WellionVet BELUA
Blood glucose & ketones
For safety and accuracy
A first step in dealing with diabetic pets is to understand the disease. The more you know about diabetes the better you will be able to take care about the health of your pet together with your veterinarian. It is important to know that the symptoms of people and pets with diabetes are similar, but for the measurement of blood glucose you will need different, specially calibrated testing devices.

6 out of 500 cats and 3 out of 500 dogs are diabetics.

Different distribution of glucose in plasma and red blood cells.

WHY A BLOOD GLUCOSE METER ESPECIALLY FOR PETS?

Different size of the red blood cells.
Diabetes mellitus in animals

**TYPE 1**

*Immune-mediated destruction of the beta cells of the pancreas*

*Absolute insulin deficiency*

*Frequent in dogs*

**TYPE 2**

*Insulin resistance and dysfunction of the pancreatic beta cells*

*Frequent in cats*

**TYPE 3**

*Secondary diabetes*

*In dogs and cats*

- Triggered by other diseases (hyperthyroidism, acromegaly, hyperadrenocorticism,...), or medications (corticosteroids, progestagens) or pancreatic tumors.
- There is an increased risk for not-neuterend female dogs.

Additional risk factor: chronic inflammation of the pancreas
Diabetes can be different from pet to pet. For this reason it is important to recognize related symptoms at an early stage and to discuss the findings with the veterinarian. In case of suspicion of diabetes further medical examinations have to be performed.

In case of suspicion of ketoacidosis – a severe complication of diabetes – your veterinarian can check the concentration of ketones in the blood of your pet by means of the WellionVet BELUA meter. The measurements can be performed in both capillary and venous blood.

If diabetes is detected at an early stage, health-related short- and longterm complications can be counteracted.

Regular blood glucose measurements play an important role in the successful treatment of diabetic animals. The blood glucose test should be performed under familiar conditions at home. In this case stress is reduced and your veterinarian will receive accurate data for the adaption of the diabetes therapy plan.

The WellionVet BELUA testing device has been developed especially for cats and dogs. For precise blood glucose and ketone results, special test strips and special code chips, dedicated to each species, are used.
Does your pet suffer from diabetes?

**Recognize the symptoms!**

1. Increased thirst
2. Frequent urination
3. Excessive hunger
4. Lack of energy
5. Weight loss in spite of increased food intake

*WellionVet BELUA - for safety and accuracy*
Different calibration of blood glucose meters of humans and animals

If a blood glucose meter calibrated on human blood is used for a cat or a dog, this can lead to inaccurate results by showing under- or overestimated readings.

A blood glucose meter for humans is calibrated for human blood parameters and evaluates the human blood glucose. The result differs from the one you get for cats and dogs. You need a special calibrated blood glucose meter for animals to get a reliable blood glucose value for your pet.

Your WellionVet BELUA blood glucose meter respects all these differences and is calibrated specially for cats and dogs.
The distribution of glucose in blood from humans and animals is different. On the one hand humans and animals have a different hematocrit value (human: 37-50%, dog: 37-55%, cat 27-47%), meaning that the number of red blood cells differs.

There is also a significant difference in the size of red blood cells of different species, therefore the percentage of glucose in plasma is diverse. In humans the part of glucose inside the red blood cells is about 42%, whereas about 58% of the glucose is situated in the plasma.

In cats (less and smaller red blood cells) the distribution of glucose is only about 7% inside the red blood cells and the major part of about 93% can be found in the plasma.
Safety and accuracy – these claims are met by the innovative WellionVet BELUA blood glucose and ketone measurement device.

The WellionVet BELUA device is specially developed for dogs and cats. Dedicated code chips are used for precise blood glucose and ketone measurement which can be easily and quickly replaced.

The easy operation of the WellionVet BELUA device makes life easier with your diabetic pet. Big digits, easy readable numbers on the backlit screen and the illuminated teststrip port also contribute to the convenience in use.

Used WellionVet BELUA teststrips can be easily and quickly removed by means of the eject button.

6 alarms can be set individually and will remind you to perform regular blood glucose tests bringing routine for your pet in diabetes therapy.

