



MIN-AD[®] Reduces Leaky Gut During Heat Stress

University of Saskatchewan Research Trial

Heat stress induces gut damage within hours of onset and disrupts milk production, conception rates, and profitability long-term. In a recent study examining the interaction between MIN-AD and positive DCAD, MIN-AD's ability to buffer the rumen and hindgut and reduce leaky gut during heat stress was evaluated.

Trial Design

The study utilized 16 cows in a 4x4 Latin square design with 21-day periods. The four treatments included high and low DCAD, with and without MIN-AD fed at the rate of 0.46 lb./ cow/ day. All cows experienced moderate heat stress. The temperature humidity index (THI) averaged 74 during the day and 67 at night, with 15 hours of the day over a THI of 68. Total tract and hindgut barrier function were assessed with a brand new method using chromium and cobalt markers.

Results

There is a direct relationship between gut permeability and marker excretion in the urine. Higher levels of marker indicate the tight junctions between cells are damaged and the gut is leaky. Lower levels of marker indicate strong barrier function between cells and low gut permeability.

- MIN-AD decreased the amount of cobalt excreted in the urine, indicating improved hindgut barrier function.
- These results are consistent with previous trials where feeding MIN-AD increased fecal pH.



MIN-AD Improved Hindgut Barrier Function By 27% During Heat Stress

PERMEABILITY MARKER	NO MIN-AD	MIN-AD	P-value
Chromium excretion, mg (Total tract barrier function)	161	144.5	0.19
Cobalt excretion, mg (Hindgut barrier function)	125	91.5	<0.01

Takeaway



Heat Stress

Heat stress predisposes cows to ruminal and hindgut acidosis by reducing DMI, salivary buffering, and blood flow to the gut.



Leaky Gut

The hindgut is more sensitive to acidosis than the rumen. Compromised barrier function leads to leaky gut, inflammation, and immune activation.



Solution

Feed MIN-AD to stabilize ruminal and intestinal pH and manage hindgut permeability during times of stress.