

INVESTIGATION OF LIVER DAMAGE IN BROILER CHICKEN USING LIVER-SPECIFIC SERUM NON-FUNCTIONAL ENZYMES

S.S.H.M.M.L. Senanayake^{1*}, P.A.B.D. Alexander² and J.G.S. Ranasinghe³

¹*Postgraduate Institute of Science, University of Peradeniya, Sri Lanka*

²*Department of Farm Animal Production and Health,
Faculty of Veterinary Medicine and Animal Science, University of Peradeniya,
Sri Lanka*

³*Department of Biochemistry, Faculty of Medicine, University of Peradeniya,
Sri Lanka*

**maleeshals.85@gmail.com*

Changes in the environment and nutrient intake could alter the metabolism of living organisms and these changes may lead to serious diseases. Sudden Death Syndrome (SDS) is a metabolic disorder in healthy young broilers with a fast growth rate. Several aetiological factors are implicated in the incidence of SDS, including high temperature and *ad libitum* feeding. This study was designed as a model to study SDS, specifically to determine the degree of liver damage in growing birds kept under two different stress conditions. COBB 500 broiler strain was selected as the experimental bird and housed at the Veterinary Teaching Farm of the University of Peradeniya, Sri Lanka. There were three experimental groups comprising 30 birds each. One group was kept as the control while the other two were treatment groups. In treatment 1, birds were exposed to a high environmental temperature (35°C) for 12 h per day starting from 26 days of age until 40 days of age. In treatment 2, birds were fed *ad libitum* for the same period. Blood samples (1.5 ml) were withdrawn from the wing vein of six birds per group at a time. The blood levels of alkaline phosphatase (ALP), alanine transaminase (ALT) and aspartate aminotransferase (AST) were measured using colorimetric commercial kits and the data were analysed using general linear models. Results revealed that ALP levels increased with age in the control group while this enzyme decreased with age in treatments 1 and 2. Usually serum ALP levels increase due to bone formation or liver damage. Lower ALP levels observed in the treatment groups might be related to poor growth rate due to the stressors applied in this study. The ALT levels decreased with age in the control group (0.06 ± 0.0 to 0.03 ± 0.0 U/L) as well as in the group fed *ad libitum* (0.02 ± 0.0 to 0.05 ± 0.0 U/L), whereas ALT levels increased in the group exposed to high temperature (0.04 ± 0.0 to 0.03 ± 0.0 U/L), probably due to acute liver damage. Our data suggest that blood ALT levels could be used as one of the indicators for liver damage in fast growing broilers.