A successful diabetes therapy can be achieved by following the treatment plan of your pet, regular blood glucose monitoring and supervision by the veterinarian.
WellionVet BELUA

- Specially calibrated for cats and dogs
- Easy handling
- Backlit display, illuminated teststrip port
- Measures blood glucose and ketones
- Fresh capillary or venous blood
- Big, easy readable digits
- Eject button
- 6 adjustable alarms

**Blood Glucose**
- Glu cat code chip
- Glu dog code chip
- 6 seconds testing time
- 500 results in memory
- 0.8 μl blood
- 1000 tests battery life
- 2x CR2032 batteries

**Ketone**
- Ket cat code chip
- Ket dog code chip
- 8 seconds testing time
- 100 results in memory
- 0.8 μl blood

WellionVet BELUA – for safety and accuracy
Simple steps to get the result

1. Insert appropriate code chip (when opening a new teststrip pack always use the new chip)

2. Insert teststrip

3. Check the code, then let blood be sucked up by the tip of the teststrip

4. The control window has to be completely filled with blood

5. In only a few seconds to a safe and accurate test result
**Correct blood sampling in animals**

**Where to get blood?**

Consult your veterinarian in terms of correct performance of a blood glucose test of your pet. You will get advice which sites are best dedicated for blood sampling. You can use the following sites for getting a capillary blood sample for the blood glucose test:

- Inner part of the ear
- Paw pads
- Inner side of the lips

**Tips and tricks for blood sampling**

In some cases it takes some time until you get a sufficient blood sample.

Here are some tips how to get an optimal blood sample:

- Warm the pricking site with a warm towel prior to the test.
- Gently rub the pricking site

The following tips will help your pet to have a positive feeling during the procedure of blood glucose testing:

- Perform the blood glucose test under relaxed and quiet conditions.
- Feed a "reward" after the procedure.
- Get your pet accustomed to the quiet "click" of the safety lancet.

Use of special safety lancets for single use ensures safe and gentle capillary blood sampling.

Wellion Safety Lancets 23G – Safety lancets for single-use
<table>
<thead>
<tr>
<th>Testsystem specially calibrated for</th>
<th>Cat, dog, cow</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood glucose</strong></td>
<td></td>
</tr>
<tr>
<td>Species &amp; code chip</td>
<td>Dog (blue code chip), Cat (green code chip), Cow (orange code chip)</td>
</tr>
<tr>
<td>Enzyme &amp; blood sample</td>
<td>GDH-FAD, Capillary &amp; venous blood</td>
</tr>
<tr>
<td>Testing time</td>
<td>6 seconds</td>
</tr>
<tr>
<td>Sample size</td>
<td>0,8 μl</td>
</tr>
<tr>
<td><strong>Ketones</strong></td>
<td></td>
</tr>
<tr>
<td>Teststrip</td>
<td>WellionVet BELUA KETONES dog &amp; cat, KETONES cow</td>
</tr>
<tr>
<td>Species &amp; code chip</td>
<td>Dog (blue code chip), Cat (green code chip), Cow (orange code chip)</td>
</tr>
<tr>
<td>Enzyme &amp; blood sample</td>
<td>HBDH, Capillary &amp; venous, HBDH, Capillary &amp; venous</td>
</tr>
<tr>
<td>Testing time</td>
<td>8 seconds, 8 seconds</td>
</tr>
<tr>
<td>Sample size</td>
<td>0,8 μl blood, 0,8 μl blood</td>
</tr>
<tr>
<td>Capillary blood sampling by means of</td>
<td>Wellion Safetylancet 23G (blue), Wellion Safetylancet 18G (pink)</td>
</tr>
<tr>
<td>Simple operation</td>
<td>✔️</td>
</tr>
<tr>
<td>Backlit display</td>
<td>✔️ Backlit display, illuminated teststrip port</td>
</tr>
<tr>
<td>Big digits</td>
<td>✔️</td>
</tr>
<tr>
<td>Eject button</td>
<td>✔️</td>
</tr>
<tr>
<td>Alarms</td>
<td>6 individually adjustable alarms</td>
</tr>
<tr>
<td>Results in memory</td>
<td>500 glucose results, 100 ketone results</td>
</tr>
<tr>
<td>Battery</td>
<td>2x CR2032</td>
</tr>
</tbody>
</table>
**WellionVet GLUCO CALEA**

**Blood glucose**

<table>
<thead>
<tr>
<th>Cat, dog, horse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dog (blue code chip)</td>
</tr>
<tr>
<td>Cat (green code chip)</td>
</tr>
<tr>
<td>Horse (red code chip)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GOD: Glucose oxidase (GOD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capillary blood</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5 seconds</th>
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</table>

<table>
<thead>
<tr>
<th>0.5 μl blood</th>
</tr>
</thead>
</table>

- Wellion Safetylancet 23G (blue)
- EASY: Easy use
- Backlit display
- 4 individually adjustable alarms
- 300 glucose results
- 1x CR2032 battery
Blood glucose of animals can be influenced by various factors.

The stress level of cats increases quickly under unusual situations like transport to the veterinarian or medical examinations. Stress-induced hyperglycemia is detected by high blood glucose levels. Therefore the diagnosis of diabetes cannot be made by just one single elevated blood glucose value.

