

Product Data Sheet

Product Name: Bifenthrin

Cat. No.: GC60642

Chemical Properties

Cas. No. 82657-04-3

SMILES O=C([C@H]1C(C)(C)[C@H]1/C=C(Cl)/C(F)(F)F)OCC2=C(C)C(C3=CC=CC=C3)=CC=C2

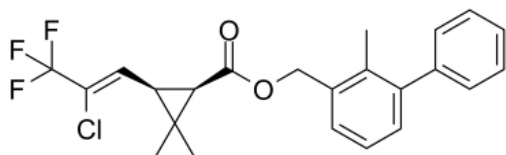
Formula $C_{23}H_{22}ClF_3O_2$ M.Wt 422.87

Solubility DMSO: 100 mg/mL (236.48 mM) Storage 4°C, protect from light

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

Cell lines Primary microglia of Sprague Dawley rats

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

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Preparation Method Microglial cells were exposed to Bifenthrin (DMSO as a control) for 24h. Gene expression of TNF-alpha and IL-6 was analyzed by real-time quantitative PCR.

Reaction Conditions 20μM; 24h

Applications Bifenthrin increased the expression of IL-6 and TNF-alpha mRNA in primary microglia.

Animal experiment [2]:

Animal models BALB/c mice

Preparation Method The animals were exposed daily to Bifenthrin via a 0.3 mL intraperitoneal injection of the appropriate concentration in corn oil. After a 7-day treatment period, the livers were collected for analysis.

Dosage form 2, 4, 8mg/kg; 7d; i.p.

Applications Bifenthrin resulted in a concentration-dependent increase in mitochondrial ROS generation.

References:

[1] Gargouri B, Yousif N M, Bouchard M, et al. Inflammatory and cytotoxic effects of bifenthrin in primary microglia and organotypic hippocampal slice cultures [J]. Journal of neuroinflammation, 2018, 15(1): 159.

[2] Zhang Y, Lu M, Zhou P, et al. Multilevel evaluations of potential liver injury of bifenthrin [J]. Pesticide biochemistry and physiology, 2015, 122: 29-37.

Background

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Background

Bifenthrin is a pyrethroid insecticide whose principal target of the neurotoxic action is the neuronal membrane's voltage-gated Na⁺ channel [1]. Bifenthrin has greater photostability and insecticidal activity, but is neurotoxic to various animals, and its clinical signs of toxicity including tremors and convulsions. [1, 2].

Bifenthrin (20μM; 24h) induced a marked increase in PGE₂, NO and TNF-alpha production in primary microglia; Bifenthrin (20μM; 24h) increased the expression of IL-6 and TNF-alpha mRNA in primary microglia [3]. Bifenthrin (1, 1.5μM; 24h) significantly decreased glutathione peroxidase activity in erythrocytes; Bifenthrin (1.5μM; 24h) induced hemolysis in erythrocytes [2].

Bifenthrin (30, 60ng/L; 14d) increased the number of congested blood vessels of juvenile rainbow trout [4]. Bifenthrin (8mg/kg; 7d; i.p.) induced local nuclear pyknosis and vacuolar degeneration of liver tissues in some BALB/c mouse specimens; Bifenthrin (2, 4, 8mg/kg; 7d; i.p.) resulted in a concentration-dependent increase in mitochondrial ROS generation of BALB/c mice [5]. Bifenthrin (0.6mg/kg; 6weeks; qod.; i.g.) significantly increased body weight of C57BL/6 mice; Bifenthrin (0.6mg/kg; 6weeks; qod.; i.g.) significantly downregulated the expression of HSL and ATGL while significantly upregulated the expression of LPL of C57BL/6 mice [6].

References:

- [1] Moreira C V L, Ogbu J s, Monteiro K L C, et al. Bifenthrin under scrutiny: revisiting toxicological evidence amid regulatory gaps [J]. Journal of applied toxicology : JAT, 2026, 46(1): 61-77.
- [2] Mukhtar F, Jilani K, Bibi I, et al. Stimulation of erythrocyte membrane blebbing by Bifenthrin induced oxidative stress [J]. Dose-response : a publication of International Hormesis Society, 2022, 20(1): 15593258221076710.
- [3] Gargouri B, Yousif N M, Bouchard M, et al. Inflammatory and cytotoxic effects of bifenthrin in primary microglia and organotypic hippocampal slice cultures [J]. Journal of neuroinflammation, 2018, 15(1): 159.
- [4] Magnuson J T, Caceres L, Sy N, et al. The use of non-targeted lipidomics and histopathology to characterize the neurotoxicity of Bifenthrin to juvenile rainbow trout (*Oncorhynchus mykiss*) [J]. Environmental science & technology, 2022, 56(16): 11482-11492.
- [5] Zhang Y, Lu M, Zhou P, et al. Multilevel evaluations of potential liver injury of bifenthrin [J]. Pesticide biochemistry and physiology, 2015, 122: 29-37.

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[6] Wei C, Wang X, Yao X, et al. Bifenthrin induces fat deposition by improving fatty acid uptake and inhibiting lipolysis in mice [J]. Journal of agricultural and food chemistry, 2019, 67(51): 14048-14055.

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