

Reducing heat stress and performance losses

JENNIFER MAURIN*reports that standardized plant extracts can protect the digestive epithelium with positive effects on the performance of heat-stressed broilers.



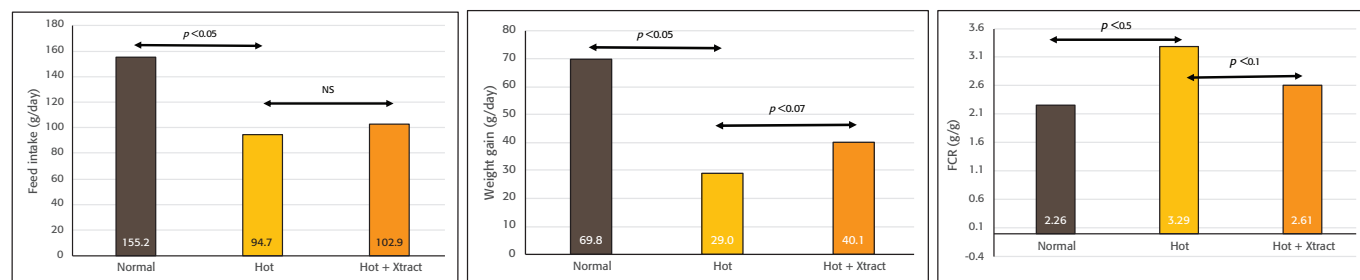
Half of the birds reared worldwide are estimated to suffer from the consequences of heat stress during summer. The first visible sign is an increase in the water: feed ratio, however recent research has also shown that excessively hot conditions have an impact on the gut structure and its permeability. Reduced feed consumption and decreased intestinal integrity and function result in the decreased energy intake, animal discomfort and the reduced performance parameters associated with summer months. An effective building temperature control system is a primary step toward managing this problem, but it can be delicate/ sensitive in case of sudden or excessive changes in temperature. Temperature management can therefore be actively supported by

natural nutritional feeding strategies.

“Leaky gut” phenomenon in heat-stressed poultry

Heat is produced by the body's metabolism, which includes maintenance, growth and egg production. Birds become 'heat stressed' when they have difficulty achieving a balance between body heat production and body heat loss. This can occur in all ages, and all types of poultry. Birds have three ways of managing their heat loss to stay in the 'thermo-neutral zone'. One of the methods consists of a natural diversion of the blood flow from the viscera to their external surface (wings, skin) in order to increase the heat exchange rate with the surrounding environment and therefore decrease body temperature.

Figure 1: Zootechnical performance – feed intake (left), weight gain (center) and FCR (right).



The associated lack of digestive tract blood irrigation progressively leads to gut mucosa depletion, associated with its membrane permeability and its inability to secrete digestive enzymes. This phenomenon already well proven is referred to as "leaky gut".

Natural ingredients to alleviate/prevent heat stress

Based on scientific explanations of leaky gut, Pancosma SA, recently evaluated the efficacy of Xtract is already well known for its multifunctional positive effects on digestive secretions, reduced inflammation and antioxidant properties. It was therefore tested in a heat stress controlled trial at Harper Adams University, UK. A total of 36 male Ross 308 broiler chickens were reared from hatching until 20 days old in a common floor pen and under normal recommended temperature. At day 21, the temperature was increased from 21°C to 35°C, simulating a violent environmental heat stress, this continued until the trial finished on day 35. The effects of 100 g/t of feed of Xtract (XT hot group) were evaluated by comparison to a negative control (normal group)

and to a positive control being heat stressed (hot group) but not supplemented with the additive. All animals had *ad libitum* access to fresh water.

The heat stress treatment (from 21°C to 35°C) had a significant negative influence on the treated groups, showing the validity of the model.

As expected, feed intake reduced when birds were reared under heat stress conditions. The observed reduction from d21 to d35 on average daily intake was around 40%. Xtract supplementation had no significant effect on daily feed intakes, exactly as would be observed under normal rearing conditions.

Nevertheless, Xtract supplemented at 100 g/t had a significant positive effect on body weight gain from d21 to d35 increasing it by 38%. This result, not being a consequence of a higher intake, shows the importance of gut protection, so that the birds can assimilate more efficiently the reduced quantity of ingested nutrients. Xtract has the capacity to protect gut epithelium and to reduce its permeability.

The optimal gut protection

combined with increased digestive secretions (also observed in normal conditions) directly resulted in limiting performance losses. Heat stressed birds being protected by Xtract could achieve more normal FCR level (2.61 vs. 3.29, representing an 18% reduction) during this stressful period.

In this specific trial, the synergy between the 3 ingredients revealed better results than ingredients alone, showing the importance of the mode of actions management.

Conclusion

Because of the natural healthy properties of protectors, some naturally occurring ingredients from plants and spices can protect animals from heat stress and help breeders minimize the economic impact of such extreme conditions. Xtract 6930 can be supplemented to birds through feed but is also available as a soluble instant form in order to be flexibly distributed through drinking water. **Ap**

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