

nova **Vet**
Field Analyzer for
Blood Ketone Monitoring



Measures blood beta-hydroxybutyrate (BHBA),
the gold standard for detecting subclinical ketosis

Ready-to-use, disposable biosensor
No calibration required

Simple test procedure in the field

Accurate, quantitative blood ketone results
in 10 seconds

Companion glucose testing can be performed
on the same meter

nova
biomedical

Field Analyzer For Blood Ketone Monitoring in Dairy Cattle

Clinical Ketosis in Early Lactation Dairy Cattle: Economic Loss to Dairy Farmers

The transition of dairy cows through calving and commencement of lactation is a critical time and is a strong determinant of the health and performance of the cow through the full lactation period. All transition cows are at risk of clinical ketosis, characterized by partial anorexia, poor appetite and signs of nervous dysfunction including abnormal licking, poor coordination, abnormal gait and bellowing. Clinical ketosis causes economic loss to the dairy farmer due to:

- Decreased milk production, poor milk quality.
- Mastitis, risk of displaced abomasum.
- Metritis, impaired fertility.
- Increased herd removals and treatment costs.

Early Detection of Subclinical Ketosis Can Prevent Economic Loss

Subclinical ketosis is defined as abnormal concentrations of circulating ketones (primarily beta-hydroxybutyrate) in the absence of clinical signs of ketosis. Early detection of ketosis in its subclinical stage enables introduction of feeding strategies to prevent clinical ketosis, cow malaise and economic loss to the dairy producer.



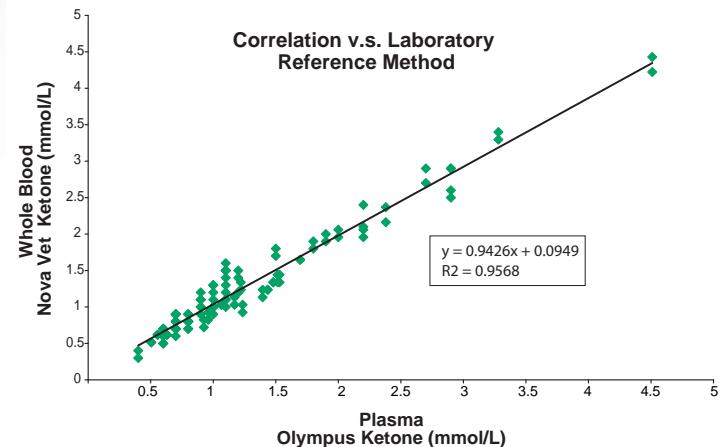
Nova Vet Measures Blood Beta-Hydroxybutyrate (BHBA), the Gold Standard for Detecting Subclinical Ketosis

Blood BHBA is the gold standard for detecting subclinical ketosis in dairy cattle.^{1,2,3} A blood BHBA concentration of 1.2 - 1.4 mmol/L is an important threshold for detection of subclinical ketosis and for predicting health risk in early lactation cows.^{2, 4, 5, 6}

- Nova Vet's BHBA biosensors provide accurate analysis in this subclinical range.
- Blood BHBA offers better sensitivity and specificity for ketosis than urine or milk ketone testing.

Accurate, Quantitative BHBA Results

Nova Vet provides accuracy comparable to reference laboratory testing for BHBA. Quantitative BHBA results eliminate subjective interpretation of semi-quantitative color charts used in milk or urine ketone testing.



Field Analyzer For Blood Ketone Monitoring in Dairy Cattle

Simple Test Procedure in the Field

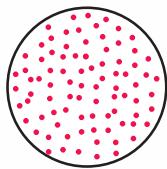
1. A very small drop of blood is obtained from the tail vein using a 20 or 22 gauge needle and vacuum tube.
2. A pre-calibrated biosensor is inserted into the meter. No calibration coding step is required for the meter or the biosensor.
3. A tiny drop of blood (0.8 microliters) is added to the end of the strip. BHBA results are ready in 10 seconds.

