Product Data Sheet

Product Name: Autocamtide-2-related inhibitory peptide
Cat. No.: GC15099

Chemical Properties

Cas. No.	167114-91-2		
Chemical Name	(2S,3Z,5S,6Z,8S,9Z,11S,12Z,14S,15Z,17S)-17-((Z)-((2S,3Z,5S,6Z,8S,9Z,11S,12Z,14S,15Z,17S,18Z,20S,21Z)-17,20-bis(4-aminobutyl)-5,8-bis(3-guanidinopropyl)-1,4,7,10,13,16,19,22-octahydroxy-2-(3-hydroxy-3-iminopropyl)-11-isobutyl-14-methyl-3,6,9,12,15,18,21-he		
SMILES	CCCCCCCCCCCCC/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](/C(O)=N/[C@@](C(O)=O)([H])CC(C)C)([H])C)([H])CC(O)=O)([H])C(C)C)([H])C)([H		
Formula	$C_{78}H_{142}N_{22}O_{20} \cdot C_2HF_3O_2$	M.Wt	1822.14
Solubility	DMF: 30 mg/ml,DMSO: 30 mg/ml,PBS (pH 7.2): 10 mg/ml	Storage	Desiccate at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ 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			

Background

IC50: 40 nM for CaM-kinase II [1].

Synthetic peptide AIP (autocamtide-2-related inhibitory peptide) is a nonphosphorylatable analog of autocamtide-2, which was identified to be a highly specific and potent inhibitor of calmodulin-dependent protein kinase II (CaM-kinase II, CaMKII). CaMKII is a serine/threonine-specific protein kinase, which is modulated by the Ca2+/calmodulin.

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In vitro: AIP (1 mM) completely inhibited CaMKII activity, but did not affect cAMP-dependent protein kinase, calmodulin-dependent protein kinase IV and protein kinase C,. The inhibition was noncompetitive, and the action was caused by binding to the autophosphorylation site, which is distinc from that for the exogenous substrate. The IC50 for the autophosphorylation of CaM II is 100 nM [1].

In vivo: Mice treated with AIP by transgenic expression of AIP, were protected from fructose-rich diet-induced arrhythmogenesis, spontaneous contractions and spontaneous Ca2+ release events [2]. Intra-nucleus accumbens (NAc) injection of AIP could dose-dependently increase the HWL (hindpaw withdrawal latency) to noxious thermal and mechanical stimulation in rats with mononeuropathy [3].

Clinical trial: So far, no clinical study has been conducted.

References:
[1] Ishida A1, Kameshita I, Okuno S, Kitani T, Fujisawa H. A novel highly specific and potent inhibitor of calmodulin-dependent protein kinase II. Biochem Biophys Res Commun. 1995 Jul 26;212(3):806-12.
[2] Sommese L, Valverde CA, Blanco P, Castro MC, Rueda OV, Kaetzel M, Dedman J, Anderson ME, Mattiazzi A, Palomeque J. Ryanodine receptor phosphorylation by CaMKII promotes spontaneous Ca(2+) release events in a rodent model of early stage diabetes: The arrhythmogenic substrate. Int J Cardiol. 2016 Jan 1;202:394-406.
[3] Bian H, Yu LC. Intra-nucleus accumbens administration of the calcium/calmodulin-dependent protein kinase II inhibitor AIP induced antinociception in rats with mononeuropathy. Neurosci Lett. 2015 Jul 10;599:129-32.

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