

Product Data Sheet

Product Name: Dapagliflozin

Cat. No.: GC15530

Chemical Properties

Cas. No. 461432-26-8

Chemical Name (2S,3R,4R,5S,6R)-2-[4-chloro-3-[(4-ethoxyphenyl)methyl]phenyl]-6-(hydroxymethyl)oxane-3,4,5-triol

SMILES CCOC1=CC=C(C=C1)CC2=C(C=CC(=C2)C3C(C(C(C(O3)CO)O)O)O)Cl

Formula $C_{21}H_{25}ClO_6$

M.Wt 408.87

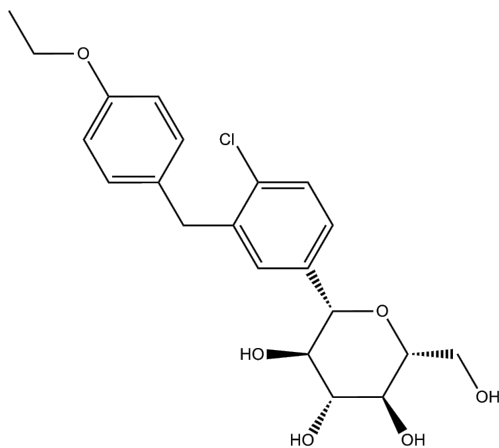
Solubility ≥ 15.1 mg/mL in DMSO, ≥ 116.6 mg/mL in EtOH

Storage Store at -20°C, sealed storage, away from moisture

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]:

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Cell lines	Human hepatocyte-derived liver cells (LO2) and human hepatocellular carcinoma cells (HepG2)
Preparation Method	Cells cultured in DMEM supplemented with 10% FBS at 37 °C in a humidified incubator containing 5% CO ₂ , the cells were treated with 0.3 mM PA for 24 h to create the hepatocyte steatosis model in vitro. Then, hepatocytes were exposed to dapagliflozin at a concentration of 20 µM with or without chloroquine for 24 h.
Reaction Conditions	20 µM;24h
Applications	Exposure to 0.3 mM PA for 24 h dramatically increased the intracellular lipid accumulation in LO2 cells and HepG2 cells, whereas cotreatment with dapagliflozin could obviously attenuate the PA-induced lipid accumulation in both of hepatic cell lines.
Animal experiment [2]:	
Animal models	Eight-week-old male BKS.Cg-Dock7m+/+Leprdb/Nju (db/db) mice
Preparation Method	Mice were group-housed conventionally and maintained on a 12-h light/dark cycle with free access to food and water. After a one-week adaptation, the diabetic condition was confirmed if the fasting blood glucose was 11.1 mmol/L. The diabetic mice were randomly assigned to two groups with 9 mice per group, and treated by daily intragastric administration of 1 mg/kg dapagliflozin or vehicle (water) for 6 weeks.
Dosage form	1 mg/kg;6 weeks;i.g.

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Applications In db/db mice, treatment with dapagliflozin for 6 weeks had little effects on body weight. The fasting blood glucose level significantly declined after the 6-week treatment of dapagliflozin.

References:

- [1]. Li L, Li Q, et.al. Dapagliflozin Alleviates Hepatic Steatosis by Restoring Autophagy via the AMPK-mTOR Pathway. *Front Pharmacol.* 2021 May 17;12:589273. doi: 10.3389/fphar.2021.589273. PMID: 34093169; PMCID: PMC8176308.
- [2]. Wei R, Cui X, et.al. Dapagliflozin promotes beta cell regeneration by inducing pancreatic endocrine cell phenotype conversion in type 2 diabetic mice. *Metabolism.* 2020 Oct;111:154324. doi: 10.1016/j.metabol.2020.154324. Epub 2020 Jul 23. PMID: 32712220.

Background

Dapagliflozin, a sodium-glucose cotransporter 2 (SGLT2) inhibitor, is a novel antidiabetic agent that is approved for the treatment of T2DM by based on its ability to inhibit SGLT2-mediated renal glucose reabsorption. In addition to providing effective glycaemic control, dapagliflozin help decrease body weight, reduce rate of cardiovascular death, and possibly slow the progression of diabetic kidney diseases[1-3].

