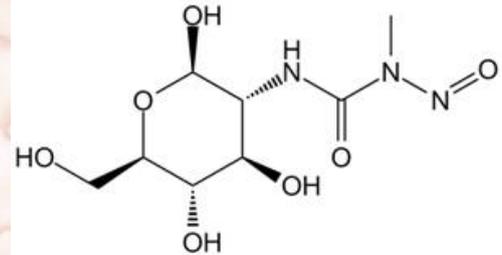


Product Data Sheet

Streptozotocin

Cat. No.:	A4457
CAS No.:	18883-66-4
Formula:	C ₈ H ₁₅ N ₃ O ₇
M.Wt:	265.22
Synonyms:	STZ; NSC-85998; Streptozocin; U 9889
Target:	DNA (Alkylating Agent)
Pathway:	Cell Cycle/DNA Damage; Apoptosis/Autophagy; Microbiology & Virology
Storage:	Store at -20° C



Solvent & Solubility

≥ 10.3 mg/mL in DMSO; ≥ 26.5 mg/mL in EtOH with gentle warming; ≥ 53.2 mg/mL in H₂O

In Vitro

Preparing Stock Solutions	Solvent Concentration	Mass		
		1mg	5mg	10mg
	1 mM	3.7705 mL	18.8523 mL	37.7045 mL
	5 mM	0.7541 mL	3.7705 mL	7.5409 mL
	10 mM	0.3770 mL	1.8852 mL	3.7705 mL

Please refer to the solubility information to select the appropriate solvent.

Biological Activity

Shortsummary

Streptozotocin (CAS 18883-66-4) is a naturally occurring nitrosourea antibiotic, widely recognized for its utility in biomedical research. Functioning primarily as a DNA-alkylating agent, streptozotocin preferentially targets pancreatic β -cells due to its uptake via the glucose transporter GLUT2, leading to selective cytotoxicity. This mechanism facilitates the induction of β -cell apoptosis by causing DNA damage, resulting in the destruction of insulin-producing cells.

In experimental settings, streptozotocin is used to induce hyperglycemia and diabetes mellitus in various animal models, particularly rodents, through a single or multiple dosing regimen. The cytotoxic effect of

streptozotocin on pancreatic β -cells has been quantitatively reported, with specific IC50 values determined in isolated islet cells or relevant pancreatic cell lines. Additionally, streptozotocin exhibits alkylating activity that disrupts cellular metabolism and may influence other tissues expressing the GLUT2 transporter, although its primary action centers on pancreatic islet cells.

In the context of pharmaceutical and biomedical research, streptozotocin is widely employed for the experimental induction of diabetes to study the pathophysiology of the disease and to evaluate novel therapeutic agents aimed at glycemic control, β -cell protection, or diabetes-related complications.

IC₅₀ & Target

Cell Viability Assay

In Vitro

Cell Line:	A murine pancreatic β cell line, INS-1
Preparation method:	Just before use, a stock solution of STZ (500 μ M) was made by dissolving it in sterile 100 mM sodium citrate buffer (pH 4.5). Cells were seeded 3 days before use into 6 well plates at a density of 2.0×10^6 cells per well and grown in their normal growth media. Following this sub-culture, cells were incubated in the presence of various concentrations of STZ (2.5 to 40.0 μ M), as described below.
Reacting conditions:	15 or 30 mM streptozocin for 1 h incubation
Applications:	Higher rates of apoptosis, as compared to necrosis, were observed when cells were exposed to 15 mM streptozocin for 1 h followed by a 24 h recovery period. Higher doses of streptozocin (30 mM) caused the cells to undergo necrosis (22%) as well as apoptosis (17%). Streptozotocin at low doses induced apoptosis and at high doses caused necrosis in INS-1 cells.

Animal experiment

In Vivo

Animal models:	Male adult Holtzman rats
Dosage form:	50, 65 or 100 mg/kg A single intravenous injection
Applications:	Streptozotocin (65 mg/kg) resulted in rapid degranulation of β cells, accumulation of glycogen in the proximal convoluted tubules of the kidney, as well as development of cataracts in 4 months after streptozotocin treatment. At a higher dose of 100 mg/kg, streptozotocin produced lesions in the exocrine cells of the pancreas, and led to persistence of small, possibly secretory, granules in the Golgi zone of β cells in diabetic rats. Streptozotocin is often used to induce diabetes mellitus in experimental animals.
Preparation method:	Male adult Holtzman rats were given a single intravenous injection of streptozotocin in saline, at 50, 65, or 100 mg.
Other notes:	The technical data provided above is for reference only.

Product Citations

See more customer validations on www.apexbt.com.

References

1. Saini KS, Thompson C, Winterford CM, et al. Streptozotocin at low doses induces apoptosis and at high doses causes necrosis in a murine pancreatic beta cell line, INS-1. *Biochemistry and Molecular Biology International*, 1996, 39(6): 1229-1236.
2. Arison RN, Ciaccio EI, Glitzer MS, et al. Light and electron microscopy of lesions in rats rendered diabetic with streptozotocin. *Diabetes*, 1967, 16(1): 51-56.

Caution

FOR RESEARCH PURPOSES ONLY.

NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Specific storage and handling information for each product is indicated on the product datasheet. Most APExBIO products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Shortterm storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.

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