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News & Comments

Analysis of Protein Electrophoresis on Avian Samples

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The propensity of avian species to mask clinical signs of sickness until the pathological process has advanced is well known. Currently, pet bird species, mostly psittacines and raptors, are routinely subjected to protein electrophoresis (EPH), a diagnostic test. According to their isoelectric profile, blood proteins are divided into various fractions. EPH is mostly utilized in birds to diagnose inflammatory conditions brought on by bacterial, viral, or parasite illnesses. It is a method of choice for figuring out the levels of albumin and globulins in avian blood samples, however, some writers point out that results can vary between labs, especially for fractions with small amplitudes. This study's primary goal is to examine the impact of haemolysis on plasma protein concentration measurements.Also, investigating the electrophoretic pattern of pathological serum of chickens with New Castle disease that was diagnosed using serological tests is another major objective of the study.

The samples were taken at the KHALED chicken slaughterhouse in EL MERID. A sample of blood, four millilitres, was taken from the jugular vein. In heparinized polystyrene tubes, 2 mL of the blood was taken, and the other half was immediately separated by centrifugation at 3,000 rpm for 10 min. In heparinized polystyrene tubes, 2 mL of the blood was taken, and the other half was immediately separated by centrifugation at 3,000 rpm for 10 min. All analyses were performed using the Systat 7.0 software (SPSS Inc., Chicago, Illinois, USA). Protein electrophoresis is frequently employed in avian medicine, veterinary medicine, and human and human diagnostics.

It has been demonstrated that electrophoretic analysis is crucial for characterizing dysproteinaemias linked to various illnesses. According to estimates, 30% of birds who appear to be in good condition will have elevated EPH readings without any modifications to the hematologic and biochemical assays. Total proteins are a frequent criterion used to evaluate health. Globulins play a role in several functions, such as the transport of ions, hormones, and lipids, as well as acute-phase reactions and immunological responses as immunoglobulins. In this investigation, total proteins, all proteins of the beta fraction, and gamma globulins were found to statistically differ between plasma and serum. The mean total protein concentration in pigeon plasma was higher than that of serumaccording to Lumeij and Maclean.

It has been proven that protein electrophoresis is a useful method in veterinary medicine. The electrophoretic fractions are calculated using the total protein concentration after the biuret technique has measured the total protein level. It is crucial to be aware of the variations in values between serum

and plasma samples, as well as any artifacts that may result from incorrect sample processing and animal conditions.

Article Reference

N. Arzour-Lakehal and A. Boudebza, 2021. Interpretation of Protein Electrophoresis on Avian Samples. Int. J. Poult. Sci., 20: 179-187.

KEYWORDS

Agarose gel electrophoresis, plasma, serum, hemolysis, Newcastle disease, protein fraction, broiler chickens