's research interest is on avian pathology, with a primary focus on viral diseases of birds. This present study is an excerpt from her PhD thesis, and part of the PhD research work was done at United States Department of Agriculture / Agricultural Research Service, Southeast Poultry Research Laboratory, 934 College Station Road Athens, GA 30605 in 2014. She is a member of organization for women in science for the developing world (OWSD) MOUUAU chapter.

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