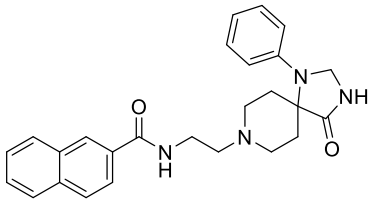
Product data sheet

MedKoo Cat#: 555649 Name: CAY10594 CAS#: 1130067-34-3 Chemical Formula: $C_{26}H_{28}N_4O_2$ Exact Mass: 428.2212 Molecular Weight: 428.54	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

CAY10594 is a potent phospholipase D2 inhibitor. CAY10594 ameliorates acetaminophen-induced acute liver injury by regulating the phosphorylated-GSK-3β/JNK axis. CAY10594 administration markedly blocked the acute liver injury in a dose-dependent manner, showing almost complete inhibition with 8 mg/kg of CAY10594. CAY10594 administration strongly blocked GSK-3β (Serine 9)/JNK phosphorylation in the APAP-induced acute liver injury model. Consistently, sustained JNK activation in the cytosol and mitochondria from hepatocytes were also decreased in CAY10594-treated mice.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	20	46.67
DMF	20	46.67
DMSO:PBS(pH7.2) (1:1)	0.5	1.17

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.33 mL	11.67 mL	23.34 mL
5 mM	0.47 mL	2.33 mL	4.67 mL
10 mM	0.23 mL	1.17 mL	2.33 mL
50 mM	0.05 mL	0.23 mL	0.47 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

Pupovac A, Stokes L, Sluyter R. CAY10593 inhibits the human P2X7 receptor independently of phospholipase D1 stimulation. Purinergic Signal. 2013 Dec;9(4):609-19. doi: 10.1007/s11302-013-9371-6. Epub 2013 Jun 21. PMID: 23793974; PMCID: PMC3889394.

In vivo study

Lee SK, Bae GH, Kim YS, Kim HS, Lee M, Ghim J, Zabel BA, Ryu SH, Bae YS. A phospholipase D2 inhibitor, CAY10594, ameliorates acetaminophen-induced acute liver injury by regulating the phosphorylated-GSK-3β/JNK axis. Sci Rep. 2019 May 10;9(1):7242. doi: 10.1038/s41598-019-43673-x. PMID: 31076618; PMCID: PMC6510900.

7. Bioactivity

Biological target:

PLD2 inhibitor

Product data sheet

In vitro activity

The current study investigated the mode of action of this compound on P2X7 activation. Measurements of ATP-induced ethidium(+) uptake revealed that CAY10593 impaired P2X7-induced pore formation in human RPMI 8226 B cells, P2X7-transfected HEK-293 cells and peripheral blood mononuclear cells. Concentration response curves demonstrated that CAY10593 impaired P2X7-induced pore formation in RPMI 8226 cells more potently than the PLD2 antagonist CAY10594 and the non-specific PLD antagonist halopemide. Electrophysiology measurements demonstrated that CAY10593 also inhibited P2X7-induced inward currents. Notably, RT-PCR demonstrated that PLD1 was absent in RPMI 8226 cells, while choline-Cl medium or 1-butanol, which block PLD stimulation and signalling respectively did not impair P2X7 activation in these cells. This data indicates that CAY10593 impairs human P2X7 independently of PLD1 stimulation and highlights the importance of ensuring that compounds used in signalling studies downstream of P2X7 activation do not affect the receptor itself.

Reference: Pupovac A, Stokes L, Sluyter R. CAY10593 inhibits the human P2X7 receptor independently of phospholipase D1 stimulation. Purinergic Signal. 2013 Dec;9(4):609-19. doi: 10.1007/s11302-013-9371-6. Epub 2013 Jun 21. PMID: 23793974; PMCID: PMC3889394.

In vivo activity

CAY10594 administration strongly blocked GSK-3β (Serine 9)/JNK phosphorylation in the APAP-induced acute liver injury model. Consistently, sustained JNK activation in the cytosol and mitochondria from hepatocytes were also decreased in CAY10594-treated mice. Many types of immune cells are also implicated in APAP-induced liver injury. However, neutrophil and monocyte populations were not different between vehicle- and CAY10594-administered mice which are challenged with APAP. Therapeutic administration of CAY10594 also significantly attenuated liver damage caused by the APAP challenge, eliciting an enhanced survival rate. Taken together, these results indicate that PLD2 is involved in the intrinsic response pathway of hepatocytes driving the pathogenesis of APAP-induced acute liver injury, and PLD2 may therefore represent an important therapeutic target for patients with drug-induced liver injury.

Reference: Lee SK, Bae GH, Kim YS, Kim HS, Lee M, Ghim J, Zabel BA, Ryu SH, Bae YS. A phospholipase D2 inhibitor, CAY10594, ameliorates acetaminophen-induced acute liver injury by regulating the phosphorylated-GSK-3β/JNK axis. Sci Rep. 2019 May 10;9(1):7242. doi: 10.1038/s41598-019-43673-x. PMID: 31076618; PMCID: PMC6510900.