Significant Cost Savings Versus Laboratory Testing

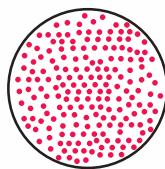
- Nova Vet BHBA is more cost effective than laboratory testing.
- Sample centrifugation, freezing of serum or plasma, and shipping of frozen materials to the laboratory are eliminated.
- BHBA results are available immediately enabling earlier herd intervention.

Nova Vet Corrects Ketone and Glucose Results for Hematocrit Levels of Dairy Cattle

Blood hematocrit (Hct) levels of dairy cattle differ significantly from human levels and can vary during lactation, by sampling site, season, and breed.^{7,8} Devices that are designed for measuring ketones in human blood can give erroneous results on bovine blood due to the lower hematocrit of bovine blood. Nova Vet measures the hematocrit level of each blood sample and corrects the ketone or glucose results for the actual hematocrit level of the sample. Accurate results are reported throughout the hematocrit range encountered in dairy cattle.



34% Hct



45% Hct

Normal Hct Level in Cows

Normal Hct Level in Humans

Companion Glucose Testing on the Same Meter

Treatment of ketosis is aimed at establishing normoglycemia and reducing blood ketone concentrations. Bolus administration of dextrose solution is a common therapy. Treating sick cows with IV glucose can have negative consequences and should be avoided if the cow's glucose status is uncertain.

- Nova Vet glucose testing can be used to guide clinical decisions regarding IV glucose therapy.
- Glucose testing is performed using the same meter with separate Nova Vet glucose biosensor.
- Nova Vet glucose testing is as easy as ketone testing. Simply insert a glucose biosensor and the meter automatically converts to glucose measuring mode.

Additional Nova Vet Features

- Large results display is easy to read in a darkened setting.
- Meter non-volatile memory stores up to 400 test results.
- Two levels of quality control check solutions provide verification of meter accuracy.
- Rugged carrying case provides convenient transport and storage of meter, glucose and ketone test strips, and quality control solutions.



Nova Vet with high impact plastic carry case.

Optimize Herd Management

Nova Vet provides simple, accurate and economical detection of ketosis in a herd. Herd management is improved when compared to relying on the dairy producer's subjective perception of clinical signs of ketosis, or less sensitive and specific milk or urine ketone tests. Herd management benefits of Nova Vet BHBA testing include:

- Early identification and monitoring of changes in transition cow performance.
- Protection of herd milk production and quality.
- Quantification of herd prevalence of ketosis.
- Avoidance of treatment costs for clinical ketosis.
- Monitoring and management of herd feeding program.
- Protection of herd reproductive performance.
- Reduction in herd culling rates.



Test Individual At-Risk Cattle

Nova Vet BHBA testing can be targeted for potential problem or high-risk cows. Individual testing of at-risk cows can identify ketosis early in the disease process so that more severe clinical disease can be avoided with clinical intervention.

From Nova Biomedical

Nova Biomedical is the world leader in whole blood glucose and ketone meters for testing on hospitalized patients. Over 200 published studies have proven the accuracy breakthrough of Nova's patented StatStrip Glucose/Ketone hospital monitoring technology. Nova Vet applies this same technology and exceptional accuracy to dairy cattle testing for ketones and glucose.

Specifications



nova **Vet**

Nova Vet Meter

Weight: 0.2 lbs (75 g)

Size: 3.6 in x 2.3 in x 0.9 in
(91 mm x 58 mm x 23 mm)

Data Storage: 400 tests total (FIFO)

