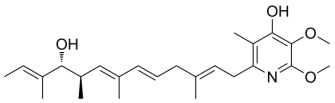
Piericidin A

Cat. No.:	HY-114936
CAS No.:	2738-64-9
Molecular Formula:	$C_{25}H_{37}NO_4$
Molecular Weight:	415.57
Target:	Bacterial; ADC Cytotoxin; Antibiotic; Mitochondrial Metabolism
Pathway:	Anti-infection; Antibody-drug Conjugate/ADC Related; Metabolic Enzyme/Protease
Storage:	Solution, -20°C, 2 years



BIOLOGICAL ACTIVITY

Description	Piericidin A (AR-054) is a natural mitochondrial NADH-ubiquinone oxidoreductase (complex I) inhibitor. Piericidin A is a potent neurotoxin and inhibits mitochondrial respiration by disrupting the electron transport system through its action on NADH-ubiquinone reductase. Piericidin A is also a potential quorum-sensing inhibitor that suppresses the expression of the virulence genes of ***Erwinia carotovora subsp. atroseptica*** (Eca). Piericidin A is an ADC cytotoxin and has anti-bacterial, anticancer, insecticidal activity[1][2][2].
In Vitro	In a cell free assay, the potency of Piericidin A to inhibit mitochondrial complex I is -2 fold smaller than the one of annonacin. In cultured neurons, Piericidin A potently induces the redistribution of phosphorylated tau from the dendrites into the cell soma and induces cell death[1]. The viability of Tn5B1-4 cells is inhibited by Piericidin A in a time- and concentration-dependent manner with IC_{50} value of 0.061 μM, whilst Piericidin A shows slight inhibitory effect on the viability of HepG2 and Hek293 cells with IC_{50} value of 233.97 μM and 228.96 μM, respectively. Piericidin A induces apoptosis of Tn5B1-4 cells coincides with a decrease in the mitochondrial membrane potential[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Piericidin A (0.5 mg/kg/d; for 28 days via osmotic minipumps) significantly increases the number of phospho-tau immunoreactive cells in the cerebral cortex in $P301S^{+/+}$ mice. Piericidin A leads to increased levels of pathologically phosphorylated tau only in $P301S^{+/+}$ mice. The synaptic density is reduced by Piericidin A treatment in $P301S^{+/+}$ mice. Exposure to Piericidin A aggravates the course of genetically determined tau pathology[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Matthias Höllerhage, et al. Piericidin A Aggravates Tau Pathology in P301S Transgenic Mice. PLoS One. 2014 Dec 1;9(12):e113557.

[2]. Ji Eun Kang, et al. Efficacies of Quorum Sensing Inhibitors, Piericidin A and Glucopiericidin A, Produced by Streptomyces Xanthocidicus KPP01532 for the Control of Potato Soft Rot Caused by Erwinia Carotovora Subsp. Atroseptica. Microbiol Res. 2016 Mar;184:32-41.

[3]. Solange Muhayimana, et al. Cytotoxic Selectivity and Apoptosis Induction of Piericidin A Contributes Potentially to Its Insecticidal Effect Against Mythimna Separata (Lepidoptera: Noctuidae) Larvae. Pestic Biochem Physiol. 2019 Jun;157:19-25.

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

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