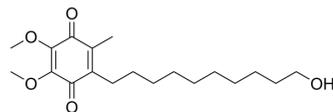


Idebenone

Cat. No.:	HY-N0303		
CAS No.:	58186-27-9		
Molecular Formula:	C ₁₉ H ₃₀ O ₅		
Molecular Weight:	338.44		
Target:	Apoptosis; Mitochondrial Metabolism		
Pathway:	Apoptosis; 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 : ≥ 100 mg/mL (295.47 mM)
 * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	2.9547 mL	14.7737 mL	29.5473 mL
	5 mM	0.5909 mL	2.9547 mL	5.9095 mL
	10 mM	0.2955 mL	1.4774 mL	2.9547 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 (7.39 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
 Solubility: ≥ 2.5 mg/mL (7.39 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
 Solubility: ≥ 2.5 mg/mL (7.39 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Idebenone, a well-appreciated mitochondrial protectant, exhibits protective efficacy against neurotoxicity and can be used for the research of Alzheimer's disease, Huntington's disease. Idebenone (oxidised form) has a dose-dependent inhibitory effect on the enzymatic metabolism of arachidonic acid in astroglial homogenates (IC₅₀=16.65 μM)^[1]. Idebenone, a coenzyme Q10 analog and an antioxidant, induces apoptotic cell death in the human dopaminergic neuroblastoma SHSY-5Y cells^[2]. Idebenone quickly crosses the blood-brain barrier.

<p>In Vitro</p>	<p>Idebenone, a compound with protective efficacy against neurotoxicity both in in vitro and in in vivo models, exists in two different oxidative states: the ubiquinol-derivative (reduced idebenone) and the ubiquinone-derivative (oxidised idebenone) [1].</p> <p>?Idebenone (oxidised form) preferentially inhibits cyclooxygenase vs. lipoxygenase metabolism (IC₅₀ ratio lipoxygenase/cyclooxygenase: 3.22)^[1].</p> <p>?Idebenone (oxidised form) behaves similarly as indomethacin and piroxicam—two typical anti-inflammatory agents^[1].</p> <p>?Idebenone (oxidised form) inhibits total arachidonic acid metabolism, cyclooxygenase metabolism, lipoxygenase metabolism, lipoxygenase/cyclooxygenase with IC₅₀s of 16.65±3.48, 14.44±2.99, 46.51±7.20, and 3.22 μM^[1].</p> <p>?Idebenone (1-10 μM; for 24-72 h) has no effect on the cell viability of SHSY-5Y cells^[2].</p> <p>?Idebenone (25 μM or higher concentrations; for 24-72 h) shows significant reduction in cell viability of SHSY-5Y cells^[2].</p> <p>?Idebenone (30 μM) induces up-regulation of BAX expression and the caspase-3 activity^[2].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Cell Viability Assay^[2]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>The human dopaminergic neuroblastoma cell line, SHSY-5Y cells</td> </tr> <tr> <td>Concentration:</td> <td>1, 3, 10, 15, 25, 30, and 90 μM</td> </tr> <tr> <td>Incubation Time:</td> <td>24, 48, and 72 hours</td> </tr> <tr> <td>Result:</td> <td>Had no apparent detrimental effects on cell viability as indicated by the absence of trypan blue-positive staining in the cells at concentrations of 1, 3, 10 μM. Exhibited some degree of trypan blue-positive staining at 15 μM. Showed extensive trypan blue-positive staining at 25 μM and 30 μM.</td> </tr> </table> <p>RT-PCR^[2]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>SHSY-5Y cells</td> </tr> <tr> <td>Concentration:</td> <td>10 μM, 30 μM</td> </tr> <tr> <td>Incubation Time:</td> <td>72 hours</td> </tr> <tr> <td>Result:</td> <td>The total RNA of BAX from SHSY-5Y cells exposed to 10 μM was not different from that of the untreated control cells. The BAX expression in SHSY-5Y cells exposed to 30 μM was significantly up-regulated when compared with the untreated control cells and cells exposed to 10 μM.</td> </tr> </table>	Cell Line:	The human dopaminergic neuroblastoma cell line, SHSY-5Y cells	Concentration:	1, 3, 10, 15, 25, 30, and 90 μM	Incubation Time:	24, 48, and 72 hours	Result:	Had no apparent detrimental effects on cell viability as indicated by the absence of trypan blue-positive staining in the cells at concentrations of 1, 3, 10 μM. Exhibited some degree of trypan blue-positive staining at 15 μM. Showed extensive trypan blue-positive staining at 25 μM and 30 μM.	Cell Line:	SHSY-5Y cells	Concentration:	10 μM, 30 μM	Incubation Time:	72 hours	Result:	The total RNA of BAX from SHSY-5Y cells exposed to 10 μM was not different from that of the untreated control cells. The BAX expression in SHSY-5Y cells exposed to 30 μM was significantly up-regulated when compared with the untreated control cells and cells exposed to 10 μM.
Cell Line:	The human dopaminergic neuroblastoma cell line, SHSY-5Y cells																
Concentration:	1, 3, 10, 15, 25, 30, and 90 μM																
Incubation Time:	24, 48, and 72 hours																
Result:	Had no apparent detrimental effects on cell viability as indicated by the absence of trypan blue-positive staining in the cells at concentrations of 1, 3, 10 μM. Exhibited some degree of trypan blue-positive staining at 15 μM. Showed extensive trypan blue-positive staining at 25 μM and 30 μM.																
Cell Line:	SHSY-5Y cells																
Concentration:	10 μM, 30 μM																
Incubation Time:	72 hours																
Result:	The total RNA of BAX from SHSY-5Y cells exposed to 10 μM was not different from that of the untreated control cells. The BAX expression in SHSY-5Y cells exposed to 30 μM was significantly up-regulated when compared with the untreated control cells and cells exposed to 10 μM.																
<p>In Vivo</p>	<p>Idebenone (oxidised form) is a compound with protective efficacy against cerebrovascular disorders in vivo, including cerebral ischemia and hypertension-induced vascular lesions^[1].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>																

CUSTOMER VALIDATION

- Eur J Pharmacol. 2023 Feb 3;943:175569.
- Neuropsych Dis Treat. 2021 Feb 17;17:533-543.
- Oncotarget. 2018 Jan 30;9(15):12137-12153.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. G Civenni, et al. Inhibitory effect of the neuroprotective agent idebenone on arachidonic acid metabolism in astrocytes. *Eur J Pharmacol.* 1999 Apr 9;370(2):161-7.

[2]. Kwok-Keung Tai, et al. Idebenone induces apoptotic cell death in the human dopaminergic neuroblastoma SHSY-5Y cells. *Neurotox Res.* 2011 Nov;20(4):321-8.

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

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA