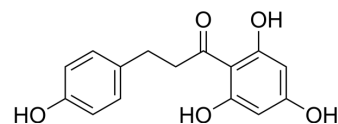


Phloretin

Cat. No.:	HY-N0142		
CAS No.:	60-82-2		
Molecular Formula:	C ₁₅ H ₁₄ O ₅		
Molecular Weight:	274.27		
Target:	SGLT; Endogenous Metabolite; GLUT		
Pathway:	Membrane Transporter/Ion Channel; Metabolic Enzyme/Protease		
Storage:	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	1 year
		-20°C	6 months



SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (182.30 mM; Need ultrasonic)
 H₂O : < 0.1 mg/mL (ultrasonic) (insoluble)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	3.6460 mL	18.2302 mL	36.4604 mL
	5 mM	0.7292 mL	3.6460 mL	7.2921 mL
	10 mM	0.3646 mL	1.8230 mL	3.6460 mL

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

In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
 Solubility: ≥ 2.5 mg/mL (9.12 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
 Solubility: ≥ 2.5 mg/mL (9.12 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
 Solubility: ≥ 2.5 mg/mL (9.12 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Phloretin (NSC 407292; RJC 02792) is a flavonoid extracted from *Malus pumila* Mill., has anti-inflammatory activities. Phloridzin is a specific, competitive and orally active inhibitor of sodium/glucose cotransporters in the intestine (SGLT1) and kidney (SGLT2). Phloretin inhibits Yeast-made GLUT1 as well as Human erythrocyte GLUT1 with IC₅₀ values of 49 μM and 61 μM, respectively^[1]. Phloretin has the potential for the treatment of rheumatoid arthritis (RA) and allergic airway inflammation [4].

IC ₅₀ & Target	SGLT1	SGLT2	Microbial Metabolite	GLUT1																								
	GLUT2																											
In Vitro	<p>Phloretin induced obvious cytotoxicity against BEL-7402 cells with IC₅₀ of 89.23 μM^[2].</p> <p>?Phloretin (40-160 μM; 24 hours) induces BEL-7402 cell apoptosis through the mitochondrial pathway, the cells exposed to phloretin exhibits nuclear chromatin condensation and increased fluorescence intensity. The caspase-9 reaches the peak level at 12 h, and leak levels of caspase-6 and caspase-3 activities occurs 18 and 24 h after the exposure, respectively^[2].</p> <p>?Phloretin (0-100 μM; 24 hours) has effects on transcription factors of adipogenesis in differentiated 3T3-L1 adipocytes, decreases PPAR-γ, C/EBPα and C/EBPβ as a dose-dependent manner^[3].</p> <p>?Phloretin (0-100 μM; 24 hours) has effects on the AMPK pathway in differentiated 3T3-L1 adipocytes, increases the phosphorylation of substrate ACC-1, AMPK in PT-treated cells^[3].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Apoptosis Analysis^[2]</p> <table border="1" data-bbox="345 621 1515 852"> <tr> <td>Cell Line:</td> <td>BEL-7402 cell</td> </tr> <tr> <td>Concentration:</td> <td>40-160 μM</td> </tr> <tr> <td>Incubation Time:</td> <td>24 hours</td> </tr> <tr> <td>Result:</td> <td>Induced cell apoptosis and activated caspase 3, 6 and 9.</td> </tr> </table> <p>Western Blot Analysis^[3]</p> <table border="1" data-bbox="345 926 1515 1157"> <tr> <td>Cell Line:</td> <td>3T3-L1 adipocytes</td> </tr> <tr> <td>Concentration:</td> <td>0 μM, 3 μM, 10 μM, 30 μM, 100 μM</td> </tr> <tr> <td>Incubation Time:</td> <td>24 hours</td> </tr> <tr> <td>Result:</td> <td>Inhibited PPAR-γ, C/EBPα and C/EBPβ expression.</td> </tr> </table> <p>Western Blot Analysis^[3]</p> <table border="1" data-bbox="345 1230 1515 1461"> <tr> <td>Cell Line:</td> <td>3T3-L1 adipocytes</td> </tr> <tr> <td>Concentration:</td> <td>0 μM, 3 μM, 10 μM, 30 μM, 100 μM</td> </tr> <tr> <td>Incubation Time:</td> <td>24 hours</td> </tr> <tr> <td>Result:</td> <td>Upregulated the expression of p-ACC-1, p-AMPK, p-AMPKα and β .</td> </tr> </table>				Cell Line:	BEL-7402 cell	Concentration:	40-160 μM	Incubation Time:	24 hours	Result:	Induced cell apoptosis and activated caspase 3, 6 and 9.	Cell Line:	3T3-L1 adipocytes	Concentration:	0 μM, 3 μM, 10 μM, 30 μM, 100 μM	Incubation Time:	24 hours	Result:	Inhibited PPAR-γ, C/EBPα and C/EBPβ expression.	Cell Line:	3T3-L1 adipocytes	Concentration:	0 μM, 3 μM, 10 μM, 30 μM, 100 μM	Incubation Time:	24 hours	Result:	Upregulated the expression of p-ACC-1, p-AMPK, p-AMPKα and β .
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In Vivo	<p>Phloretin (oral administration; 50 or 100 mg/kg; once daily) decreases oxidative stress and diminished levels of malondialdehyde (MDA) and hydrogen peroxide (Phloretin (50 or 100 mg/kg) significantly reduced MDA and H₂O₂ levels in paw tissue, reduces productivity of anti-collagen antibodies in serum^[3]).</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <table border="1" data-bbox="345 1661 1515 1923"> <tr> <td>Animal Model:</td> <td>Collagen-Induced Arthritis (CIA) Mice^[3]</td> </tr> <tr> <td>Dosage:</td> <td>50 or 100 mg/kg</td> </tr> <tr> <td>Administration:</td> <td>Oral administration</td> </tr> <tr> <td>Result:</td> <td>Showed mitigation of clinical symptoms of RA in addition to reduced inflammation of hind-limbs compared to the control group.</td> </tr> </table>				Animal Model:	Collagen-Induced Arthritis (CIA) Mice ^[3]	Dosage:	50 or 100 mg/kg	Administration:	Oral administration	Result:	Showed mitigation of clinical symptoms of RA in addition to reduced inflammation of hind-limbs compared to the control group.																
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CUSTOMER VALIDATION

- Cell Res. 2021 Sep;31(9):980-997.
- Acta Pharm Sin B. 2021 Jan;11(1):143-155.
- J Hazard Mater. 2023 Sep 21;461:132570.
- Exp Mol Med. 2022 Nov 16.
- Phytomedicine. 2022 Jul;101:154113.

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REFERENCES

- [1]. Kasahara T, Kasahara M. Expression of the rat GLUT1 glucose transporter in the yeast *Saccharomyces cerevisiae*. *Biochem J.* 1996 Apr 1;315 (Pt 1):177-82.
- [2]. Luo H, et al. Phloretin induces apoptosis of BEL-7402 cells in vitro. *Nan Fang Yi Ke Da Xue Xue Bao.* 2008 Jul;28(7):1249-51.
- [3]. Huang WC, et al. Phloretin and phlorizin promote lipolysis and inhibit inflammation in mouse 3T3-L1 cells and in macrophage-adipocyte co-cultures. *Mol Nutr Food Res.* 2013 Oct;57(10):1803-13.
- [4]. Wang SP, et al. Potent Antiarthritic Properties of Phloretin in Murine Collagen-Induced Arthritis. *Evid Based Complement Alternat Med.* 2016;2016:9831263.
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