Okadaic acid ammonium salt

Cat. No.: HY-115760

CAS No.: 175522-42-6

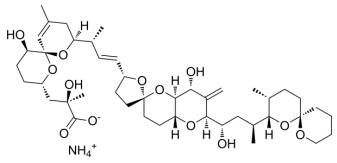
Molecular Formula: $C_{44}H_{71}NO_{13}$

Molecular Weight: 822.03

Target: Phosphatase

Pathway: Metabolic Enzyme/Protease

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Okadaic acid ammonium salt, a marine toxin, is an inhibitor of protein phosphatases (PP). Okadaic acid ammonium salt has a significantly higher affinity for PP2A (IC_{50}=0.1-0.3 nM), and inhibits PP1 (IC_{50}=15-50 nM), PP3 (IC_{50}=3.7-4 nM), PP4 (IC_{50}=0.1 nM), PP5 (IC_{50}=3.5 nM), but does not inhibit PP2C. Okadaic acid ammonium salt increases of phosphorylation of a number of proteins by inhibiting PP, and acts as a tumor promoter. Okadaic acid ammonium salt induces tau phosphorylation[1][2].

IC_{50} & Target

PP1 15-50 nM (IC_{50})	PP2A 0.1-0.3 nM (IC_{50})	PP3 3.7-4 nM (IC_{50})	PP4 0.1 nM (IC_{50})
PP5 3.5 nM (IC_{50})	PP2B ~4000 nM (IC_{50})	PP7 ⊠1000 nM (IC_{50})	

In Vitro

Okadaic acid ammonium salt (0-100 nM; 24 h or 48 h) inhibits the proliferation of AGS, MNK-45, Caco 2 cells[3].
Okadaic acid (10 nM, 8 hours) ammonium salt increases Drp1 phosphorylation and mitochondrial fission in rat cortical neurons[4].

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

Cell Proliferation Assay[3]

Cell Line:	AGS, MNK-45 and Caco 2 cell lines
Concentration:	0-100 nM
Incubation Time:	24 h or 48 h
Result:	Inhibited the proliferation of AGS, MNK-45, Caco 2 cells.

In Vivo

Okadaic acid ammonium salt (100 μM; injected unilaterally to the lateral amygdala) induces Tau phosphorylation and protein aggregation in anatomically distinct brain regions 24 h post-injection[5].

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

Animal Model:	Female wild-type C57BL/6 mice (6 to 8 months)[5]
Dosage:	100 μM

Administration:	Injected unilaterally to the lateral amygdala
Result:	Induced Tau phosphorylation and protein aggregation in anatomically distinct brain regions 24 h post-injection.

CUSTOMER VALIDATION

- Cancer Lett. 2021 Mar 3;S0304-3835(21)00101-4.
- Int J Biol Macromol. 2023 Jun 2;125171.
- Int J Biochem Cell Biol. 2021, 106036.
- bioRxiv. 2023 Jun 6.
- Research Square Preprint. 2022 Mar.

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REFERENCES

[1]. Kleppe R, et al. Cell Death Inducing Microbial Protein Phosphatase Inhibitors--Mechanisms of Action. Mar Drugs. 2015 Oct 22;13(10):6505-20.

[2]. Valdiglesias V, et al. Okadaic acid: more than a diarrheic toxin. Mar Drugs. 2013 Oct 31;11(11):4328-49.

[3]. del Campo M, et al. Okadaic acid toxin at sublethal dose produced cell proliferation in gastric and colon epithelial cell lines. Mar Drugs. 2013;11(12):4751-4760.

[4]. Cho MH, et al. Increased phosphorylation of dynamin-related protein 1 and mitochondrial fission in okadaic acid-treated neurons. Brain Res. 2012 May 15;1454:100-10.

[5]. Baker S, et al. A local insult of okadaic acid in wild-type mice induces tau phosphorylation and protein aggregation in anatomically distinct brain regions. Acta Neuropathol Commun. 2016;4:32.

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