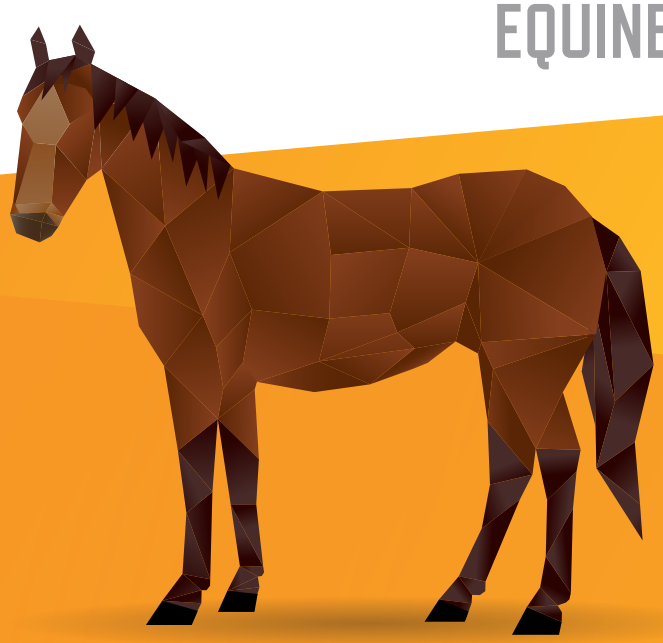
KemTRACE® CHROMIUM

KEMIN EQUINE



CHROMIUM, HEAT STRESS AND YOUR HORSE

Summer temperatures, increased activity and reduced air flow in trailers or stalls are some of the conditions that can lead to heat stress in horses.

HORSES ARE AT A HIGHER RISK OF HEAT STRESS IF THEY ARE:

- ✓ Poorly conditioned
- ✓ Overweight
- ✓ Older
- ✓ Unable to find shade
- ✓ In poorly ventilated stalls/trailers
- ✓ Heavily muscled
- ✓ Have not acclimated to warmer temperatures

A HORSE DISSIPATES EXCESS BODY HEAT BY: [2]

- Maximizing blood flow to skin, helping to disperse heat
- Sweating to eliminate about 70% of the heat generated by exercise
- Breathing rapidly to eliminate up to 15% of the heat load

>106°F = heat stroke

103°F = over heating

101-103°F = normal during exercise

<100°F = normal

The typical resting body temperature for a horse is between 99-100°F. A horse begins to overheat once the body temperature reaches approximately 103°F. Above 106°F, the horse may experience heat stroke that can lead to a coma, convulsions or death.[2,3]

Temperature and Humidity Impact on Horse Cooling[1]

Air Temperature (°F) + Relative Humidity (%)	Horse Cooling Efficiency
Less than 130	Most effective
131-150	Decreased
151-180	Greatly reduced
Greater than 180	Condition can be fatal if the horse is stressed

CHROMIUM HAS BEEN SHOWN TO REDUCE BODY TEMPERATURE AND RESPIRATORY RATE DURING HEAT STRESS.

A TRIAL CONDUCTED AT THE UNIVERSITY OF MELBOURNE CONSISTED OF TWO GROUPS: [4]

