

## THE EFFECT OF INCREASED SODIUM IN FEED ON ASCITES AND RIGHT VENTRICULAR FAILURE IN BROILER CHICKEN

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Sodium (Na<sup>+</sup>) is a major supplemental macromineral, in poultry diets, usually in the form of Sodium Chloride (NaCl). The optimum level of NaCl requirement for chicken is shown to reside between 0.2 and 0.75%. Sodium Toxicity (ST) in chicken occurs due to severe alteration of water-electrolyte balance, resulted from Na<sup>+</sup> and water retention due to excess dietary intake. Broiler chicks are much more susceptible to a mild form of NaCl toxicity which occurs slightly above optimum, presented as Ascites and Right Ventricular Failure (ARVF), oedema and mortality. Ascites and Right Ventricular Failure is a metabolic disorder of fast growing broiler chicken, associated with many aetiological factors. Recent studies have suggested ARVF and mortality occurs when the NaCl content is more than 2.16% in feed. No studies have been done with NaCl in feed greater than 1.11% to look at the relationship between increased NaCl and incidence of ascites.

Two hundred and forty, commercial, day-old male broiler chicks, on a diet similar to a commercial diet, containing at concentrations of 0.25% (0.098% Na<sup>+</sup>), 0.75% (0.294% Na<sup>+</sup>), 1.5% (0.49% Na<sup>+</sup>) and 2% (0.688% Na<sup>+</sup>) with 6 replicates (10 birds in each replicate) in 24 pens, were fed on broiler starter and finisher diets from day 8 to 21 and 22 to 42 respectively. Water containing 0.0035% NaCl were provided *ad libitum*.

There were no cases of ARVF or ST at 0.25% NaCl. The total number of deaths due to ARVF and ST were 16 and 8 respectively. In the 0.75%, 1.5% and 2% groups there were 6, 2, and 8 deaths due to ARVF respectively. At processing, 5, 4, and 4 carcasses had ascites in the 0.75%, 1.5% and 2% NaCl groups respectively. There were no significant differences in Right Ventricle (RV) : Total Ventricle (TV), Heart Weight (HW), Carcass Weight (CW), HW : CW and RV : CW between treatment groups in birds died of ARVF and ST. There were significant differences in HW, CW, and HW: CW and no significant differences in RV: TV, RV: CW between the treatment groups.

Although the recommended level of supplemented NaCl in the diet of broiler chicken is 0.75%, using cardiovascular changes and mortality as the criteria, this study with NaCl supplementation at this concentration as the sole source causes high incidence of ARVF and ST under local conditions.