

### Background:

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 this production level. When this happens, cows metabolize body fat to meet their energy needs, resulting in increased production of ketones, a condition known as subclinical ketosis. This condition is much more common than clinical ketosis, and has been associated with significant economic losses due to decreased milk production, impaired fertility, displaced abomasums and metritis. Researchers have determined that the herd prevalence of subclinical ketosis is approximately 41% for the first 9 weeks of lactation (Duffield, 2001).

Subclinical ketosis can be detected by measuring the level of ketone bodies in milk, blood or urine. Beta-hydroxybutyrate (BHB) is one of the major ketone bodies formed during ketosis (Geishauser, 1998). The PortaBHB milk ketone test is a simple, on-farm test to screen for BHB levels in milk. BHB levels >200 µmol/L in milk were found to be 4 times more likely to come from cows with subclinical ketosis (Gesishauser, 2000).

### Test Chemistry:

The reagent pad on the test strip contains an enzyme that converts BHB to acetoacetate. This reaction generates hydrogen ions that reduce nitrotetrazolium blue to formazan, which is purple in color. The darker the purple color, the higher the concentration of BHB.

### Directions for Use:

1. Collect milk sample (quarter or composite).
2. Remove a test strip from vial. Close vial tightly.
3. Dip the pad of the test strip into the sample (see image).
4. Remove test strip and shake off excess milk.
5. Wait one minute and compare to color chart (see image).



### Notes:

- If the test strips or milk samples have been refrigerated, allow them to reach room temperature before testing.
- If the milk has been standing for some time, make sure to mix it thoroughly before performing the test.
- Close the strip container tightly after use. Test strips are moisture sensitive.
- This test is designed for use with milk only. Test results with other fluids have not been studied.

### Interpretation of Results:

#### BHB concentration in milk Indication:

0 – 99 µmol/L	normal (–)
100 – 199 µmol/L	questionable (+/–)
200 – 499 µmol/L	positive (+)
500+ µmol/L	positive (++)

### Storage and Handling:

- Store at 2°C – 25°C (36°F – 77°F). Store refrigerated whenever possible. Product shelf life is 1 year from the date of manufacture if stored at room temperature.
- Avoid using test strips that have discolored after extended storage.
- The reagent pad on unused test strips should be yellow.
- Keep the test strip vial tightly closed.
- Do not touch reagent pad on the test strips.

### References:

- Duffield, T. 2001. *Importance of Subclinical Ketosis in Lactating Dairy Cattle. Proc. Michigan Vet. Conf.*
- Geishauser T, Leslie K, Kelton D, Duffield T. 1998 *Evaluation of Five Cowside Tests for Use with Milk to Detect Subclinical Ketosis in Dairy Cows. J. Dairy Sci 81:438-443*
- Geishauser T, Leslie K, Tenhag J, Bashiri A. 2000. *Evaluation of Eight Cowside Ketone Tests in Milk for Detection of Subclinical Ketosis in Dairy Cows. J. Dairy Sci 83:296-299*

Manufactured in the USA for:

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