

## **Dietary supplementation of betaine (Betafin®) and response to high temperature stress in male broiler chickens**

### **ABSTRACT**

The effects of supplemental betaine (Betafin®) in the drinking water (50 g/kg) (WB) or feed (100 g/kg) (FB) were investigated on male broiler chickens (CobbxCobb) exposed to 4 h episodes of heat stress at  $34\pm 1^{\circ}\text{C}$  on day (d) 35 and  $36\pm 1^{\circ}\text{C}$  from d 36 to 41. Prior to (d 1 to 34) and following heat exposure (d 35 to 41), betaine supplementation had no significant effect on body weight, total feed intake and cumulative feed conversion ratios of broilers. The total water intake of WB chicks was lower compared to controls. Prior to heat exposure, there was no difference in percentage of mortality among the three dietary groups. Following the heat challenge period, although higher percentage of control chicks succumbed to the heat challenge as compared to those of WB, it was not significantly different. The WB and FB chicks were less hyperthermic than controls in response to the heat challenge. Irrespective of treatment groups, the heat treatment resulted in a marked elevation in heterophil/lymphocyte ratios (HLR). The WB birds however, had smaller increase in HLR than those of controls during heat exposure. Antibody production against Newcastle disease vaccine on day 35 was not affected by betaine supplementation. On d 42, WB birds had higher antibody production than those of FB. It is concluded that the WB treatment, as measured by HLR, antibody production and mortality rate, has advantages over the FB group under heat stress conditions.

**Keyword:** Betaine; Broiler chickens; Heat stress