

Product Data Sheet

Product Name: GC7 Sulfate

Cat. No.: GC33094

Chemical Properties

Cas. No. 150417-90-6

SMILES NC(NCCCCCCCNC(=O)S(=O)(=O)O)=O

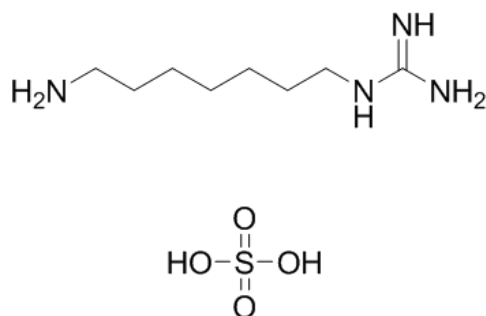
Formula $C_8H_{22}N_4O_4S$ M.Wt 270.35

Solubility Water : 3 mg/mL (11.10 mM) Storage Store at -20°C

General tips For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

Structure



Protocol

Cell experiment [1]:	
Cell lines	MYCN2 and BE(2)-C neuroblastoma cells

Caution: Product has not been fully validated for medical applications. For research use only.

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Preparation Method	GC7 Sulfate was added to MYCN2 and BE(2)-C neuroblastoma cell cultures, with MYCN2 cells cultured with or without doxycycline-mediated MYCN induction according to the experimental design. Cell viability was measured using the MTS assay, and Rb, phosphorylated Rb, Cdk4, and p21 protein levels were analyzed by western blotting.
Reaction Conditions	0.1-100μM; 72h
Applications	GC7 Sulfate (0.1-100μM; 72h) reduced viable-cell numbers in MYCN2 and BE(2)-C neuroblastoma cells in a concentration-dependent manner and decreased Rb, phosphorylated Rb, and Cdk4 protein levels while increasing p21 protein in MYCN2 cells.
Animal experiment [2]:	
Animal models	Renal glucose-metabolism model in ten-week-old male C57BL/6 mice
Preparation Method	GC7 Sulfate was dissolved in saline and administered to ten-week-old male C57BL/6 mice by intraperitoneal injection for 3 consecutive days. Plasma, urine, and kidney tissues were collected at the endpoint to measure urinary glucose, urinary lactate, creatinine, kidney eIF5A hypusination, and GLUT1/GLUT2 protein expression.
Dosage form	3mg/kg/day; ip. once daily for 3 days
Applications	GC7 Sulfate (3mg/kg/day; intraperitoneal injection once daily for 3 days) decreased kidney eIF5A hypusination, increased urinary glucose and lactate normalized to creatinine, and reduced renal GLUT1 expression.

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References:[1] Bandino A, Geerts D, Koster J, Bachmann AS. Deoxyhypusine synthase (DHPS) inhibitor GC7 induces p21/Rb-mediated inhibition of tumor cell growth and DHPS expression correlates with poor prognosis in neuroblastoma patients. *Cell Oncol (Dordr)*. 2014;37(6):387-398. doi:10.1007/s13402-014-0201-9.[2] Coughon M, Carcy R, Melis N, Rubera I, Duranton C, Dumas K, et al. Inhibition of eIF5A hypusination reprogrammes metabolism and glucose handling in mouse kidney. *Cell Death Dis*. 2021;12(4):283. doi:10.1038/s41419-021-03577-z.

Background

GC7 Sulfate is the sulfate salt of N1-guanyl-1,7-diaminoheptane and a deoxyhypusine synthase (DHPS) inhibitor^[1-2]. GC7 Sulfate blocks DHPS-dependent eukaryotic translation initiation factor 5A (eIF5A) hypusination, reducing eIF5A activation and regulating p21/retinoblastoma protein (Rb), epithelial-mesenchymal transition, glycolytic metabolism, and stress-response pathways^[1-5]. GC7 Sulfate is used in research on hypusination, eIF5A biology, tumor-cell proliferation, renal metabolism, ischemia-reperfusion injury, and diabetes-related immune or beta-cell models^[1-7].

