

HEAT STRESS: WHY MINERAL NUTRITION BECOMES KEY UNDER HIGH TEMPERATURES



When animals are exposed to high temperatures, they do not only eat less but their entire metabolism is pushed out of balance. Behind the visible signs of heat stress, such as panting, reduced feed intake, lower production and poorer fertility, a hidden biological chain reaction is taking place.

WHAT HAPPENS INSIDE THE ANIMAL DURING HEAT STRESS?

- Oxidative stress increases
- Antioxidant reserves are challenged
- Gut barrier and immune pressure rise
- Disrupted acid-base balance (respiratory alkalosis)

Heat stress in livestock is associated with impaired performance, gastrointestinal pressure, reproductive challenges, inflammation and cell damage. That is where a strong mineral foundation becomes important

MINERAL NUTRITION: BUILDING RESILIENCE BEFORE STRESS HITS

Excential Selenium 4000 supports this first line of resilience by supplying selenium as L-selenomethionine. This is the selenium form that can be incorporated into animal proteins, creating a functional selenium reserve that can support a more continuous selenium supply during periods of reduced intake, sickness or heat stress. Internal material states that this selenium storage supports continuous selenium supply when intake is limited and when selenoenzyme production is needed to combat oxidative stress. The relevance of selenium under heat stress is supported by broiler data, significantly improved feed conversion ratio compared with the control treatment based on sodium selenite. In another heat-stress related dataset, Excential Selenium 4000

shown to reduce concentrations of proteins linked to heat stress and oxidative stress (HSP-70, MDA and PGC-1 α), indicating a protective effect against heat stress (Figure 1).

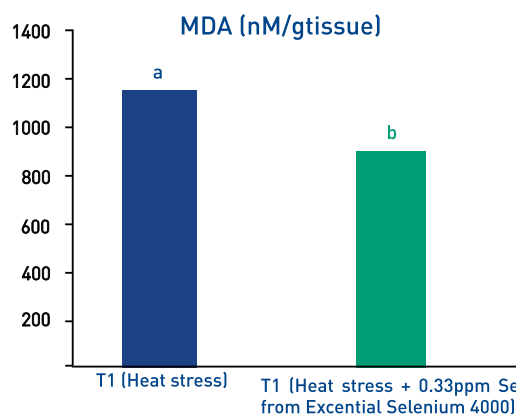


Figure 1: MDA levels of birds under heat stress with or without Excential Selenium 4000

Excential SMART complements this selenium strategy by supplying hydroxy copper, zinc and manganese. Where Excential Selenium 4000 helps secure selenium status and supports selenoenzyme activity, Excential SMART strengthens the broader mineral foundation needed for antioxidant defense and recovery. SMART trial data in broilers showed improved antioxidant capacity, including higher serum Mn-SOD activity at 80 mg/kg Mn from Excential SMART M and lower liver MDA levels at 60–100 mg/kg Mn from Excential SMART M.

Together, Excential Selenium 4000 and Excential SMART help animals build resilience before heat stress hits: selenium supports redox balance and selenium reserves, while SMART minerals support the broader antioxidant and metabolic systems needed to maintain performance under pressure.



Heat stress increases oxidative pressure



Trace elements support antioxidant defense



Excential Selenium 4000 builds selenium reserves



Excential SMART delivers bioavailable Cu, Zn, Mn

