

Transition Cow Troubleshooting

Ketosis treatment

Using glucose or gluconeogenic precursors to assist fresh cows with ketosis provides the energy they need, while experiencing higher than normal levels of ketone bodies in the blood associated with increased or abnormal fat metabolism.

When treating fresh cows for ketosis, it is important to treat the current metabolic disease without causing more harm. Harm can be caused by providing too much glucose support. Hyperglycemia (the condition of excess glucose in the bloodstream) has a negative impact on abomasal (the fourth chamber of the bovine stomach) motility and function which may lead to a higher incidence of displaced abomasum (DAs) in dairy cattle.

To classify the severity of ketosis, cow-side tests are available (milk, urine and blood tests). Blood tests measuring the levels of β -hydroxybutyric acid (BHBA) in the blood is currently the gold standard cow-side test. CAUTION: relying on the ability to detect ketosis by the smell of the cow's breath is not reliable. Strength of ketosis odor on the breath will not indicate the severity of ketosis. There are many people extremely sensitive to the odor of ketosis and there are others who cannot detect this odor at all. DO NOT use odor detection as a diagnostic. Determining the severity of ketosis with cow-side tests will offer guidance in choosing the best treatment option.

Utilizing a blood BHBA test is best for individual cow treatment decisions and should be avoided as a herd-based monitoring tool. When using the blood BHBA test to determine the severity of ketosis, it is important to remember the following before taking a blood sample:

- Blood samples should NOT be collected from the mammary vein. The udder extracts BHBA from the blood and will give a low or false reading.
- Blood BHBA levels in the body will increase after the consumption of feed. Sampling four to five hours after feeding will capture peak BHBA levels when performed consistently in this manner.
- Cows less than four days fresh are already likely to be hyperglycemic. Suggested use of the blood BHBA test is between four to fourteen days in milk (DIM).

Suggested ways to classify the severity of ketosis:

NORMAL

BHBA reading of < 1.2 mmol/L

MILD

100 mg/dl on milk, 15 mg/dl on urine, or BHBA reading of 1.3 to 2.3 mmol/L

MODERATE

200 mg/dl on milk, 40 mg/dl on urine, or BHBA reading of 2.4 to 3.3 mmol/L

SEVERE

>200 mg/dl on milk, 80 to 160 mg/dl on urine, or BHBA reading of >3.3 mmol/L

Suggested ketosis protocols that may reduce the risk of hyperglycemia:

MILD

Eight ounces of propylene glycol once or twice orally per day to cows. Treatment is repeated for three days as needed (monitoring for a positive test on urine, milk, or blood test). If three days of treatment does not resolve ketosis, call the herd veterinarian.

MODERATE

Fresh cow drench once daily (see example recipe below) to cows. Treatment is repeated for three days as needed (monitoring for a positive test on urine, milk, or blood test). If three days of treatment does not resolve ketosis, call the herd veterinarian.

SEVERE

250 ml of 50 percent dextrose to cows IV in the morning and 250 ml of 50 percent dextrose to cows in the evening (Approximately eight hours between treatments). By morning, if the level of ketosis has fallen to mild or moderate levels resort to those treatments. If severe ketosis does not resolve after 500 ml of IV dextrose, call the herd veterinarian.

Ketosis that occurs in the first fourteen DIM may indicate a fatty liver. Milk production in these cows is usually low and there is an increased level of endogenous steroids. Consequently, the addition of steroids is not helpful and may lead to hyperglycemia. Repeated steroid and/or IV dextrose

treatments intensify the chances of developing hypokalemia (low potassium concentration), thus causing more harm to the cow. When faced with chronic ketosis complications seek advice and assistance from the herd veterinarian.

Remember, when monitoring BHBA levels, draw and test blood prior to any ketosis treatments to eliminate any error of a false reading.

Fresh cow drench:

(Adapted from Stokes and Goff, Hoards Dairyman Sept. 10, 2001)

To five gallons of warm water, add the following:

Calcium propionate (1.0-1.5 lbs):

- Less irritating than CaCl
- Slower elevation in Ca but more sustained
- Also provides energy

KCl: 100-150 gm (0.22-0.33 lbs)

MgSO₄: 200 gm (0.44 lbs)

Sodium PO₄: 220 gm (0.5 lbs)

Other ingredients that aid in stimulation of rumen motility:

- Ground feeds (such as alfalfa meal)
- Fats
- DFM (direct feed microbials)
- Yeast and/or probiotics

It is recommended to follow the five gallon fresh cow drench solution with another five gallons of warm clean water. A total of 10 gallons may be delivered to a cow.



Courtesy of Ryan Breuer

Acknowledgements

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Funding for this project was provided by the North Central Risk Management Education Center and the USDA National Institute of Food and Agriculture.

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