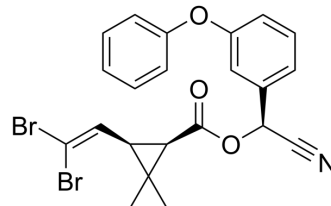


## Deltamethrin

<b>Cat. No.:</b>	HY-B1971
<b>CAS No.:</b>	52918-63-5
<b>Molecular Formula:</b>	C <sub>22</sub> H <sub>19</sub> Br <sub>2</sub> NO <sub>3</sub>
<b>Molecular Weight:</b>	505.2
<b>Target:</b>	Endogenous Metabolite; Calcium Channel; Caspase; Apoptosis; Bcl-2 Family; NF-κB; Interleukin Related
<b>Pathway:</b>	Metabolic Enzyme/Protease; Membrane Transporter/Ion Channel; Neuronal Signaling; Apoptosis; NF-κB; Immunology/Inflammation
<b>Storage:</b>	Powder    -20°C    3 years 4°C        2 years In solvent   -80°C    6 months -20°C    1 month



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	DMSO : 100 mg/mL (197.94 mM); ultrasonic and warming and heat to 60°C				
		Solvent Concentration	Mass		
	<b>Preparing Stock Solutions</b>	<b>1 mM</b>	<b>1 mg</b>	<b>5 mg</b>	<b>10 mg</b>
		<b>5 mM</b>	1.9794 mL	9.8971 mL	19.7941 mL
		<b>10 mM</b>	0.3959 mL	1.9794 mL	3.9588 mL
Please refer to the solubility information to select the appropriate solvent.					
<b>In Vivo</b>	1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: 2.5 mg/mL (4.95 mM); Suspended solution; Need ultrasonic				
	2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: 2.5 mg/mL (4.95 mM); Suspended solution; Need ultrasonic				
	3. Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: ≥ 2.5 mg/mL (4.95 mM); Clear solution				

### BIOLOGICAL ACTIVITY

<b>Description</b>	Deltamethrin (Decamethrin) is an orally active synthetic pyrethroid insecticide. Deltamethrin induces oxidative stress and results in inflammation and apoptosis via inhibiting Nrf2/HO-1 pathway. Deltamethrin has an anticancer effect by inducing apoptosis. Deltamethrin can be used extensively in pest control <sup>[1][2][3][4][5][6]</sup> .			
<b>IC<sub>50</sub> &amp; Target</b>	Caspase 3	Bcl-2	Bax	IL-1β

**In Vitro**

Deltamethrin (5-60  $\mu\text{M}$ , 24 h) increases cytosolic free  $\text{Ca}^{2+}$  concentration and induces apoptosis in a concentration-dependent manner in OC2 human oral cancer cells<sup>[2]</sup>.

Deltamethrin (0.5-100  $\mu\text{M}$ , 24 h) inhibits thymocytes viability<sup>[3]</sup>.

Deltamethrin (10-50  $\mu\text{M}$ , 1-6 h) shows a concentration- and time-dependent enhancement in caspase-3 activity in murine thymocytes<sup>[3]</sup>.

Deltamethrin (10-50  $\mu\text{M}$ , 18 h) induces apoptosis in thymocytes<sup>[3]</sup>.

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

**Cell Viability Assay<sup>[3]</sup>**

Cell Line:	Murine thymocytes
Concentration:	0.5 $\mu\text{M}$ , 1 $\mu\text{M}$ , 10 $\mu\text{M}$ , 25 $\mu\text{M}$ , 50 $\mu\text{M}$ , 100 $\mu\text{M}$
Incubation Time:	6 h, 18 h
Result:	Caused 32% and 59% loss in cell viability at 25 $\mu\text{M}$ and 100 $\mu\text{M}$ at 6 h. Caused 46% and 68% loss in cell viability at 25 $\mu\text{M}$ and 100 $\mu\text{M}$ at 18 h.

**Cell Cycle Analysis<sup>[3]</sup>**

Cell Line:	Murine thymocytes
Concentration:	10 $\mu\text{M}$ , 25 $\mu\text{M}$ , 50 $\mu\text{M}$
Incubation Time:	18 h
Result:	Increased the number of apoptotic cells in a concentration-dependent manner.

**In Vivo**

Deltamethrin (5.6-18 mg/kg, Oral, once a day for 15 days) induces oxidative stress in mice<sup>[4]</sup>.

Deltamethrin (60 mg/kg, Intraperitoneal injection, single dose) can increase the activity of Choline acetyltransferase (ChAT) in the striatum in rats<sup>[5]</sup>.

Deltamethrin (15-45 mg/kg, Gavage, once a day for 12 weeks) promotes cardiomyocyte inflammation and apoptosis through inhibiting the Nrf2/HO-1 signaling pathway in quails<sup>[6]</sup>.

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

Animal Model:	Swiss albino male mice <sup>[4]</sup>
Dosage:	5.6 mg/kg, 18 mg/kg
Administration:	Oral
Result:	Significantly induced lipid peroxidation (LPO) in liver and kidney. Suppressed the activities of vital antioxidant enzymes such as glutathione peroxidase (GPx), glutathione S-transferase (GST) and catalase (CAT). Decreased the glutathione (GSH) level.

Animal Model:	Male Sprague-Dawley rats <sup>[5]</sup>
Dosage:	60 mg/kg
Administration:	Intraperitoneal injection (i.p.)
Result:	Modulated the hippocampal high-affinity choline uptake (HACU). Increased the activity of ChAT in the hippocampus and cortex. Increased the activity of striatal ChAT.

---

## REFERENCES

- [1]. Lu Q, et al. Deltamethrin toxicity: A review of oxidative stress and metabolism [J]. Environmental research, 2019, 170: 260-281.
- [2]. Chi C C, et al. Effect of the pesticide, deltamethrin, on Ca<sup>2+</sup> signaling and apoptosis in OC2 human oral cancer cells [J]. Drug and Chemical Toxicology, 2014, 37(1): 25-31.
- [3]. Kumar A, et al. Deltamethrin induced an apoptogenic signalling pathway in murine thymocytes: exploring the molecular mechanism [J]. Journal of Applied Toxicology, 2014, 34(12): 1303-1310.
- [4]. Rehman H, et al. The modulatory effect of deltamethrin on antioxidants in mice [J]. Clinica Chimica Acta, 2006, 369(1): 61-65.
- [5]. Hossain M M, et al. Neuromechanical effects of pyrethroids, allethrin, cyhalothrin and deltamethrin on the cholinergic processes in rat brain [J]. Life sciences, 2005, 77(7): 795-807
- [6]. Yang X, et al. The heart as a target for deltamethrin toxicity: Inhibition of Nrf2/HO-1 pathway induces oxidative stress and results in inflammation and apoptosis [J]. Chemosphere, 2022, 300: 134479.
- 

**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