

Navan Veterinary Services  
**January 2015 Newsletter**

Ketosis Monitoring – What are your options?

With the recent introduction on December 1st of the Ketoscreen test from DHI (see Information Sheet on next page), it is timely to discuss ketosis, its effects and how to test and monitor it.

**What is Ketosis?** Primary ketosis, a metabolic disease of negative energy balance, occurs most frequently in the first two weeks of lactation. The cow cannot mobilize enough glucose to keep up with the demand of milk production. So, the body begins to mobilize its store of fat leading to increased ketones. Even secondary ketosis, which occurs after the onset of another disease, will usually occur within the first 60 days of milk. Impacts of Ketosis on the cow includes reduced milk yield, increased risk of other health disorders (milk fever, metritis, mastitis, reduced reproductive efficiency) and increased likelihood of culling.

**When should you be testing your cows on the farm?** Cows should be tested on a weekly basis and include all cows less than 2 weeks in milk.

**What are your testing options?**

Test			Comments
Individual Cow Monitoring			
Ketostix	Urine	Aceto-actetate	Not good at detecting subclinical Normal ≤ trace Subclinical ≥ small Clinical > small
Keto-Test	Milk	BHBA	Normal <100 µmol/L Subclinical ≥100 µmol/L Clinical ≥ 200 µmol/L
BHBA meter	Blood	BHBA	Normal < 1.4mmol/L Subclinical > 1.4mmol/L Clinical ≥ 3 mmol/L
Herd Screening			
NEFAs	Blood	NEFAs	- pre-fresh monitoring (<7 days before calving) for negative energy balance - useful in evaluating dry cow/transition diets - predictor of metabolic issues as a fresh cow
DHI Ketoscreen	Milk	BHBA	Negative < 0.15mmol/L (equivalent to 150 µmol/L) Positive ≥ 0.15 mmol/L - Whole herd gets tested; herd reports on 5-21 DIM and 22-42 DIM; cow reports on cows 5-90DIM - Complements on-farm monitoring (not frequent enough to monitor all fresh cows) - Helps with evaluating herd prevalence and ration decisions

\* Note that units of measure are different for each test, dependant on the fluid being measured, how the test was developed and the limitations of those tests. Be sure to interpret the results based on the test you are using. \*

**How can we minimize Ketosis?** Before cows calve, maintaining feed intake in late gestation is key as well as not allowing cows to be over-conditioned during late lactation and in the dry period. Ideally, a cow's body condition score (BCS) should not increase in the dry period. Cows with a body condition greater than 4 are at higher risk of fatty liver and ketosis. Dry matter intakes (DMI) are critical and should be monitored. Too much DMI, especially in the far off period, can cause liver problems and ketosis in fresh cows. Ideally DMI should be 1.85% of body weight in the far off group – about 13 kg. Close up dry cow's intake should be 1.65% - about 11.5 kg. Remember, more is not better.

From Canwest DHI (used with permission):

### **Ketosis/BHB Testing**

Ketosis is a common metabolic disease that affects cows in early lactation. Affected cows may exhibit clear clinical signs of ketosis (off feed, production drop, firm dry feces, occasional nervous signs) but very often, signs will not be noticeable and ketosis will be at the subclinical level. Studies have shown that subclinical ketosis results in lower milk production, higher incidence of mastitis and metabolic diseases as well as a negative impact on reproduction, all adding up to significant cost.

The only way to monitor subclinical ketosis in the herd is to test for it. On farm tests (blood, urine, milk) have been available for years and now through the DHI lab.

Although individual cow treatment of ketosis is possible and usually effective, prevention, through optimal management of the dry and early lactation period is by far most economical and should be a priority for all herds.

### **How does the DHI test work?**

The Ketoscreen test from DHI uses the regularly collected DHI samples. It is therefore very easy and inexpensive. The test measures the level of beta-hydroxybutyrate (BHB), a ketone body, which when found in high level is an indication of the risk for ketosis. Results from the DHI milk test have been shown to correlate well with on farm BHB tests.

Since the first few weeks of lactation is the critical time for ketosis, herd results are reported in 2 categories; 5-21 Days in Milk and 22-42 Days in Milk. The percentage of cows with elevated BHB levels and considered 'Positive' for ketosis is reported, along with a herd trend of the last 10 DHI tests, as well as 3 month period trends. Individual results of cows between 5-90 DIM are also reported.

### **How can the DHI ketosis test help?**

As the name implies, the Ketoscreen service from DHI is meant to be a herd screening tool that provides an overview and trend of the ketosis status and risk in the herd. Results can then be used to help assess and monitor the dry and early lactation periods, with a focus on prevention and reduction of ketosis. Without regular measuring, it is difficult to monitor and make improvements.

As a general indication:

<5% Positive	Low-Very Good
5-10%	Low-Good
10-20%	Average-Improvements Possible
20-40%	High
>40%	Very High

It is important to remember that due to the DHI testing frequency, many cows will not be in the critical early lactation period (5-15 DIM) where testing and treatment for ketosis is ideal. Therefore Ketoscreen should not be used to replace on-farm ketosis monitoring programs, but rather as a herd indicator to complement routine on farm cow testing.

Producers should work closely with their advisor(s) to develop their ketosis prevention, monitoring and treatment program as well as test results' interpretation.