Technical Data

# Remarkable adaptations in the metabolism of heat stressed cow II: glucose metabolism

Cows under heat stress depend on short chain fatty acids and glucose for their energy supply. This is because the use of fat as an energy source is restricted in these cows. However, the increased use of glucose as an energy source has its effects on milk production. Glucose is the most important substrate for lactose, the milk sugar. Less glucose means less lactose and thus reduced milk production. Ruminants have a limited capacity for the digestion of starch as this is dependent on rumen microbes effectively breaking starches and sugars down during the fermentation process into fatty acids. Ruminants have to synthesize most of their glucose. The fatty acids produced during rumen fermentation are the main source of substrate for this process, however amino acids can be used as well. This also impacts milk production. Amino acids used for glucose can't be used for milk protein. Therefore you often see reduced milk protein content of the milk and increased milk urea in heat stressed cows (in addition to a reduced milk fat content). The changes in the cows' metabolism indicate how to effectively support the heat stressed cow. Smart nutritional choices can help the cow during the warm summer time.

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