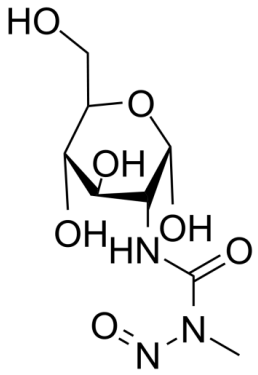
Data Sheet

Product Name:	Streptozocin
Cat. No.:	CS-1828
CAS No.:	18883-66-4
Molecular Formula:	C8H15N3O7
Molecular Weight:	265.22
Target:	Autophagy; Bacterial; DNA Alkylator/Crosslinker; DNA/RNA Synthesis
Pathway:	Anti-infection; Autophagy; Cell Cycle/DNA Damage
Solubility:	H2O : 113.3 mg/mL (427.19 mM; Need ultrasonic and warming); DMSO : 130 mg/mL (490.16 mM; Need ultrasonic)



BIOLOGICAL ACTIVITY:

Streptozocin is a potent **DNA-methylating antibiotic**. Streptozotocin causes methylation of liver and kidney and pancreatic DNA, but no methylation in brain DNA. IC50 & Target: DNA alkylator[1] **In Vitro:** Streptozocin (STZ) shows higher cytotoxic effect in vitro on hematological cell lines compared to Alloxan (ALX). ALX appears not to be toxic for the studied cell lines with estimated IC_{50} values of 2809, 3679 or over 4000 μg/mL for HL60, K562 and C1498 cells, respectively. Streptozocin is more toxic, especially for the human myeloid leukemia cell line, HL60. The IC_{50} values of Streptozocin are 11.7, 904 and 1024 μg/mL for HL60, K562 and C1498 cells, respectively. Results also show that the murine leukemic cells are more resistant to Streptozocin and ALX cytotoxicity than human leukemic cells[2]. **In Vivo:** Streptozocin (STZ)-injected mice show tendency to have lower body weight than that observed in animals injected with ALX. Streptozocin -injected mice have significantly fewer splenocytes ($22.2\pm3.2\times10^6$; n=10) compared to mice injected with ALX ($60.7\pm4.3\times10^6$; n=15; p=0.01)[2].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: Streptozocin (STZ) stock solutions of 50 mg/mL in distilled H_2O (dH_2O) are freshly prepared for each experiment[2].[2] Human and murine cell lines are cultured in triplicate in 96-well plates at a density of 2×10^4 cells/well in the absence (untreated control) or presence of various concentrations of ALX (20-3000 μg/mL) or STZ (1-3000 μg/mL) for 48 h at 37°C under a humidified atmosphere containing 5% CO_2. Cells incubated in complete media including dH_2O in a final concentration of 0.1% served as control for solvent toxicity and cells incubated in complete medium are used as a control for the experiments. The effects of the tested drugs on tumor cell growth or viability are determined employing the MTT assay in accordance with the manufacturer's instructions. The IC_{50}values (drug concentration that induces 50% inhibition of the cell growth) are calculated using the GraphPad Prism 4 program[2].
Animal Administration: Streptozocin (STZ) is freshly prepared in phosphate buffered saline (PBS) (Mice)[2].[2][3]Mice[2]
Male C57BL/6 mice (10-16 weeks) are used.The age group distribution in the mouse group treated with Streptozocin and ALX as well as controls is as follows: Streptozocin xenograft (n=7, median age 14 weeks), ALX xenograft (n=11, median age 15 weeks), Streptozocin non-transplanted (n=7, median age 14 weeks), ALX non-transplanted (n=15, median age 15 weeks).Male C57BL/6 mice are under inhalation anesthesia injected via the penile vein with ALX (75 mg/mL) or Streptozocin (180 mg/kg). Control group contain male C57BL/6 mice. Blood glucose levels and body weight are measured before injection, after 6 h, then daily after drug injection.
Rats[3]
Thirty rats underwent oophorectomy to induce menopausal status. Rats receive intraperitoneal administration of Streptozocin (50 mg/kg) to induce diabetes mellitus (DM) 1 week after the oophorectomy. Blood glucose level is checked 3 days after Streptozocin administration, and values >250 mg/dL are considered as positive for DM.

References:

[1]. Bennett RA, et al. Alkylation of DNA in rat tissues following administration of streptozotocin. Cancer Res. 1981 Jul;41(7):2786-90

[2]. Diab RA, et al. Immunotoxicological effects of streptozotocin and alloxan: in vitro and in vivo studies. Immunol Lett. 2015 Feb;163(2):193-8

[3]. Acer S, et al. Oxidative stress of crystalline lens in rat menopausal model. Arq Bras Oftalmol. 2016 Jul-Aug;79(4):222-5.

CAIndexNames:

D-Glucose, 2-deoxy-2-[[(methylnitrosoamino)carbonyl]amino]-

SMILES:

O[C@@H]1[C@@H](CO)O[C@H](O)[C@H](NC(N(C)N=O)=O)[C@H]1O

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