

Healthy,
happy diabetic pets



You
make it possible with
Caninsulin

Vets make it possible with

Caninsulin® is formulated for pets

As a veterinary surgeon you regularly see pets with diabetes mellitus. At Intervet, we know it is a challenge to help an owner manage their pet's diabetes.

That's why we developed Caninsulin. A porcine insulin, Caninsulin is specially formulated for dogs and cats. It has a strength of 40 IU/ml, so it is much easier to measure even small doses.

With Caninsulin, helping pet owners manage their dog's or cat's diabetes is easier. We support you during this process with a clinical information website, www.caninsulin.com. For owners, we have educational leaflets and a website, www.pet-diabetes.com, featuring helpful information about managing their pet's diabetes.

Managing diabetes with Caninsulin®

Diabetes mellitus is a common endocrine disorder of dogs and cats that results in absolute or relative insulin deficiency. Insulin treatment is the cornerstone of successful management, but dietary adjustments and a regular lifestyle are also important.

Caninsulin is an aqueous suspension of 40 IU highly purified porcine insulin per ml, consisting of 30% amorphous and 70% crystalline zinc insulin. Porcine insulin is identical to canine insulin but differs from feline insulin by three key amino acids.

In dogs, the amorphous fraction of Caninsulin has peak activity approximately 3 hours after subcutaneous administration and its effects last for about 8 hours (Fig. 1). Thereafter, the effect is maintained by the crystalline fraction, which has a slower onset of action and peak effects from 7 to 12 hours following injection (Fig. 1).



In most cases, the duration of activity of Caninsulin may be sufficient to treat dogs once daily. In some cases, particularly if blood glucose concentrations are monitored closely, treatment has to be given twice daily.

In cats, the duration of action of Caninsulin is shorter than in dogs. As a result, all cats require twice daily treatment. Twice daily administration of Caninsulin provides excellent glycaemic control that can sometimes result in clinical remission.



Caninsulin®



Initial regulation for dogs

The initial dose for dogs is 1 IU/kg plus, if required, a supplemental dose based on body weight (Table 1). Same examples are given in Table 2.

Body weight	Dose supplement
< 10 kg	1 IU
approx.10 kg	2 IU
12-20 kg	3 IU
> 20 kg	4 IU

Table 1 Guide to starting once daily Caninsulin treatment in dogs

Weight	Starting dose	Supplement	Total dose
7 kg	7 IU	1 IU	8 IU
10 kg	10 IU	2 IU	12 IU
15 kg	15 IU	3 IU	18 IU
35 kg	35 IU	4 IU	39 IU

Table 2 Examples of supplemental insulin dose based on body weight



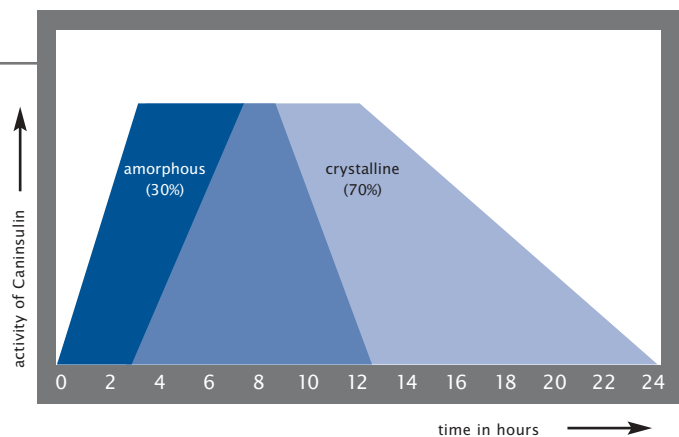
Initial regulation for cats

The initial dose for cats is 0.25-0.5 IU/kg twice daily, depending on the initial blood glucose concentration (Table 3). The starting dose should ideally not exceed 2 IU per cat twice daily. The dose should be rounded down to the nearest whole unit.

