Delphinidin 3-glucoside chloride

Cat. No.: HY-108052

CAS No.: 6906-38-3

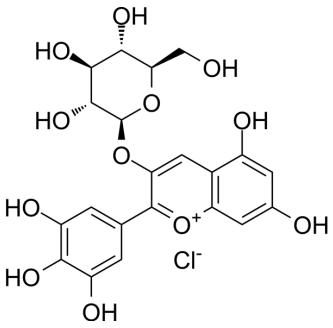
Molecular Formula: $C_{21}H_{21}ClO_{12}$

Molecular Weight: 500.84

Target: EGFR; Apoptosis; Akt

Pathway: JAK/STAT Signaling; Protein Tyrosine Kinase/RTK; Apoptosis; PI3K/Akt/mTOR

Storage: -20°C, sealed storage, away from moisture and light
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 10 mg/mL (19.97 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	1.9966 mL	9.9832 mL	19.9665 mL
	5 mM	0.3993 mL	1.9966 mL	3.9933 mL
	10 mM	0.1997 mL	0.9983 mL	1.9966 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 0.5 mg/mL (1.00 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 0.5 mg/mL (1.00 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Delphinidin 3-glucoside chloride (Delphinidin 3-O-glucoside chloride) is an active anthocyanin found in Hibiscus sabdariffa extract. Delphinidin 3-glucoside chloride induces a pro-apoptotic effect in B cell chronic lymphocytic leukaemia (B CLL)[1]. Delphinidin 3-glucoside chloride exerts phytoestrogen activity by binding to ERβ, with an IC_{50} of 9.7 μM[2]. Delphinidin-3-O-glucoside chloride inhibits EGFR with an IC_{50} of 2.37 μM[3]. Delphinidin 3-glucoside chloride exhibits antitumor effects through pAKT/IRF1/HOTAIR pathway. Delphinidin 3-glucoside chloride exhibits efficacy against oxidative stress, inhibits platelet activation and endothelial dysfunction[4][5][6].

IC_{50} & Target

IC50: 2.37 μM (EGFR)[3]

In Vitro

Delphinidin 3-glucoside chloride (30-100 μM) induces cell apoptosis in B CLL cells through redox-sensitive caspase 3 activation[1].

Delphinidin 3-glucoside chloride (0-40 μM) exhibits inhibitory activity towards breast cancer cells and carcinogen-induced breast carcinogenesis, through downregulation of the HOTAIR expression via pAKT/IRF1 signaling pathway[4].
Delphinidin 3-glucoside chloride (1-100 μM) inihibits the oxLDL-induced endothelial dysfunction in HUVECs with dependence of Sodium-Dependent Glucose Transporter (SGLT1)[5].
Delphinidin 3-glucoside chloride (0-50 μM) inhibits ADP, collagen or TRAP stimulated platelet aggregation through inhibition of AMPK phosphorylation[6].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Apoptosis Analysis[1]

Cell Line:	B CLLs
Concentration:	30-100 μM
Incubation Time:	24 h
Result:	Induced cell apoptosis.

Western Blot Analysis[4]

Cell Line:	MDA-MB-231 and MCF-7, HUVECs, B CLLs
Concentration:	40 μM for MDA-MB-231 and MCF-7, 0-100 μM for HUVECS
Incubation Time:	24 h
Result:	Inhibited AKT phosphorylation. Increased levels of pro-apoptotic factors: Cyt c, caspase 3 and Bax, decreased levels of Bcl-2.

Immunofluorescence[4]

Cell Line:	MDA-MB-231
Concentration:	0-40 μM
Incubation Time:	24 h
Result:	Promoted IRF1 expression.

In Vivo

Delphinidin 3-glucoside chloride (40 mg/kg/day, i.g. for 25 days) inhibits tumor growth in MDA-MB-231-Luc-GFP xenografted athymic BALB/c mice [4].Delphinidin 3-glucoside chloride (50 μM, i.v.) inhibits thrombus growth in $FeCl_3$ induced mesenteric arteriole injury in C57BL/6 mice[6].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	MDA-MB-231-Luc-GFP xenografted athymic BALB/c mice[4]
Dosage:	40 mg/kg/day
Administration:	i.g., for 25 days
Result:	Inhibited tumor growth.

REFERENCES

[1]. Yang X, et al., Delphinidin-3-glucoside suppresses breast carcinogenesis by inactivating the Akt/HOTAIR signaling pathway. BMC Cancer. 2016 Jul 7;16:423.

[2]. Jin X, et al., Delphinidin-3-glucoside protects against oxidized low-density lipoprotein-induced mitochondrial dysfunction in vascular endothelial cells via the sodium-dependent glucose transporter SGLT1. PLoS One. 2013 Jul 18;8(7):e68617.

[3]. Yang Y, et al., Plant food delphinidin-3-glucoside significantly inhibits platelet activation and thrombosis: novel protective roles against cardiovascular diseases. PLoS One. 2012;7(5):e37323.

[4]. Mahmoud Alhosin, et al. Bilberry extract (Antho 50) selectively induces redox-sensitive caspase 3-related apoptosis in chronic lymphocytic leukemia cells by targeting the Bcl-2/Bad pathway. Sci Rep. 2015 Mar 11;5:8996.

[5]. Naoki Nanashima, et al. Phytoestrogenic Activity of Blackcurrant Anthocyanins Is Partially Mediated through Estrogen Receptor Beta. Molecules. 2017 Dec 29;23(1):74.

[6]. Candice Mazewski, et al. Comparison of the effect of chemical composition of anthocyanin-rich plant extracts on colon cancer cell proliferation and their potential mechanism of action using in vitro, in silico, and biochemical assays. Food Chem. 2018 Mar 1;242:378-388.

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