

What is Sub-clinical Ketosis?

Ketosis in dairy cows occurs as a result of negative energy balance, a condition most common during the early postpartum period. During this time, milk production is increasing dramatically, while energy intake may not be adequate to sustain the higher production level. When this happens, cows metabolize body fat to meet their energy needs, resulting in increased production of ketones, a condition known as sub-clinical ketosis.

(Duffield, 2001)

The sub-clinical condition is much more common than clinical ketosis and has been associated with significant economic loss due to decreased milk production, impaired fertility, displaced abomasums and metritis. It is estimated that the incidence of sub-clinical ketosis during the first three weeks of lactation averages 40% – 60% in most herds. (Oetzel 2013, University of WI)

Did you know?

- Ketosis causes 506 lbs milk loss per affected cow.
- Each case costs approximately \$150.
- Ketosis increases the risk of impaired fertility, and displaced abomasum.

Source: Guard, Cornell University, 2008

Why Test for Sub-clinical Ketosis?

- Monitoring for sub-clinical ketosis in individual cows provides means of early detection and treatment before clinical signs appear such as a foul odor on the cow's breath.
- Monitoring at the herd level can help producers identify problems and make appropriate management decisions to correct nutritional and other ketosis related issues.
- Healthier cows lead to better milk quality and increased production, which results in higher profits.

BHB (beta-hydroxybutyrate) is one of the major ketone bodies formed during ketosis.

How can you test for Sub-clinical Ketosis?

Ketones can be monitored in blood, milk, or urine.

- The gold standard for detecting sub-clinical ketosis measures BHBA in serum (lab test).
- On-farm tests that use whole blood or milk samples have been developed offering immediate results at a lower cost.
- Most ketosis powders and urine dipsticks change color in presence of other ketones, not BHB. Therefore, they are not as specific for sub-clinical ketosis as blood and milk tests.
- Commonly used threshold values for on-farm testing of subclinical ketosis are:

Blood BHB = 1200 μ mol/L to 1400 mmol/L

Milk BHB = 100 μ mol/L to 200 mmol/L

Items to consider

- Mastitic cows and/or cows with high SCC (>1,000,000) may exhibit higher BHB levels.

Suggested Protocols: Individual Cow Management

Cows should be monitored for BHB at 2 to 14 days in milk when the incidence of sub-clinical ketosis peaks. In some cases, this period may extend to 21 days.

For best results, do not check cows for BHB level within four (4) hours after feeding.

Recommended protocol:

- Test all fresh cows once a week during the first two weeks of lactation (identifies approximately 95% of sub-clinical cows).

Alternate protocols:

- Test all fresh cows once during the second week of lactation (identifies approximately 69% – 86% of sub-clinical cows).
- Consider focusing on fresh older cows (second or greater lactation), fresh cows with body condition score > 4, or fresh cows during periods of heat stress.

Protocol for problem herds:

Herds experiencing an abnormal incidence of DA's, metritis, mastitis, weight loss, poor milk production, etc.

- Test all fresh cows weekly for the first six weeks of lactation.



Suggested Protocols: Herd Level Management

For dry cow and transition periods:

- Check 12 cows within the first two weeks of freshening. If two (2) or more cows are positive, consult with your veterinarian and/or nutritionist to evaluate herd management practices during the dry cow and transition periods.

For herd health and nutrition management:

- Check 12 cows in each feeding group quarterly. If two (2) or more cows test positive, consult with your nutritionist to evaluate herd feed rations.

Some factors that can affect the incidence of ketosis are feed bunk space, overcrowding, heat stress and transition diets.

Prevent Sub-clinical Ketosis

- Feed cows according to their nutritional needs.
- Establish a sub-clinical ketosis monitoring program for your herd.

Milk & Blood Tests for Sub-clinical Ketosis



the **PortaBHB**[™]
milk ketone test

- Simple, on-farm milk test to screen for BHB levels
- Uses milk, not urine
- Affordable and convenient

36 months room temperature stability



BHBCheck[™]
blood ketone test

- 5-second blood ketosis test
- Ergonomic shape
- Stores 450 records
- 1 year shelf life for strips stored at room temperature
- Consistent results and accurate performance

Data can be imported to a computer with BHBCheck cable.

Intended Use:

These tests are intended solely as on-farm screening tests. Consult a veterinarian before starting any treatment.

PortaCheck, Inc.
1 Whittendale Drive, Suite E
Moorestown, NJ 08057
856.231.8894
www.portacheck.com

DL0082

Rev. B0

Monitoring Sub-clinical Ketosis in Dairy Cows



On-farm Testing Solutions

PortaCheck[™], Inc.

1 Whittendale Drive, Suite E
Moorestown, NJ 08057

856.231.8894

www.portacheck.com