In vitro, GC7 Sulfate (0.1-100µM; 72h) reduced viable-cell numbers in MYCN2 and BE(2)-C neuroblastoma cells in a concentration-dependent manner; 5µM and 10µM initiated significant antiproliferative effects in MYCN2 cells with or without MYCN induction, and 25µM initiated a significant antiproliferative effect in BE(2)-C cells^[1]. GC7 Sulfate (10µM and 100µM; 72h) decreased total Rb, phosphorylated Rb, and cyclin-dependent kinase 4 (Cdk4) protein levels and increased p21 protein in MYCN2 neuroblastoma cells^[1]. GC7 Sulfate (30µM; 24h) decreased eIF5A hypusination, increased lactate release and glucose consumption, reduced glucose efflux, and repressed glucose transporter 1 (GLUT1) protein expression in murine proximal convoluted tubule cells^[4].

In vivo, GC7 Sulfate (3mg/kg/day; intraperitoneal injection once daily for 3 days) decreased kidney eIF5A hypusination, increased urinary glucose and lactate normalized to creatinine, and reduced renal GLUT1 expression in ten-week-old male C57BL/6 mice^[4]. GC7 Sulfate (3mg/kg; single intraperitoneal injection 4h before renal ischemia-reperfusion) improved renal functional recovery and strengthened antioxidant defense in ten-week-old male C57BL/6J mice subjected to unilateral renal ischemia-reperfusion injury^[5]. GC7 Sulfate (4mg/kg; intraperitoneal injection once daily for 14 days) reduced fasting blood glucose, increased fasting serum insulin, and improved glucose-tolerance outcomes in 8-12-week-old male C57BLKS/J-db/db mice^[6]. GC7 Sulfate (4mg/kg; daily injection

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from 6 to 10 weeks of age) reduced insulinitis severity and delayed diabetes development in female non-obese diabetic mice during the early post-treatment period^[7].

References:

- [1] Bandino A, Geerts D, Koster J, Bachmann AS. Deoxyhypusine synthase (DHPS) inhibitor GC7 induces p21/Rb-mediated inhibition of tumor cell growth and DHPS expression correlates with poor prognosis in neuroblastoma patients. *Cell Oncol (Dordr)*. 2014;37(6):387-398. doi:10.1007/s13402-014-0201-9.
- [2] Lou B, Fan J, Wang K, Chen W, Zhou X, Zhang J, Lin S, Lv F, Chen Y. N1-guanyl-1,7-diaminoheptane (GC7) enhances the therapeutic efficacy of doxorubicin by inhibiting activation of eukaryotic translation initiation factor 5A2 (eIF5A2) and preventing the epithelial-mesenchymal transition in hepatocellular carcinoma cells. *Exp Cell Res*. 2013;319(17):2708-2717. doi:10.1016/j.yexcr.2013.08.010.
- [3] Lee NP, Tsang FH, Shek FH, Mao M, Dai H, Zhang C, Dong S, Guan XY, Poon RT, Luk JM. Prognostic significance and therapeutic potential of eukaryotic translation initiation factor 5A (eIF5A) in hepatocellular carcinoma. *Int J Cancer*. 2010;127(4):968-976. doi:10.1002/ijc.25100.
- [4] Cougnon M, Carcy R, Melis N, Rubera I, Duranton C, Dumas K, et al. Inhibition of eIF5A hypusination reprogrammes metabolism and glucose handling in mouse kidney. *Cell Death Dis*. 2021;12(4):283. doi:10.1038/s41419-021-03577-z.
- [5] Cougnon M, Giraud S, Materozzi M, Allart E, Boildieu N, Ameteau V, et al. Inhibition of eIF5A hypusination enhances antioxidant defense to prevent kidney ischemia/reperfusion injury. *Redox Biol*. 2025;86:103814. doi:10.1016/j.redox.2025.103814.
- [6] Robbins RD, Tersey SA, Ogihara T, Gupta D, Farb TB, Ficorilli J, et al. Inhibition of deoxyhypusine synthase enhances islet beta cell function and survival in the setting of endoplasmic reticulum stress and type 2 diabetes. *J Biol Chem*. 2010;285(51):39943-39952. doi:10.1074/jbc.M110.170209.
- [7] Colvin SC, Maier B, Morris DL, Tersey SA, Mirmira RG. Deoxyhypusine synthase promotes differentiation and proliferation of T helper type 1 (Th1) cells in autoimmune diabetes. *J Biol Chem*. 2013;288(51):36226-36235. doi:10.1074/jbc.M113.473942.

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