Baseline blood glucose concentration	Initial Caninsulin dose (round down to nearest whole unit)
<20mmol/l or <360 mg/dl	0.25 IU/kg body weight
>20 mmol/l or >360 mg/dl	0.5 IU/kg body weight

Table 3 Guide to starting twice daily Caninsulin treatment in cats

Figure 1 Schematic representation of Caninsulin concentration in dogs showing biphasic activity



Diabetes management is easy

Dose adjustment

In dogs, dose adjustment should be managed in steps of 10%. In cats the dose should be adjusted in steps of 1IU. Following adjustment, evaluation – apart from checking for hypoglycaemia – should not take place before the new dose has been given for a period of at least 3 days. It should be realised that maintaining a normal blood glucose concentration throughout the entire day is impossible. The aim is to try to maintain blood glucose concentrations between 5 and 15 mmol/l (90 and 270 mg/dl) for a substantial part of the day. This will both avoid hypoglycaemia and result in the disappearance of most of the clinical signs – the goal of therapy.

Hypoglycaemia

If the insulin dose is too high, clinical signs of hypoglycaemia may be observed. This serious and potentially fatal condition (which can also be triggered by anorexia, vomiting or excessive exercise, etc.) may occur at any stage, even after stabilisation has been achieved. The clinical signs include hunger, restlessness, shivering, ataxia, disorientation, convulsions and coma; some animals just become very quiet and stop eating.

Immediate oral administration of a source of glucose (1 g/kg body weight) to the diabetic pet can alleviate these signs. Following emergency glucose administration, food must be given repeatedly at intervals of 1 to 2 hours to counteract the effects of the extra insulin. Owners need to always keep a source of glucose readily available.



Somogyi effect

An insulin dose that is slightly too high may produce the Somogyi effect, rebound hyperglycaemia (Fig. 2). In this chain of events the body attempts to counteract a sudden decline in or a very low blood glucose concentration. This triggers the release of adrenaline (epinephrine) and subsequently cortisol, glucagon and growth hormone. These hormones increase the blood glucose concentration. If rebound hyperglycaemia occurs, polyuria and polydipsia may be misinterpreted as insulin underdosage.

Hyperglycaemia can sometimes persist for days after a single hypoglycaemic event, especially in cats. If the Somogyi effect is suspected, confirm it by performing a blood glucose curve.

with Caninsulin®



Monitoring

• Clinical signs

Resolution of the clinical signs is one of the main goals of treating diabetic pets. Monitoring clinical signs – polyuria, polydipsia, polyphagia and body weight – is simple and easy. Most pet owners have already noticed some if not all of these signs in their pet and can easily learn to record these to help monitor their pet's progress.

• Urine

Urine monitoring can be a quick and easy way to detect ketones and hyperglycaemia. However, it is not a very reliable method of monitoring diabetes mellitus. This is

because urine only tests positive for glucose if the blood glucose concentration remains above the renal threshold for a substantial period. Therefore, do not rely on urine monitoring alone to adjust an animal's insulin dose.

• Blood

The most accurate way to assess a pet's response to treatment is by making a blood glucose curve. Further detailed information on this is available at www.caninsulin.com.



Problems with regulation:

If the response to insulin therapy is poor, construct a blood glucose curve and rule out other concurrent or underlying disorders.

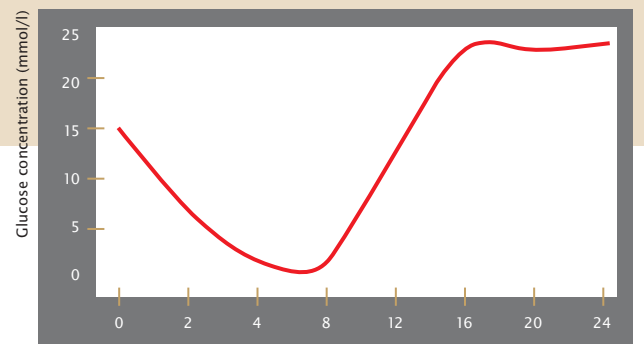


Figure 2: Rebound hyperglycaemia

Coach pet owners in managing

Owner participation

During therapy the owner of a diabetic pet needs to learn to actively participate in monitoring their pet's progress. Most owners quickly learn to give insulin injections and to accurately monitor and record their pet's clinical signs, if instructed well. It is also the pet owner that needs to adopt and maintain a regular feeding and exercise regime for their pet. They will need your help to get started.

Prognosis

The prognosis for a diabetic animal depends to a large extent on the level of confidence, knowledge and dedication of its owner. These factors can be influenced favourably by your attitude and by the quality of the information you, the veterinary surgeon, provide. You can encourage owners by telling them that treating a diabetic animal is interesting, rewarding and certainly not always as complicated as is sometimes thought.