Dapagliflozin(20 μ M;24h) promoted ACC1 phosphorylation and ACOX1 protein expression, promoted autophagy and alleviated lipid accumulation in PA-stimulated LO2 cells and HepG2 cells[4]. In diabetic proximal renal tubule cells, Dapaglide(20 μ M;48h) net improved HG-induced autophagy flux reduction and inhibited mTOR by increasing AMPK activity, meanwhile dapagliflozin inhibited NF- κ B pathway inflammatory changes[9].

In db/db mice, treatment with dapagliflozin(1 mg/kg;6 weeks;i.g.) for 6 weeks had little effects on body weight. The fasting blood glucose level significantly declined after the 6-week treatment of dapagliflozin[5]. Dapagliflozin(30mg/kg/day; p.o.) attenuated SGLT2 expression, which could prevent excessive glucose absorption and increase AMPK phosphorylation in HFD-induced obese mice or OA-stimulated HuS-E/2 cells[6]. Dapagliflozin (1mg/kg; i.v.) given pre-ischemia conferred the maximum level of cardioprotection quantified through the decrease in arrhythmia, attenuated infarct size, decreased cardiac apoptosis and improved cardiac mitochondrial function, biogenesis and

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

dynamics, leading to LV function improvement during cardiac I/R injury[7]. Dapagliflozin (1.5 mg/kg; 23 days; p.o.) provided glomerular protection in mice with protein-overload proteinuria induced by bovine serum albumin (BSA). Dapagliflozin limited proteinuria, glomerular lesions, and podocyte dysfunction and loss[8].

References:

- [1]. Dhillon S. Dapagliflozin: A Review in Type 2 Diabetes. *Drugs*. 2019 Jul;79(10):1135-1146. doi: 10.1007/s40265-019-01148-3. Erratum in: *Drugs*. 2019 Dec;79(18):2013. PMID: 31236801; PMCID: PMC6879440.
- [2]. Plosker GL. Dapagliflozin: a review of its use in type 2 diabetes mellitus. *Drugs*. 2012 Dec 3;72(17):2289-312. doi: 10.2165/11209910-000000000-00000. PMID: 23170914.
- [3]. Plosker GL. Dapagliflozin: a review of its use in patients with type 2 diabetes. *Drugs*. 2014 Dec;74(18):2191-209. doi: 10.1007/s40265-014-0324-3. PMID: 25389049.
- [4]. Li L, Li Q, et al. Dapagliflozin Alleviates Hepatic Steatosis by Restoring Autophagy via the AMPK-mTOR Pathway. *Front Pharmacol*. 2021 May 17;12:589273. doi: 10.3389/fphar.2021.589273. PMID: 34093169; PMCID: PMC8176308.
- [5]. Wei R, Cui X, et al. Dapagliflozin promotes beta cell regeneration by inducing pancreatic endocrine cell phenotype conversion in type 2 diabetic mice. *Metabolism*. 2020 Oct;111:154324. doi: 10.1016/j.metabol.2020.154324. Epub 2020 Jul 23. PMID: 32712220.
- [6]. Chiang H, Lee JC, et al. Delayed intervention with a novel SGLT2 inhibitor NGI001 suppresses diet-induced metabolic dysfunction and non-alcoholic fatty liver disease in mice. *Br J Pharmacol*. 2020 Jan;177(2):239-253. doi: 10.1111/bph.14859. Epub 2019 Nov 12. PMID: 31497874; PMCID: PMC6989948.
- [7]. Lahnwong S, Palee S, et al. Acute dapagliflozin administration exerts cardioprotective effects in rats with cardiac ischemia/reperfusion injury. *Cardiovasc Diabetol*. 2020 Jun 15;19(1):91. doi: 10.1186/s12933-020-01066-9. PMID: 32539724; PMCID: PMC7296726.
- [8]. Cassis P, Locatelli M, et al. SGLT2 inhibitor dapagliflozin limits podocyte damage in proteinuric nondiabetic nephropathy. *JCI Insight*. 2018 Aug 9;3(15):e98720. doi: 10.1172/jci.insight.98720. PMID: 30089717; PMCID: PMC6129124.
- [9]. Xu J, Kitada M, et al. Dapagliflozin Restores Impaired Autophagy and Suppresses Inflammation in High Glucose-Treated HK-2 Cells. *Cells*. 2021 Jun 10;10(6):1457. doi: 10.3390/cells10061457. PMID: 34200774; PMCID: PMC8230404.

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA