HB220412

Streptozocin

Product Information

Product Name	Cat#	Size
Streptozocin	60256ES60	100 mg
	60256ES76	500 mg
	60256ES80	1 g

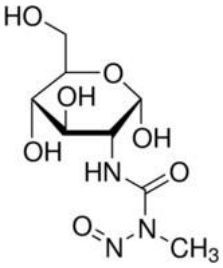
Product Description

Streptozocin (STZ) is an antitumor antibiotic produced from a certain Streptomyces Aureobasidium pullulans, and can also be synthesized artificially. Often used to treat pancreatic cancer. At the same time, STZ selectively destroys islet β cells of certain species of animals, and can induce diabetes in many animals. Generally, rats and mice are used to make animal models.

Diabetes modeling is related to the dose of STZ injection: when a large dose is injected, it can directly cause extensive destruction of islet β cells, which can cause type I diabetes model; Peripheral tissue is not sensitive to insulin, and high-calorie feed is fed at the same time, and the combination of the two induces pathological and physiological changes that are close to the animal model of human type II diabetes.

In addition, STZ has been widely studied in anti-leukemia, DNA methylation, anti-nephritis and so on.

Product Properties

English Synonym	Streptozotocin
CAS NO.	18883-66-4
Molecular Formula	$C_8H_{15}N_3O_7$
Molecular Weight	265.22 g/moL
Appearance	white to yellow powder
Purity	≥98% (HPLC)
Solubility	Easily soluble in water, lower alcohols, ketones, etc.
Structure	

Shipping and Storage

The product is shipped with dry ice and can be stored at -20°C for 2 years. Need to keep away from light and moisture.

【Notes】This product is easy to deliquescence. If repeated sampling and weighing are required, long-time exposure should be avoided to prevent moisture, and it will fail within 30 minutes after being exposed to moisture. If it is necessary to weigh it multiple times, it must be operated and stored in strict accordance with the principle of avoiding moisture.

Instructions

Take a diabetes model as an example to illustrate the use of STZ.

1. Prepare citrate buffer

Solution A: Weigh 2.1 g of citric acid (MW: 210.14) and add it to 100 mL of double distilled water to prepare solution A;

Solution B: 2.94 g of sodium citrate (MW: 294.10) was added to 100 mL of double distilled water to prepare solution B.

Mix the A and B solutions in a certain ratio (1:1.32 or 1:1), measure the pH value, and adjust the pH within the range of 4.2-4.5, that is, the citric acid buffer for STZ preparation.

2. Preparation before injection

Before preparing STZ injection, place STZ in a dry sterilized bottle, wrap it with tin foil, and place it in an ice bath with citric acid buffer to pre-cool, and take it to the animal room for use.

3. Preparation of injections

Rats were weighed after an overnight fast. Rats were grouped to dissolve STZ by group. 1% STZ injection was prepared in citrate buffer based on fasting body weight. If the follow-up injection operation is not proficient, do not dissolve STZ at one time.

【Notes】STZ is easy to be deactivated, and STZ needs to be dried and protected from light after being weighed quickly. It is recommended to use dry aluminum foil (or tin foil) paper.

4. Injection

Intraperitoneal injection or tail vein injection, if the injection technique is not skilled, the two groups should be injected alternately, and the injection should be completed within 30 minutes. 【Notes】 Most injections require a bolus injection.

Cautions

1) STZ is not stable due to moisture. If it needs to be weighed multiple times, it must be operated and stored in strict accordance with the principle of avoiding moisture. The operating environment, containers, and dispensing tools must be kept dry.

2) The injection solution should be prepared only before injection, because the STZ aqueous solution is extremely unstable.

FAQs

1. Q: How to store STZ powder after receiving it?

Answer: After packaging, seal the bottle with sealing film, wrap the bottle with aluminum foil (or tin foil, that is, protect from light), and put it in a drying jar (desiccant, that is, keep dry state) and refrigerated at -20 ℃ for long-term storage.

2. Q: Why do rats fast before modeling?

A: Fasting for more than 12 hours (usually overnight fasting, no water). The longer the fasting time, the more obvious the destructive power of STZ on islet β cells, namely

higher efficacy. Therefore, the relative fasting time is prolonged, and the dosage of STZ can be reduced.

3. Q: What is the commonly used STZ dose when modeling?

Answer: Taking the average weight of 200 grams of rats as an example, type 1 diabetes model: the dose of rats is 70-65 mg/kg; type 2 diabetes model: high-sugar and high-fat feeding for 1-2 months old rats, STZ doses range from 25 to 40 mg/kg; or ref. This dose is for reference only. It is recommended to explore the optimal dose through preliminary experiments.

4. Q: Is pre-experiment very important?

A: Very important. The dosage of STZ in the experiment should refer to the results of the pre-experiment, and try not to blindly follow the dosage in the literature or others.

The average weight and fasting (low sugar state) drug resistance, fasting time, injection selection time, previous feeding process, and sugar measurement selection time of mice are different.

It is the most scientific way to determine the dosage that is in line with your own experimental mice through pre-experimentation.

5. Q: How does the injection method affect the experimental results?

Answer: Tail injection is intravenous injection, and the drug utilization rate is higher. Compared with intraperitoneal injection, it can save the amount of drugs. The disadvantage is that the operation is not as good as intraperitoneal injection.

Easy to shoot.

6. Q: During injection, what is the relationship between advancing speed and blood sugar?

Answer: The speed of bolus injection is fast, and it is more likely to form hyperglycemia. The speed of bolus injection is slow, and the relative risk is relatively low, but modeling animals is easy to fail. Routine operation requires rapid injection. Of course, the dose of STZ is a major factor in determining blood sugar levels.

7. Q: After the injection of STZ, the mice died. Is it normal? How to solve it?

Answer: normal. The difference in mortality due to individual differences in rats and differences in fasting (hypoglycemia) resistance may be due to a sudden increase in blood sugar, rat maladaptation, or DKA (ie, ketoacidosis). First, be sure to drink enough water (insufficient water intake can easily lead to dead mice). Secondly, both high blood sugar and low blood sugar can cause dead mice, and there are two ways to avoid dead mice by injecting insulin or temporarily supplementing sugar. Route 1: Insulin supplementation. A common cause of death is hyperglycemia. By supplementing some intermediate-acting insulin (such as Novolin or NPH), 2-3 units each time, after 3-5 days, the mortality of rats is usually reduced. The second way: sugar supplement method. The fasted mice were already in a state of hypoglycemia at the time of injection, and 20% glucose was injected intraperitoneally 4 hours after modeling to avoid the death of the mice due to hypoglycemia at the time of injection. Again, prevent animals from killing each other. In the case of lack of food and insufficient water supply, they will kill each other and eat the same kind, so food and drinking water must be adequately supplied, preferably in two ways. Finally, prevent infection. Diabetic rats have a lot of urine and wet litter, so litter needs to be changed frequently, so diabetic rats are more prone to infection than other rats, especially urinary tract infection and abdominal infection. Before and after invasive operations such as intraperitoneal injection, subcutaneous injection, blood collection and blood glucose measurement, attention should be paid to disinfection. For example, tetracycline (or chlortetracycline eye ointment) can be applied locally to treat the wound to prevent infection after each blood test for blood sugar.

8. Q: After injecting STZ, the model fails, what should I do?

Answer: If the model does not meet the standard, STZ (intraperitoneal injection at a dose of 10 mg-20 mg/kg body weight) is added after three days, and it is easy to form a model, or normal dose injection after blood sugar returns to normal; but to achieve the desired effect, often re-modeling is restored to normal state.