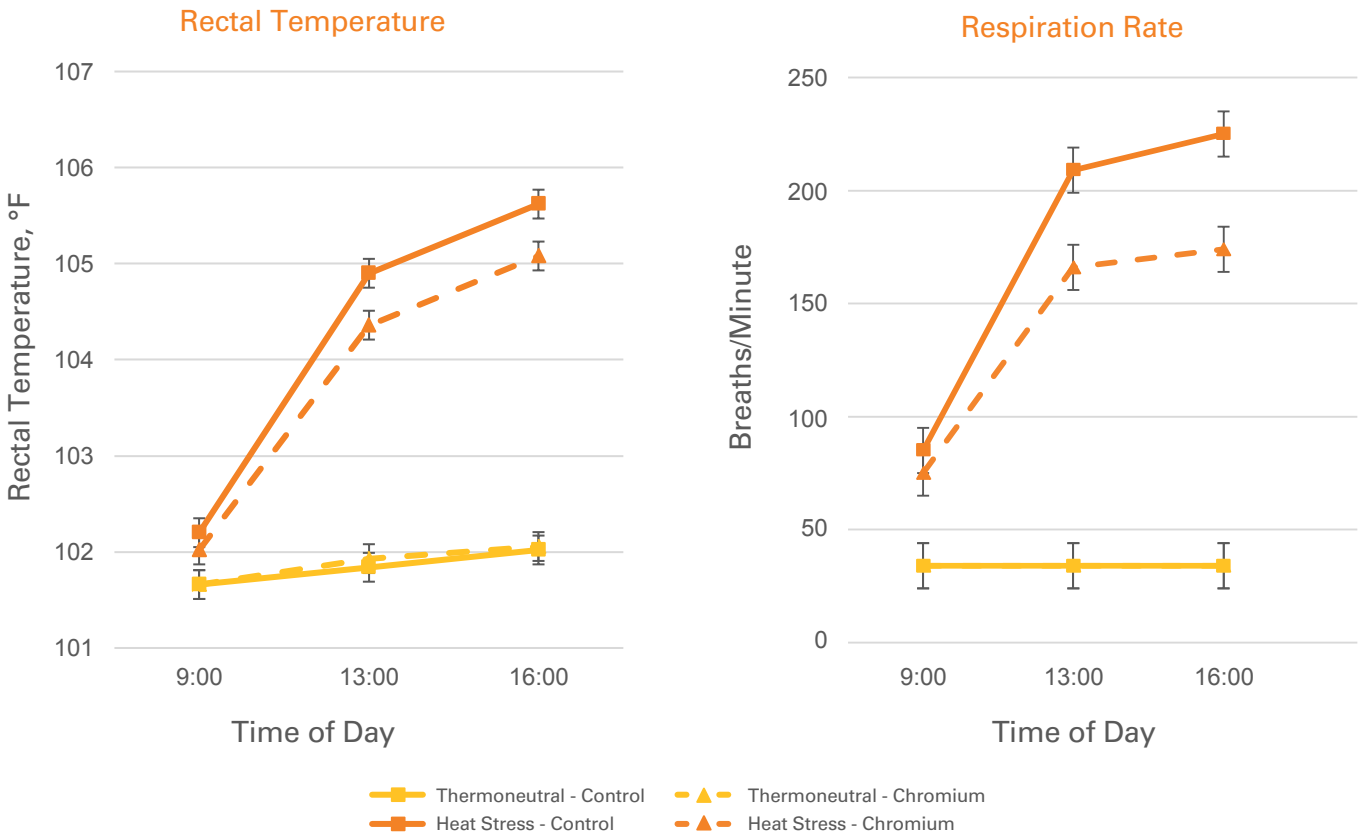
THERMONEUTRAL GROUP: [2]

- Constant 35-45% humidity and a temperature of 68°F

HEAT STRESS GROUP WITH VARYING CONDITIONS:

- 95°F and a relative humidity of 35-45% from 9:00 a.m. to 5:00 p.m. (9:00-17:00)
- 82°F with a relative humidity of 35-45% from 5:00 p.m. to 9:00 a.m. (17:00-9:00)

Figure 1. Physiology of pigs fed chromium or control diet exposed to thermoneutral or heat stress conditions – adapted from effects of chromium supplementation on physiology, feed intake and insulin related metabolism in growing pigs subjected to heat stress [4].



At the 13:00 and 16:00 time points, heat stressed pigs that received supplemental chromium had significantly lower rectal temperatures and reduced respiration rates. Overall there was a significant interaction between temperature, diet and time for rectal temperature and respiration rate, P=0.013 and P<0.001 respectively.

Swine heat stress indices demonstrate pigs may become heat stressed at a lower combination of heat and humidity than the horse.[5] However, the heat conditions demonstrated in this trial would still negatively impact the ability of a horse to cool. The chromium group exhibited both a lower rectal temperature and reduced respiratory rate. Researchers believe there is a connection between increased insulin sensitivity and improved capillary function in the skin. The result is increased blood flow, and ultimately, an increased amount of body heat dissipated.

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To learn more, visit
kemin.com/equineheatstress | kemin.com/chromiumeq
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