
Product Data Sheet

Product Name: ZIP (SCRAMBLED)

Cat. No.: GC13461

Chemical Properties

Cas. No. 908012-18-0

Formula $C_{90}H_{154}N_{30}O_{17}$

M.Wt 1928.4

Solubility $\geq 192.8\text{mg/mL}$ in DMSO

Storage Store at -20°C

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

Background

IC50: By suppressing protein kinase $M\xi$ (PKM ξ), ZIP reverses late-phase LTP with an IC50 of 1 - 2.5 μM .

Long-term potentiation (LTP), a persistent synaptic enhancement, is considered to be a substrate for memory. A typical LTP process includes two phases, induction and maintenance. PKM ξ as an active form of protein kinase C (PKC) isozyme is necessary and potent for LTP maintenance. ZIP is applied as a novel and cell-permeable inhibitor for PKM ξ and can therefore block LTP. [1]

In vitro: In order to determine the specific phase of LTP affected by PKM ξ , ZIP was added at different concentrations to the bath before cells incubation. Experiments with ZIP were compared with experiments without the peptide. This study showed that ZIP could selectively inhibit PKM ξ -induced synaptic potentiation in hippocampal slices in vitro. [2]

In vivo: ZIP was the first tool available to test the maintenance hypothesis in vitro. The effect of ZIP on late phase of LTP in vivo was also detected using the rat hippocampus. It was found that intra-hippocampal injection of ZIP with a dosage of 10 nmol in 1 ml saline rapidly reversed the late-phase LTP and led to persistent loss of 1-day-old spatial memory. [3]

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

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

References:

[1]Ling SF, Benardo LS, Serrano PA, Blace N, Kelly MT, Crary JF and Sacktor TC. Protein kinase M ξ is necessary and sufficient for LTP maintenance. Nat. Neurosci. 2002 Apr. 5(4): 2956.

[2]Serrano P, Yao Y and Sacktor TC. Persistent phosphorylation by protein kinase maintains late-phase long-term potentiation. J. Neurosci. 2005 Feb. 25(8): 1979-84.

[3]Pastalkova E, Serrano P, Pinkhasova D, Wallace E, Fenton AA, Sacktor TC. Storage of spatial information by the maintenance mechanism of LTP. Science. 2006 Aug. 313: 1141-4.

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