Elevated blood glucose levels in dogs and cats can also occur together with diverse concomitant conditions like other hormonal diseases, chronic inflammation of the pancreas, some tumors, after traumas, neurological diseases or through some medication like e.g. longterm administration of glucocorticoids.

When performing the blood glucose test of your pet at home under relaxed usual conditions, the results are much more reliable and cause less stress for the pet and the owner.

In order to be able to control the disease you have to check the blood sugar level on a regular base. These test results will lead from time to time to an adjustment of the treatment plan of your pet. The accurate results of the WellionVet blood measurement device are perfectly suitable for the evaluation through the veterinarian.

Active dealing with diabetes, blood glucose monitoring at home under usual conditions and the competent care of your veterinarian contribute to a successful management of diabetes of your pet.
**What’s my task?**

- Use exclusively WellionVet blood glucose meters which are specially developed and calibrated for animals
- Test the blood glucose of your pet regularly according to the advice of your veterinarian
- Note the blood glucose results, the amount of food, the dose of insulin and the testing time in the Wellion logbook
- Inform your veterinarian if the test result is outside the range given by the veterinarian
- If the tested blood glucose is below 70mg/dl (3.9 mmol/l), test again to detect an upcoming hypoglycemia. You can treat hypoglycemia quickly by administration of Invertsugar Syrup
- Feed only the amounts of food recommended by the veterinarian
- Inform your veterinarian when you are aware of a change in behaviour of your pet

**What to avoid:**

- Do not use blood glucose meters which are calibrated for humans
- Do not reduce or increase the amount of food without consulting your veterinarian first
- Do not inject insulin which was not stored appropriately
- Do not change the dose of insulin without consulting your veterinarian first
- If your pet does not eat or vomits contact your veterinarian immediately

**INVERTSUGAR SYRUP**
- Wellion GOLD
- Wellion 1Shot

**About 40g**  **About 15g**

**Liquid source of energy**

**QUICK & LONG-LASTING**
The WellionVet GLUCO CALEA blood glucose meter is specially developed for dogs, cats and horses and calibrated for the blood composition and properties of the particular species. 3 dedicated code chips are used for precise blood glucose testing which can be changed easy and quick.

EASY OPERATION
BIG, EASY READABLE DIGITS
EJECT BUTTON
BACKLIT DISPLAY
HYPO- AND HYPERALARM
4 ADJUSTABLE ALARMS
5 SECONDS TESTING TIME
300 RESULTS IN MEMORY
0,5 μl BLOOD

GOD – capillary blood
Blood glucose test from capillary blood, gently and safe blood sampling by means of the Wellion Safetylancets

0,5 μl blood sample
The very small required blood sample of 0,5 μl makes the WellionVet GLUCO CALEA ideal for home-monitoring

5 seconds testing time
Quick result

WellionVet GLUCO CALEA - For safety and accuracy
Blood glucose test in horses

EMS – equine metabolic syndrome

Risk factors

- Genetic predisposition
- Glucocorticoids
- Obese horses which get too much of high-energy food and do not have enough physical activity

PERFORMANCE DIAGNOSTICS in sport- and race horses
Blood glucose monitoring before and after the training or the race
The measurement of β-Hydroxybutyrate (BHB), the predominant ketone body in blood, is the GOLD STANDARD diagnostic test for detection of subclinical ketosis.

The determination of BHB with a device especially calibrated for cows, allows a diagnosis even prior to the development of clinical ketosis with visible signs of disease. As even animals who suffer from subclinical ketosis show already a decrease in performance and have an increased risk for other diseases due to the impaired immune system, the detection and the treatment of ketosis in the subclinical state is of highest importance!

Disease prevention is much better than treatment of obvious ill cows!

### Benefits of testing with the WellionVet BELUA device

- Easy operation for testing ketones
- Calibrated especially for the blood composition and blood properties of dairy cows
- Minimally invasive blood sampling through collection of capillary blood → the small blood sample of 0.8 μl can be collected very easily by means of Safetylancets for single use
- Very fast: test result directly in the stable after only 8 seconds
- Objective results: exact value in numbers

The premature detection of elevated ketone concentrations allows an early efficient treatment and will lead therefore to a higher production performance and higher income!
Regular monitoring of the energy metabolism of dairy cows pays off!

A regular and complete check of all cows after calving is important, to detect subclinical ketosis at an early stage, to take immediate measures and therefore to achieve a higher output. Regular testing of the ketone concentration of all cows after calving is the base of a successful monitoring of the energy metabolism!

