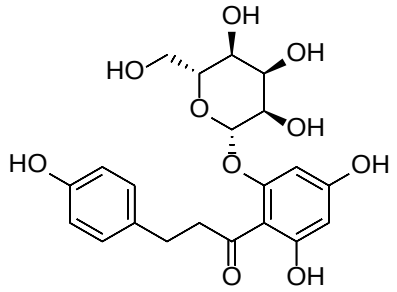
Product data sheet

MedKoo Cat#: 329650 Name: Phlorizin CAS: 60-81-1 Chemical Formula: $C_{21}H_{24}O_{10}$ Exact Mass: 436.1369 Molecular Weight: 436.413	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Phlorizin, also referred to as phloridzin, is a glucoside of phloretin, a dihydrochalcone, a family of bicyclic flavonoids, which in turn is a subgroup in the diverse phenylpropanoid synthesis pathway in plants. Phlorizin is a competitive inhibitor of SGLT1 and SGLT2 because it competes with D-glucose for binding to the carrier; this reduces renal glucose transport, lowering the amount of glucose in the blood. Phlorizin was studied as a potential pharmaceutical treatment for type 2 diabetes, but has since been superseded by more selective and more promising synthetic analogs, such as canagliflozin and dapagliflozin.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMF	30.0	68.74
DMSO	40.0	91.66
DMSO:PBS (pH 7.2) (1:1)	0.5	1.15
Ethanol	5.0	11.46
Water	1.0	2.29

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.29 mL	11.46 mL	22.91 mL
5 mM	0.46 mL	2.29 mL	4.58 mL
10 mM	0.23 mL	1.15 mL	2.29 mL
50 mM	0.05 mL	0.23 mL	0.46 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Zhang Z, Huang J, Zhao Z, Yuan X, Li C, Liu S, Cui Y, Liu Y, Zhou Y, Zhu Z. In Vivo and In Vitro Antiviral Activity of Phlorizin Against Bovine Viral Diarrhea Virus. J Agric Food Chem. 2022 Nov 30;70(47):14841-14850. doi: 10.1021/acs.jafc.2c05934. Epub 2022 Nov 16. PMID: 36384297.
2. Jia Z, Xie Y, Wu H, Wang Z, Li A, Li Z, Yang Z, Zhang Z, Xing Z, Zhang X. Phlorizin from sweet tea inhibits the progress of esophageal cancer by antagonizing the JAK2/STAT3 signaling pathway. Oncol Rep. 2021 Jul;46(1):137. doi: 10.3892/or.2021.8088. Epub 2021 May 26. PMID: 34036398; PMCID: PMC8165578.

In vivo study

Product data sheet

1. Katsuda Y, Sasase T, Tadaki H, Mera Y, Motohashi Y, Kemmochi Y, Toyoda K, Kakimoto K, Kume S, Ohta T. Contribution of hyperglycemia on diabetic complications in obese type 2 diabetic SDT fatty rats: effects of SGLT inhibitor phlorizin. Exp Anim. 2015;64(2):161-9. doi: 10.1538/expanim.14-0084. Epub 2015 Jan 22. PMID: 25736710; PMCID: PMC4427731.
2. Rossetti L, Smith D, Shulman GI, Papachristou D, DeFronzo RA. Correction of hyperglycemia with phlorizin normalizes tissue sensitivity to insulin in diabetic rats. J Clin Invest. 1987 May;79(5):1510-5. doi: 10.1172/JCI112981. PMID: 3571496; PMCID: PMC424427.

7. Bioactivity

Biological target:

Phlorizin is a non-selective SGLT inhibitor with Kis of 300 and 39 nM for hSGLT1 and hSGLT2.

In vitro activity

In vitro studies also confirmed the activity of phlorizin against CP BVDV. Exploration on its potential mechanism suggested that phlorizin inhibited CP BVDV-induced beclin-1 level and the conversion rate of LC3B-I to LC3B-II. Interestingly, although phlorizin also showed a protective effect on MDBK cells, which were treated with 3-methyladenine A (3-MA), the effect was significantly weakened. Furthermore, phlorizin suppressed the stage of BVDV replication but showed no effect on stages of attachment and internalization.

Reference: J Agric Food Chem. 2022 Nov 30;70(47):14841-14850. https://pubmed.ncbi.nlm.nih.gov/36384297/

In vivo activity

In the present study, blood glucose levels of female SDT fatty rats were controlled with phlorizin, a non-selective SGLT inhibitor, to examine whether and how these complications are caused by hyperglycemia. Phlorizin treatment adequately controlled plasma glucose levels during the experiment. These renal parameters tended to decrease with phlorizin; however, effects were partial. Sciatic nerve conduction velocities were significantly delayed in SDT fatty rats compared with Sprague-Dawley (SD) rats. Both nerve and eye disorders were prevented with phlorizin.

Reference: Exp Anim. 2015;64(2):161-9. https://pubmed.ncbi.nlm.nih.gov/25736710/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.