Get more information about Caninsulin online

More information to help you manage diabetes in dogs and cats is available at www.caninsulin.com

You can also visit the website that provides more information for owners of diabetic pets at www.pets-diabetes.com

diabetes



Feeding schedule for dogs

For dogs, the daily food intake is usually divided into two meals. The first meal is given around the time of the morning insulin injection and the second meal approximately 8 hours later.

Diet

The volume and composition of meals should be identical from day to day to avoid changes in insulin requirements. As this is difficult to accomplish with home-prepared meals, commercial pet food is preferable. Commercial diets, often with fat restriction and a high quality, highly digestible source of protein, provide more gradual uptake of glucose from the intestines. The diet chosen should be of the correct caloric value to maintain or reach ideal body weight.



Feeding schedule for cats

Cats usually prefer to eat when they choose. Free access to a measured amount of food is often the best option.



Caninsulin®

www.caninsulin.com

Product information



PRESENTATION

Caninsulin is an aqueous suspension of insulin containing 40 IU per ml of highly purified porcine insulin, 30% is amorphous zinc insulin and 70% crystalline zinc insulin.

USES

Caninsulin is an intermediate acting insulin containing porcine insulin, is structurally identical to canine insulin. It is indicated in the treatment of diabetes mellitus in dogs and cats.

DOSAGE AND ADMINISTRATION

Invert the insulin vial a few times to resuspend the Caninsulin. Caninsulin should be administered by subcutaneous injection. An insulin syringe with unit markings for a 40 IU/ml insulin should be used.

A once daily injection is sufficient to stabilise the blood glucose level in most dogs. However, the duration of action may vary, making it necessary to administer the insulin dose twice daily to some dogs.

In cats, it is necessary to administer Caninsulin twice daily.

The dose depends on the degree of deficit in the animal's own insulin production and therefore is different in each case.

In dogs, the initial daily dose is 1 IU per kg bodyweight plus a body weight dependent supplement dose.

In cats, the initial daily dose is 0.25-0.5 IU/kg twice daily. Especially in obese cats, an unduly high starting dose may be dangerous.

Subsequent adjustment to establish the maintenance dose should be made by increasing or decreasing the daily dose by approximately 10% per day according to the results of measurement of the glucose levels in the blood.

Once the maintenance dose has been established and the animal is stabilised a long term management programme needs to be implemented. The aim should be to manage the animal in such a way as to minimise the variations in its insulin requirement. This includes monitoring to detect under or overdosage of insulin and adjustment of dose if required. Careful stabilisation and tight monitoring and control during maintenance will help to limit the chronic problems associated with diabetes including cataracts.

Various approaches to maintenance have been described. The most clinically rational approach is for the owner to monitor and record the dog's general health and ketones (including well-being, thirst and appetite) and check urine glucose at least daily. The veterinary surgeon checks the case every 2-4 months (or more often if there are problems) including

its health and urine glucose record. Blood glucose is also measured at this time. Adjustments to the insulin dose are made by the veterinarian based on full analysis of the clinical data and on blood glucose measurement.

The ability for owners to recognise the signs of hypo- or hyperglycaemia and respond appropriately is important if control is to be achieved during maintenance therapy. Polyuria, polydipsia and polyphagia in combination with weight loss, general bad condition, loss of hair or abnormal furry coat and lethargy are the most common clinical signs of diabetes mellitus and requires administration of insulin to restore blood glucose levels to the normal range.

CONTRA-INDICATIONS, WARNINGS, ETC.

1. Caninsulin is an intermediate acting insulin and is not intended for the treatment of animals with severe acute diabetes presenting in a ketoacidotic state. Caninsulin must not be administered by the intravenous route.
2. The use of progestogens in patients suffering from diabetes mellitus should be avoided. Ovariohysterectomy may have to be considered.
3. Stress and irregular exercise must be avoided. Care must be taken with the use of corticosteroids.
4. It is important to establish a strict feeding schedule in consultation with the owner that will include a minimum of fluctuations and changes.
5. Administration of Caninsulin must be carried out by an adult responsible for the welfare of the animal.

For animal treatment only. Keep out of the reach of children.

STORAGE

Store refrigerated at 2-8°C. Protect from light. Store in an upright position. Following withdrawal of the first dose use the product within 20 days. Discard unused material.

PACKAGING

Vials containing 10 ml or 2.5 ml in single and multiple packs.