A Comparative Analysis of Various Means of Enzyme Linked Immunosorbent Assay Tests for Avian Paramyxovirus-Newcastle Disease Virus

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In the aid of monitoring several poultry diseases, including Newcastle Disease (Avian Paramyxovirus) commercial poultry farm owners, managers, and veterinarians monitor antibody titers, which measures the amount of antibodies for a particular disease in the bird's blood. Common assessment for monitoring antibodies includes the ELISA (Enzyme Linked Immunosorbent Assay) test. The ELISA testing method, among others, is also used to test flocks for Avian Influenza, Avian Encephalomyelitis, Infectious Bronchitis and Mycoplasma Gallicepticum and Mycoplasma Synovae. The purpose of monitoring layer flocks on a periodic basis is to determine the antibody count for the above listed diseases. By knowing what the antibody counts are, farmers and veterinarians may understand which precautions or prevention methods need to take place to maintain overall flock health. Previous to this project, blood was needed to test for the NDV antibody. However I thought it was possible to use egg yolks to test for the antibody instead, for their high count of maternal antibodies. Eggs and blood samples were taken from 180 hens, the samples were matched, and the tests were run side by side. After a T-Test which showed no statistically significant difference between the two tests (P-value= 2.2e-34) I concluded that egg yolks could be used by poultry farmers and veterinarians as an equal substitute for blood serum when running the Newcastle Disease Virus-Avian Paramyxovirus ELISA test. Further testing which will involve testing for the antibodies of Avian Influenza, Avian Encephalomyelitis, Infectious Bronchitis and Mycoplasma Gallicepticum and Mycoplasma Synovae in egg yolks, and the refinement of the egg yolk test are currently underway.

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