Optimized herd monitoring through multiple testing of every cow in the first 3 weeks after calving. Test at least 2 times per week to guarantee the optimal economic success for your herd. Repeated measurements increase the probability to detect subclinical ketotic animals rapidly.

A proactive herd monitoring program is an important and valuable tool: routine screening of every cow after calving for premature detection of
- herd problems as well as single animal problems during early lactation
- and taking measures in-time and initiating improvements in herd management!

Improvement of herd health, animal welfare and performance!
WellionVet BELUA

**The ketone measurement device for cows**

- Safe and accurate measurement of ketone bodies in dairy cows
- Specially calibrated for the blood composition and blood properties of dairy cows!

The WellionVet BELUA device is specially developed for dairy cows. The easy operation and measurement of the concentration of ketone bodies directly at the animal allows a precise result in only **a few seconds in the stable!**

- **SPECIALY CALIBRATED FOR COWS**
- **FRESH CAPILLARY OR VENOUS BLOOD**
- **BACKLIT DISPLAY,**
  **ILLUMINATED TESTSTRIP PORT**
- **BIG, EASY READABLE DIGITS**
- **EJECT BUTTON**
- **8 SECONDS TESTING TIME**
- **100 RESULTS IN MEMORY**
- **0,8 μl BLOOD SAMPLE**
The WellionVet BELUA device is calibrated especially for dairy cows by means of a species-specific code chip and gives therefore exact and reliable results!

1. Insert the dedicated code chip (always use the new chip with opening of every new box of teststrips).

2. Unwrap teststrip and insert it.
   The WellionVet Ketone teststrips are single-foiled. Every new teststrip is fresh and uncontaminated.

3. Check the code, then let the blood drop be sucked into the tip of the teststrip.

4. The control window has to be completely filled with blood.

5. A safe and accurate ketone result within a few seconds directly in the stable.

**Blood sampling**

The diagnosis of ketosis can be made by measurement in venous or capillary blood. A drop of capillary blood can be gained e.g. at the region of the hairless exterior vulva.

The use of Wellion Safetylancets 18G allows easy and safe collection of capillary blood – a quick, reliable and accurate result directly at the animal.
Ketosis – a serious metabolic disease of dairy cows

Ketosis = metabolic state using fatty acids as a source of energy

If the body faces a condition of a lack of energy it will adapt to it by a mobilisation of its lipid reserves as a normal adaptive response. Free fatty acids are used to generate energy. During this process ketone bodies are formed which accumulate in the body and their concentration can be measured in blood.

The energy demand of high performance dairy cows increases rapidly after calving at the onset of lactation and cannot be met by food intake.

High performance dairy cows run through a period of negative energy balance during early lactation which leads to an impairment of the immune system.

The transition period – a time of extraordinary importance for the management of dairy cows! The last 3 weeks before calving until 3 weeks after calving is a critical period of time for the health, production and profitability of dairy cows.

Approximately 75% of diseases in dairy cows occur within the first month after calving\(^1\). 30-50% of dairy cows come down with a metabolic or infectious disease during the transition period.\(^2\)

\(^1\) LEBLANC et al, 2006  \(^2\) LEBLANC, 2010
The **subclinical ketosis** is “invisible” and can only be detected by the measurement of the ketone bodies. The characteristics:
- Increased concentration of ketone bodies in blood
- No visible symptoms of a disease
- But already decreased performance, fertility disorders and increased risk for other diseases!

→ The production performance can therefore be decreased without any externally apparent symptoms of the animal!

Every third dairy cow is affected by subclinical ketosis during early lactation! With severe consequences:
- Decreased milk production
- Impaired reproductive performance
- Increased risk of displaced abomasum
- Impairment of the immune system – higher risk of infectious diseases
- Increased odds of claw diseases
- Increased risk of early culling – total loss of the animal
- Higher risk of clinical ketosis: considerably higher economic losses!

**Subclinical ketosis** is more common than **clinical ketosis** and therefore responsible for a much higher loss of earnings in total! The disease remains undetected if ketones are not measured. Therefore dairy cows should be monitored routinely for subclinical ketosis!

**Clinical ketosis**

With **progression of the metabolic disorder** the ketone bodies will proceed in accumulation in blood and clinical symptoms will arise.

In addition to visible signs of the disease of the animal, also significant higher loss of performance, fertility disorders and subsequent diseases with possible organ damage are accompanied with clinical disease. Especially the liver is exposed to a heavy burden, permanent damage and loss of function can be the consequence.

A clinical ketosis can turn out to be very expensive! Decreased milk and reproductive performance, subsequent diseases and related treatment costs can cause significant financial burden.
WellionVet BELUA
Blood glucose & ketones
For better herd health