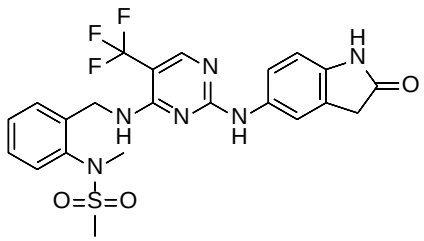
Product data sheet

MedKoo Cat#: 407200 Name: PF-431396 CAS#: 717906-29-1 Chemical Formula: $C_{22}H_{21}F_3N_6O_3S$ Exact Mass: 506.1348 Molecular Weight: 506.50	
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-431396 is a potent and selective focal adhesion kinase (FAK) and proline-rich tyrosine kinase 2 (PYK2) inhibitor (IC50 values are 2 and 11 nM respectively).

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	39.48

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.97 mL	9.87 mL	19.74 mL
5 mM	0.39 mL	1.97 mL	3.95 mL
10 mM	0.20 mL	0.99 mL	1.97 mL
50 mM	0.04 mL	0.20 mL	0.39 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

1. Konno T, Kohno T, Miyakawa M, Tanaka H, Kojima T. Pyk2 inhibitor prevents epithelial hyperpermeability induced by HMGB1 and inflammatory cytokines in Caco-2 cells. Tissue Barriers. 2021 Apr 3;9(2):1890526. doi: 10.1080/21688370.2021.1890526. Epub 2021 Mar 4. PMID: 33660567; PMCID: PMC8078543.

In vivo study

1. Sato AY, Cregor M, McAndrews K, Li T, Condon KW, Plotkin LI, Bellido T. Glucocorticoid-Induced Bone Fragility Is Prevented in Female Mice by Blocking Pyk2/Anoikis Signaling. Endocrinology. 2019 Jul 1;160(7):1659-1673. doi: 10.1210/en.2019-00237. PMID: 31081900; PMCID: PMC6591015.

7. Bioactivity
Biological target: PF-431396 is a dual focal adhesion kinase (FAK) and proline-rich tyrosine kinase 2 (PYK2) inhibitor, with IC50 values of 2 nM and 11 nM, respectively.

In vitro activity

To investigate the roles of Pyk2 phosphorylated angulin-1/LSR and TRIC in the intestinal epithelial barrier, 2D and 2.5D cultures of Caco-2 cells were treated with the Pyk2 inhibitor PF-43 with or without HMGB1, inflammatory cytokines TNFα and IFNγ. Treatment with PF-43 increased expression of angulin-1/LSR, phosphorylated AMPK and phosphorylated MAPK and decreased that of

phosphorylated JNK, with upregulation of the epithelial barrier and cellular metabolism measured as basal oxygen consumption rate (OCR) and ATP production in 2D culture. Treatment with PF-43 prevented the downregulation of the epithelial barrier by HMGB1 and inflammatory cytokines in 2D culture. Treatment with PF-43 prevented the epithelial hyperpermeability induced by HMGB1 and inflammatory cytokines in 2.5D culture. In 2.5D culture, treatment with PF-43 inhibited the decreases of angulin-1/LSR, TRIC, pJNK, pAMPK and pMAPK induced by HMGB1 and the inflammatory cytokines. Treatment with PF-43 inhibited in part the induced phosphorylation of the serine of angulin-1/LSR and TRIC.

Reference: Tissue Barriers. 2021 Apr 3;9(2):1890526.
https://www.tandfonline.com/doi/abs/10.1080/21688370.2021.1890526?journalCode=ktib20

In vivo activity

Excess of glucocorticoids (GCs) is a leading cause of bone fragility, and therapeutic targets are sorely needed. Pharmacological inhibition of proline-rich tyrosine kinase 2 (Pyk2) prevents GC-induced bone loss by overriding GC effects of detachment-induced bone cell apoptosis (anoikis). In wild-type or vehicle-treated mice, GCs either prevented osteoclast apoptosis or promoted osteoblast/osteocyte apoptosis. In contrast, mice treated with Pyk2 kinase inhibitor PF-431396 (PF) were protected. PF-treated mice were also protected from GC-induced bone resorption, microarchitecture deterioration, and weakening of biomechanical properties.

Reference: Endocrinology. 2019 Jul 1;160(7):1659-1673. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6591015/

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.