A STUDY ON PREVALENCE AND AETIO-PATHOLOGY OF ASCITES AND RIGHT VENTRICULAR FAILURE IN BROILER CHICKENS IN MID COUNTRY WET ZONE OF SRI LANKA

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SUMMARY

The broiler industry worldwide has now developed into one of the most dynamic areas of agriculture making a significant contribution to the supply of dietary animal protein requirements of people in both industrialized and developing countries. Despite intensive research during the past three decades and the ability to control most infectious disease, it is now evident that most serious industry problems relate to non-infectious disorders, commonly referred to as metabolic disorders.

This thesis focuses on a metabolic disorder in commercial broiler chicken; ascites and right ventricular failure (ARVF), and describes its current knowledge in relation to pathology, multi-faceted and, multi-factorial aetiology in a wide range of geographical distribution. The literature reviewed suggests that the pathogenesis is a cascade of events initiated by excess work load on the heart; and that the pathological changes are a direct consequence of circulatory disturbance resulted from right heart failure. These events were studied with an objective to provide further knowledge on ARVF, and understand the prevalence and possible aetiological factors associated under Sri Lankan conditions. This study encompasses pathological aspects to support the hypothesis that ARVF occurs due to a state of hypoxia resulted from an inability to compensate the high oxygen demand required by fast growing broilers.

This study conducted in hot, humid tropical climate; correlates with the studies done in temperature climates. Although the recorded prevalence was low, the losses due to total mortality from ARVF and cardiac decompensation as

shown by global surveys, and carcass condemnation contributes to a high economic loss. The pathological study revealed the similarity with previous studies and defines some distinct changes which have not been observed previously. The changes observed in tissues strongly suggest that they were due to tissue hypoxia, and some supportive evidence for hypotheses of hypoxia are also provided in this study.

Characterization of ascitic fluid was useful in further defining an avian transudate. The successful induction of ARVF with excess dietary salt highlights the possibility of salt as a possible cause under local commercial broiler operations.

All aspects dealt in this study supports that ARVF occurs due to hypoxia resulted from pulmonary-haemodynamic insufficiency resulted due to high oxygen and metabolic demands of fast growth.

This study highlights the potential of dietary sodium in feed in inducing ARVF, and draws attention to several other possible factors that can trigger ARVF under commercial broiler operations. Attempts to reduce the incidence of ARVF have to compromise the cardio-pulmonary capabilities with the ever progressing production traits. Genetic, managemental and nutritional factors that potentially trigger ARVF and health have to be dealt carefully to reduce the incidence of ARVF in broiler operations.