



**ProtectLife**  
International Biomedical Inc.

Learning

# Canine Diabetes And One Accurate Diagnostic Tool



Health  
Educational  
Propaganda

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**AmiShield**  
Veterinary Chemistry Analyzer

## What is diabetes?

There are 2 reasons for suffering from diabetes: (1) insufficient or lack of insulin secreted by the pancreas; (2) insensitivity of cells to insulin. These reasons will be that glucose is too high to decrease, and all organs will be infiltrated in the hyperglycemia. If this condition persists, it will lead to lesions in various organs of the body, seriously affect the quality of life even death.



In addition, diabetes is an irreversible disease. Once diagnosed, it must be treated for life. Therefore, it is strongly recommended that canines in high-risk groups must regularly detect the HbA1c test, which can early diagnose the Pre-Diabetes. After control the glucose, prevent to suffer from diabetes.

## High-Risk Groups

There are 7 High-Risk Groups:

1. Canines over 7 years old.
2. Breeds with a higher risk of diabetes: Husky, Labrador, Golden Retriever, Samoyed, Chow Chow, Beagle, Dachshund, West Highland White Terrier, Australian Terrier, Schnauzer, Poodle, etc.
3. Unsuitable diet: High oil, high starch, low protein foods.
4. Obesity: Long-term inactivity and excessive food intake.
5. Pancreatitis: Abnormal insulin secretion.
6. Hepatobiliary disease: Abnormal insulin secretion.
7. Pregnant female: Gestational diabetes may occur but postpartum recovery.



These breeds with a higher risk of diabetes

## Symptoms of Diabetes

The following figure shows 4 common symptoms of diabetes.



Polydipsia, Polyuria and Polyphagia



Obvious weight loss



Decreased activity, lethargy



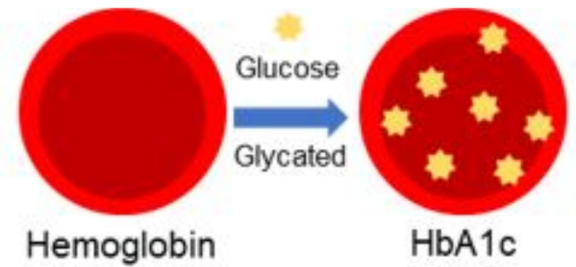
Hyperglycemia and glycosuria

## Pre-Diabetes

- **Between health and diabetes.** If glucose is not controlled in normal range, it will develop to diabetes.
- **No obvious symptoms,** and glucose may be normal. Pre-diabetes **ONLY** is known through the HbA1c test.
- **High-risk groups** tend to enter this stage.

## Glycated Hemoglobin (HbA1c)

HbA1c is the product that hemoglobin combines with glucose in the blood. Cycle of canine HbA1c, consistent with cycle of canine erythrocytes, is about 100 days. Therefore, HbA1c can accurately reflect the glucose level in 100 days. In addition, it is not affected by factors such as environment, emotion and physiology. HbA1c can easily diagnose canines suffered from pre-diabetes and diabetes.



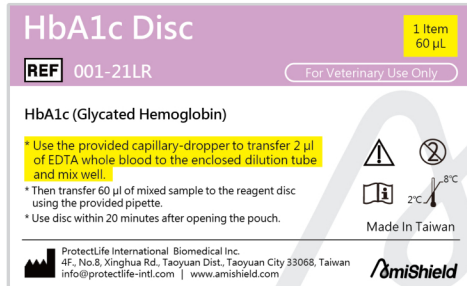
## Comparison of Diagnostic Tools

	Glucose	HbA1c
<b>Principle</b>	Detect the glucose in blood	Detect the HbA1c in blood
<b>Feature</b>	Only present short-term changes of glucose	Reflect the glucose level in 100 days
<b>Interference</b>	Easily affected by factors such fasting, exercise, drugs, emotions, and unfamiliar environments	Stable and not easy to affect the value
<b>Diagnose</b>	Fasting for 8 hours before detected, and need to be hospitalized to make a glucose curve	No need for fasting and hospitalization. Detect at any time and just takes 15 minutes
<b>False Negative</b>	Pre-diabetic canines have mostly normal glucose levels after fasting for 8 hours	Find the pre-diabetic canines and prevent to suffer from diabetes

## When to Use HbA1c

- Regular health examination for high-risk groups
- Find the pre-diabetic canines
- When diabetes needs to be diagnosed
- Diabetes treatment effect tracking
- Preoperative Examination

Using AmiShield veterinary chemistry analyzer and the dedicated Canine HbA1c disc can check out whether canines suffered from pre-diabetes/diabetes or not.



## Test Result

Result	Range	Significance
	3 - 4%	Normal
	4 - 6.5%	Pre-Diabetic
	> 6.5%	<b>Diabetic</b> (Fasting Glucose >300mg/dL)

### Treated diabetic canine:

Result	Range	Significance
	4 - 4.9%	Excellent Control
	5 - 5.9%	Good Control
	≥ 6%	Fair Control

**Normal:** No risk for diabetes.

**Pre-Diabetic:** Canines are between health and diabetes, but they have not yet developed diabetes. Please follow the advice of veterinarians, improve diet, exercise, reduce weight or supplement related health products, etc. These methods can avoid developing diabetes.

**Diabetic:** **Diabetic canine (fasting blood glucose higher than 300 mg/dL) must be treated, take medicine, exercise and diet control, and regularly detect the HbA1c value and evaluate the curative effect.**

### ◆ Reference

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3. Elliott DA, Nelson RW, Reusch CE, Feldman EC, Neal LA. Comparison of serum fructosamine and blood glycosylated hemoglobin concentrations for assessment of glycemic control in cats with diabetes mellitus. J Am Vet Med Assoc. 1999 Jun 15; 214(12):1794-8.