Battery Information: 3V Li Button Battery

References

1. Carrier, J. et al. (2004). Evaluation and use of three cowside tests for detection of subclinical ketosis in early postpartum cows. *Journal of Dairy Science*, 37(11), 3725-35.
2. Oetzel, G. R. (2007). Herd-level ketosis – diagnosis and risk factors. Proceedings from American Association of Bovine Practitioners 40th Annual Conference: *Preconference Seminar 7C: Dairy Herd Problem Investigation Strategies: Transition Cow Troubleshooting*, Vancouver, BC, Canada. Retrieved from <http://www.vetmed.wisc.edu/dms/fapm/fapmtools/2nutr/ketosis.pdf>
3. Townsend J. (2011). Cowside tests for monitoring metabolic disease. Proceedings from: *Tri-State Dairy Nutrition Conference*, Ft Wayne, IN. Retrieved from <http://tristatedairy.osu.edu/Proceedings%202011/Townsend%20paper.pdf>
4. Ketosis in Cattle: Introduction (Acetonemia, Ketonemia). (2013). In *The Merck Veterinary Manual*. Retrieved from www.merckvetmanual.com/mvm/htm/bc/80900.htm
5. Duffield, T. F. et al. (2009). Impact of hyperketonemia in early lactation dairy cows on health and production. *Journal of Dairy Science*, 92(2), 571-580.
6. LeBlanc, S. (2010). Monitoring metabolic health of dairy cattle in the transition period. *Journal of Reproduction and Development*, 56(Suppl), 29-35.
7. Lane, A. G. et al. (1969). Relationship of hematocrit values to selected physiological conditions in dairy cattle. *Journal of Animal Science*, 28,508-11.
8. Kirk, W. G. et al. (1970). Blood components of range cattle: Phosphorus, calcium, hemoglobin, and hematocrit. *Journal of Range Management*, 23.

nova
biomedical
novabiomedical.com



Nova Biomedical Headquarters: 200 Prospect St., Waltham, MA 02454 U.S.A.: +1-781-894-0800 800-458-5813 FAX: +1-781-894-5915 Int'l FAX: +1-781-899-0417 e-mail: info@novabio.com
Nova Biomedical Benelux B.V.: Europalaan 4, 5232 BC, Den Bosch, The Netherlands, TEL: +31(0)733032701 e-mail: NL-info@novabio.com or BE-info@novabio.com
Nova Biomedical Brasil: Rua Massena, 107, Jardim Canadá, Nova Lima - MG, CEP: 34007-746 Brasil, TEL: +55-31-3360-2500, email: BR-info@novabio.com
Nova Biomedical Canada, Ltd: 17 – 2900 Argentia Road, Mississauga, Ontario L5N 7X9 Canada, TEL: +1-905-567-7700 800-263-5999 FAX: +1-905-567-5496 e-mail: CA-info@novabio.com
Nova Biomedical France: Parc Technopolis - Bât. Sigma 3 Avenue du Canada 91940 Les Ulis Courtabœuf, France, TEL: +33-1-64 86 11 74 FAX: +33-1-64 46 24 03 e-mail: FR-info@novabio.com
Nova Biomedical GmbH, Deutschland: Hessenring 13 A, Geb. 6, 64546 Mörfelden-Walldorf, Germany, TEL: +49-6105 4505-0 FAX: +49-6105 4505-37 e-mail: DE-info@novabio.com
Nova Biomedical Iberia, S.L.: c/Vic 17, Plant 3A 08173 Sant Cugat del Vallès, Barcelona, Spain, TEL: +34 935531173 e-mail: ES-info@novabio.com or PT-info@novabio.com
Nova Biomedical Italia Srl: Via Como 19, 20045 Lainate, (MI), TEL: +39-02-87070041 FAX: +39-02-87071482 e-mail: IT-info@novabio.com
Nova Biomedical K.K. Japan: Harumi Island Triton Square Office Tower X 7F, 1-8-10 Harumi, Chuo-ku, Tokyo 104-6007, Japan TEL: 03-5144-4144 FAX: 03-5144-4177 e-mail: jp-info@novabio.com
Nova Biomedical Schweiz GmbH: Herstrasse 7, 8048 Zürich, Switzerland, TEL: +41-41-521-6655 FAX: +41-41-521-6656 e-mail: CH-info@novabio.com
Nova Biomedical U.K.: Innovation House, Aston Lane South, Runcorn, Cheshire WA7 3FY United Kingdom, TEL: +44-1928 790400 FAX: +44-1928 796792 e-mail: UK-info@novabio.com