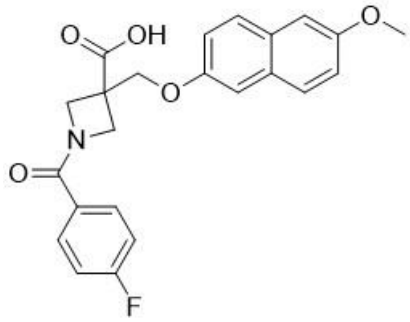
Product data sheet

MedKoo Cat#: 522468 Name: PF04418948 CAS#: 1078166-57-0 Chemical Formula: $C_{23}H_{20}FNO_5$ Exact Mass: 409.13255 Molecular Weight: 409.41	
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:

PF-04418948 is a novel, potent and selective prostaglandin EP2 receptor antagonist. PF-04418948 inhibited prostaglandin E(2)(PGE(2))-induced increase in cAMP in cells expressing EP(2) receptors with a functional K(B) value of 1.8 nM. In human myometrium, PF-04418948 produced a parallel, rightward shift of the butaprost-induced inhibition of the contractions induced by electrical field stimulation with an apparent K(B) of 5.4 nM. In dog bronchiole and mouse trachea, PF-04418948 produced parallel rightward shifts of the PGE(2)-induced relaxation curve with a K(B) of 2.5 nM and an apparent K(B) of 1.3 nM respectively. Reversal of the PGE(2)-induced relaxation in the mouse trachea by PF-04418948 produced an IC(50) value of 2.7 Nm.

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	20.0	48.9

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.44	12.21	24.43
5 mM	0.49	2.44	4.89
10 mM	0.24	1.22	2.44
50 mM	0.05	0.24	0.49

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

1. Kosuge Y, Nango H, Kasai H, Yanagi T, Mawatari T, Nishiyama K, Miyagishi H, Ishige K, Ito Y. Generation of Cellular Reactive Oxygen Species by Activation of the EP2 Receptor Contributes to Prostaglandin E2-Induced Cytotoxicity in Motor Neuron-Like NSC-34 Cells. Oxid Med Cell Longev. 2020 Jan 11;2020:6101838. doi: 10.1155/2020/6101838. PMID: 32411331; PMCID: PMC7201578.

2. af Forselles KJ, Root J, Clarke T, Davey D, Aughton K, Dack K, Pullen N. In vitro and in vivo characterization of PF-04418948, a novel, potent and selective prostaglandin EP_2 receptor antagonist. Br J Pharmacol. 2011 Dec;164(7):1847-56. doi: 10.1111/j.1476-5381.2011.01495.x. Erratum in: Br J Pharmacol. 2012 Jun;166(3):1192. Dosage error in article text. PMID: 21595651; PMCID: PMC3246710.

In vivo study

1. Zhang P, Bi RY, Gan YH. Glial interleukin-1β upregulates neuronal sodium channel 1.7 in trigeminal ganglion contributing to temporomandibular joint inflammatory hypernociception in rats. J Neuroinflammation. 2018 Apr 20;15(1):117. doi: 10.1186/s12974-018-1154-0. PMID: 29678208; PMCID: PMC5910598.

2. Stone AJ, Copp SW, Kaufman MP. Role of prostaglandins in spinal transmission of the exercise pressor reflex in decerebrated rats. Neuroscience. 2014 Sep 26;277:26-35. doi: 10.1016/j.neuroscience.2014.06.061. Epub 2014 Jul 5. PMID: 25003710; PMCID: PMC4164591.

7. Bioactivity

Biological target:

PF-04418948 is a selective prostaglandin EP2 receptor antagonist with an IC50 of 16 nM.

In vitro activity

In the present study, to clarify the mechanisms underlying PGE2-induced neurotoxicity, generation of intracellular reactive oxygen species (ROS) was focused on and the effects of N-acetylcysteine (NAC), a cell-permeable antioxidant, on PGE2-induced cell death in differentiated NSC-34 cells were examined. DCF analysis showed that the generation of ROS caused by PGE2 at 80 μM was attenuated significantly in the presence of PF-04418948, an EP2-selective antagonist, at 30 μM (Figure 1(b)). In contrast, L-798,106, an EP3-selective antagonist, at 10 μM did not suppress PGE2-induced ROS production (Figure 1(b)). PF-04418948 and L-798,106 did not change ROS formation in differentiated NSC-34 cells. These findings suggest that PGE2 is a lipid mediator with key links to inflammation and oxidative stress.

Oxid Med Cell Longev. 2020; 2020: 6101838.Published online 2020 Jan 11.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7201578/

In vivo activity

This study explored here in the trigeminal ganglion (TG) whether IL-1β upregulated Nav1.7 expression and whether the IL-1β located in the SGCs upregulated Nav1.7 expression in the neurons contributing to TMJ inflammatory hypernociception. Rat TG explants were treated with IL-1β with or without inhibitors, including NS398 for COX-2, PF-04418948 for EP2, and H89 and PKI-(6-22)-amide for protein kinase A (PKA), or with adenylate cyclase agonist forskolin, and used real-time PCR, Western blot, and immunohistofluorescence to determine the expressions or locations of Nav1.7, COX-2, cAMP response element-binding protein Treatment with PF-04418948, an EP2 selective antagonist, completely blocked the IL-1β-induced upregulation of Nav1.7 expression, but not COX-2 expression. This study also showed that the COX-2 inhibitor NS-398 or the EP2 inhibitor PF-04418948 blocked the upregulation of phospho-CREB ($P < 0.05$; Fig. 3c, d).

J Neuroinflammation. 2018; 15: 117.Published online 2018 Apr 20
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5910598/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.