

Effect of Glucose Oxidase on Growth Performance and Meat Quality of Broiler Chicken

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Glucose oxidase act on glucose in the presence of oxygen to produce hydrogen peroxide and D-glucono-1, 5-lactone. The enzyme is produced by certain fungi and insects, and has many commercial applications, primarily as an antimicrobial agent and as a pH balancing agent. This experiment was conducted to study the effect of glucose oxidase on growth performance and meat quality of broiler chicken. A total of 960 day-old, Cobb500 broiler chicks were randomly assigned into the experiment pens. The treatment (drinking water + 0.025% glucose oxidase) and control (drinking water only) were each replicated six times in separate pens, each pen had 80 chicks. All birds were fed the same commercial feed. Two birds from each replicate were randomly sampled and slaughtered on day 35. Breast meat samples were tested for meat quality traits (pH, colour, water holding capacity, cooking loss, proximate composition) and sensory parameters. Birds fed glucose oxidase had a significantly ($p < 0.05$) higher weight gain (1,890g) compared to the control group (1,836g). Glucose oxidase had no effect on feed intakes or feed conversion ratios of the birds. Breast meat from the birds fed glucose oxidase gained poor sensory attributes (color, flavour, taste, juiciness, tenderness, overall acceptability) except odour compared to control group ($p < 0.05$). No differences were observed in other meat quality traits and proximate composition ($p > 0.05$), except gross energy between the two groups. Gross energy content of the breast meat from birds fed glucose oxidase was significantly ($p < 0.05$) higher (5.2kcal/g) compared to that from birds fed only drinking water (5.0kcal/g). In conclusion, glucose oxidase in drinking water resulted in better growth performance in broiler chicken but gained poor sensory attributes in their breast meat.

Keywords: Breast meat quality, Broilers, Glucose oxidase, Growth performances, Sensory attributes