

AUT1

Chemical Properties

CAS No. : 1311136-84-1

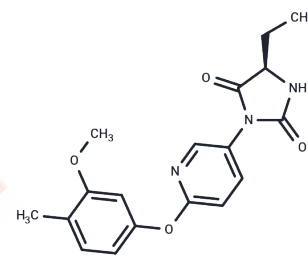
Formula: C₁₈H₁₉N₃O₄

Molecular Weight: 341.36

Keep away from moisture

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Actual storage temperature shall be subject to the COA.



Biological Description

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| Description | AUT1 (AUT-1) is a novel specific modulator of Kv3 channels (EC50: 4.7 and 4.9 μ M for Kv3.1b and Kv3.2a). |
| Targets(IC50) | Potassium Channel |
| In vitro | AUT1 increased the current mediated by human recombinant Kv3.1b and Kv3.2a channels. pEC50 values for AUT1 were 5.33 (4.7 μ M) and 5.31 (4.9 μ M) for Kv3.1b and Kv3.2a, respectively [1]. Using Chinese hamster ovary cells stably expressing rat Kv3.1 channels, lower concentrations of AUT1 shift the voltage of activation of Kv3.1 currents toward negative potentials, increasing currents evoked by depolarization from typical neuronal resting potentials [2]. |
| Cell Research | The population patch-clamp mode of an automated voltage clamp recording with IonWorks Quattro was used. Briefly, the effects on these channels were tested using 384-well population patch-clamp plates. Seal resistance was measured for each well, and cells were perforated by incubation with 100 mg/ml amphotericin B. Cells were held at 270 mV and stepped to 215 mV for 100 milliseconds (partial channel activation), and after 100 milliseconds at 270 mV, a second pulse to 140 mV was applied for 50 milliseconds (full channel activation). In all of the experiments, this voltage protocol was applied to cells before and following a 3-minute incubation with AUT1. 1-Cyclohexyl-1-[(7,8-dimethyl-2-oxo-1H-quinolin-3-yl)methyl]-3-phenylurea (10 mM), which we had previously found to be a potent and full activator of human Kv3.1 and Kv3.2 channels, was included in all assays as a standard. An external buffer with the addition of dimethyl sulfoxide (DMSO) was also tested to provide a vehicle baseline. Recordings were performed in the following buffers: Dulbecco's phosphate-buffered saline (PBS) with MgCl ₂ and CaCl ₂ as an extracellular solution and 50 mM KCl, 100 mM K-gluconate, 3.2 mM MgCl ₂ , and 5 mM HEPES, pH 7.3 adjusted with KOH, as an intracellular solution. An online correction of 115-20 mV was applied to correct for junction potentials. The current signal was sampled at 10 kHz [1]. |

Solubility Information

A DRUG SCREENING EXPERT

| | |
|---------------------|---|
| Solubility | DMSO: 250 mg/mL (732.36 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble) |
| In vivo Formulation | 10% DMSO+40% PEG300+5% Tween 80+45% Saline: 5 mg/mL (14.65 mM),Sonication is recommended. <i>Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.</i> |

Preparing Stock Solutions

| | 1mg | 5mg | 10mg |
|-------|-----------|------------|------------|
| 1 mM | 2.9295 mL | 14.6473 mL | 29.2946 mL |
| 5 mM | 0.5859 mL | 2.9295 mL | 5.8589 mL |
| 10 mM | 0.2929 mL | 1.4647 mL | 2.9295 mL |
| 50 mM | 0.0586 mL | 0.2929 mL | 0.5859 mL |

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

- Rosato-Siri MD, et al. A Novel Modulator of Kv3 Potassium Channels Regulates the Firing of Parvalbumin-Positive Cortical Interneurons. *J Pharmacol Exp Ther.* 2015 Sep;354(3):251-60.
- Brown MR, et al. Physiological modulators of Kv3.1 channels adjust firing patterns of auditory brain stem neurons. *J Neurophysiol.* 2016 Jul 1;116(1):106-21.

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