Suggested Protocols: Glucose Testing

- Check 12 cows from each feeding group as a random sampling size.
- Obtain a small amount of whole blood from the caudal vein, 1/2 mL is more than enough.
- After calibrating your meter, insert a BHBCheck™ Plus Glucose test strip into your meter. Once it is ready, apply 1 drop of whole blood from the syringe to the tip of the test strip.
- Record your results and share with or compare to your veterinarian's suggested ranges for blood glucose.

Herd Management

- Be sure to avoid over-conditioning dry cows.
- Ensure adequate feed bunk spacing for close-up and fresh cows.
- Avoid overcrowding, heat stress, and unnecessary stress during the transition and fresh periods.
- Discuss ketosis and hypo/hyperglycemia incidence in your herd with your veterinarian.
- Test fresh cows for BHB and glucose levels.

Test for Glucose

BHBCheck™ Plus
blood ketone & glucose test system

- Easy-to-use cow-side test.
- Tests for both BHB and Glucose in whole blood—no need to send samples to the laboratory.
- Results in 5 seconds (BHB) and 7 seconds (glucose).
- Blood testing for both BHB and glucose are gold standard as opposed to less accurate urine dipsticks or milk powders.

Intended Use:
This test is intended solely as an on-farm screening test. Consult a veterinarian before starting any treatment.

DL0130 Rev A0

Monitoring Whole Blood Glucose in Your Herd

PortaCheck®
On-Farm Testing Solutions

Your Partner in Milk Quality and Animal Health

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Moorestown, NJ 08057
856.231.8894
www.portacheck.com

What is Glucose?

Glucose is an essential nutrient that provides energy for functions in major cells, tissues, red blood cells, and the mammary gland. In cows, glucose is a product of carbohydrate digestion. Rumen microorganisms digest carbs into glucose, and glucose is rapidly fermented to volatile fatty acids (VFA). VFA are oxidized for energy in the liver using a process called gluconeogenesis. During the early lactation period after calving, **the mammary gland requires an extreme amount of glucose which can send cows into a state of negative energy balance** (ketosis) since they often cannot consume enough feed to fulfill their bodies' glucose needs.

Ketosis occurs when cows metabolize body fat to meet their bodies' energy needs of postpartum milk production. Metabolism of body fat results in an increased production of **βeta-hydroxybutyrate (BHB)** and other ketone bodies that can be detected in bodily fluids like blood and milk. In addition to BHB testing, glucose testing can help differentiate between Type I and Type II Ketosis:

Type I: high-yielding cow can't produce enough glucose (hypoglycemic-hypoinsulinemic)

Type II: over-conditioned "fat" dry cow, fatty liver (hyperglycemic-hyperinsulinemic)

Why Test for Glucose?

It is important to know whether or not your cow is in a hypo-, normo-, or hyperglycemic state. Glucose levels can affect a cow's metabolism and health. Furthermore, **glucose can be read alongside BHB levels** to determine if a cow is in a state of sub-clinical or clinical ketosis and for treatment determination upon discussion with your veterinarian.

Did You Know?

Glucose is a part of a cow's metabolic profile and can be indicative of future fertility and health as it directly effects two (2) essential processes postpartum: restoration of ovarian cyclicity and uterine involution.

When to Test?

Test for glucose within the weeks prior to and following calving. During this time, glucose levels can fluctuate. In the weeks following calving, milk production will approach and/or reach its highest point which may have an effect on glucose or BHB levels due to energy imbalance. A cow will often expend more energy than she can take in, resulting in a negative energy balance.

- Test blood glucose alongside BHB.
- Test after milking but before eating.
- Test cows that appear to be sick, off feed, depressed, or having low milk production.

Glucose Levels

It is important that you consult with your veterinarian to establish an ideal range for glucose levels in your herd. Below is an example range:

Hypoglycemic: <40 mg/dL
Normoglycemic: 44 – 78 mg/dL
Hyperglycemic: >80 mg/dL

Hypoglycemic indicates low glucose levels and hyperglycemic indicates high glucose levels.