

Nutritional supplements may reduce the effects of heat on dry matter intake of cattle

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During periods of hot weather grain-fed cattle, particularly *Bos taurus*, may suffer from excessive heat load (EH) resulting in economic loss. The primary method used by cattle to correct their heat balance when exposed to EH is to reduce feed intake. Feeding osmolytes such as polyols, free amino acids, and combinations of urea and methylamines to cattle may improve heat tolerance. Osmolytes help to maintain cellular water balance, thereby protecting cells and tissues from dehydration and osmotic inactivation.

Eight Angus steers (549.7 ± 25 kg), exposed to hot conditions (HOT) (32°C dry bulb temperature (DB), 66% relative humidity (RH)), were used to test the effects of adding a product (*Bos Koolus*®), a mixture of heat stress alleviating compounds including osmolytes to a feedlot diet. Steers were randomly allocated to one of two diets: Diet 1 (CON) *Bos Koolus*® free diet, and Diet 2 (BK), where *Bos Koolus*® was added at 7.5 kg/t. The diets were isocaloric and isonitrogenous (10.8 MJ DE/kg, 12% crude protein) and both contained 8.5% crude fibre. Dry matter intake (kg/hd/d) was recorded for each steer over a 12 day period. The study was replicated 4 times with 2 steers on the CON and BK diets in each replication. The steers used in the first replication were reused in the third

replication. The steers used in replication 2 were also used in replication 4. There were 28 days between each exposure to HOT conditions. The steers were housed in individual stalls (3 m x 1 m) for 8 days in a climate controlled facility, day 1 was thermoneutral (TN; 24°C DB, 70% RH), then 5 days HOT and then 2 days TN, a further 4 days were spent in individual stalls (3 m x 3 m) in outside pens.

Over the 5 days exposure to HOT the BK steers had greater ($P < 0.001$) DMI than the CON steers at 5.00 ± 0.34 and 3.65 ± 0.34 kg/hd/d, respectively. There were no differences in DMI between treatments under TN conditions. Daily DMI fell in both treatments under HOT compared to the DMI under TN conditions. However, the DMI of the BK steers did not change ($P > 0.05$) from day 1 to day 5 of HOT, while the DMI of CON continued to fall (Figure 1). Over the 5 days of HOT the DMI of the BK steers was 6.75 kg more than CON. The largest DMI reductions for CON occurred on days 3, 4 and 5 of HOT. By day 5 of HOT the DMI of the CON group was 2.8 kg/hd/d (4.91 kg/hd/d for BK steers). These data suggest that the steers fed BK were better able to tolerate the hot conditions imposed than those fed the control diet.

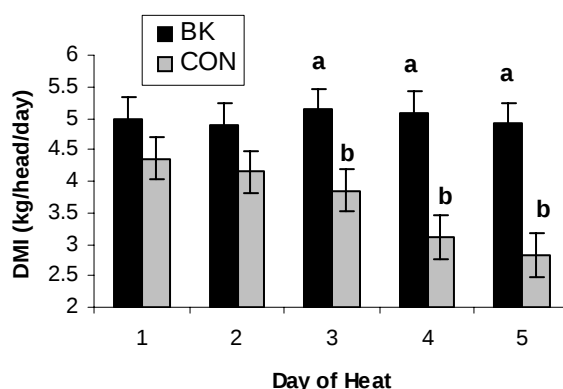


Figure 1 Dry matter intake (kg/head/day) for the *Bos Koolus*® (BK) fed steers and the control group (CON) over 5 days of exposure to hot climatic conditions (32°C dry bulb temperature, 66% relative humidity).