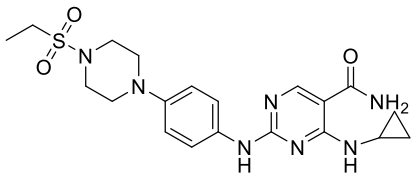
Product data sheet

MedKoo Cat#: 206113 Name: Cerdulatinib free base CAS#: 1198300-79-6 (free base) Chemical Formula: $C_{20}H_{27}N_7O_3S$ Exact Mass: 445.18961 Molecular Weight: 445.54	
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:

Cerdulatinib, also known as PRT2070 and PRT062070, is a n ovel, oral, dual spleen tyrosine kinase (Syk) and janus kinase (JAK) inhibitor. Cerdulatinib preferentially inhibited JAK1 and JAK3 dependent cytokine mediated signaling and functional responses in various cell types. IL2 mediated STAT5 Y694 was inhibited with an IC50 of 0.27μM, while IL4 mediated signaling to STAT6 Y641 and functional responses in B cells and monocytes, namely CD69, CD25, and CD23 up-regulation, were inhibited with IC50Â's within the range of 0.11μM to 0.57μM. It is currently being studied in patients with genetically-defined hematologic cancers, as well as for patients who have failed therapy due to relapse or acquired mutations.

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	25.0	56.11
DMSO:PBS (pH 7.2) (1:3)	0.25	0.56
DMF	20.0	44.89

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.24 mL	11.22 mL	22.44 mL
5 mM	0.45 mL	2.24 mL	4.49 mL
10 mM	0.22 mL	1.12 mL	2.24 mL
50 mM	0.04 mL	0.22 mL	0.45 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. Guo A, Lu P, Coffey G, Conley P, Pandey A, Wang YL. Dual SYK/JAK inhibition overcomes ibrutinib resistance in chronic lymphocytic leukemia: Cerdulatinib, but not ibrutinib, induces apoptosis of tumor cells protected by the microenvironment. Oncotarget. 2017 Feb 21;8(8):12953-12967. doi: 10.18632/oncotarget.14588. PMID: 28088788; PMCID: PMC5355069.
2. Blunt MD, Koehrer S, Dobson RC, Larrayoz M, Wilmore S, Hayman A, Parnell J, Smith LD, Davies A, Johnson PWM, Conley PB, Pandey A, Strefford JC, Stevenson FK, Packham G, Forconi F, Coffey GP, Burger JA, Steele AJ. The Dual Syk/JAK Inhibitor Cerdulatinib Antagonizes B-cell Receptor and Microenvironmental Signaling in Chronic Lymphocytic Leukemia. Clin Cancer Res. 2017 May 1;23(9):2313-2324. doi: 10.1158/1078-0432.CCR-16-1662. Epub 2016 Oct 3. PMID: 27697994; PMCID: PMC5417366.

In vivo study

Product data sheet

1. Coffey G, Betz A, DeGuzman F, Pak Y, Inagaki M, Baker DC, Hollenbach SJ, Pandey A, Sinha U. The novel kinase inhibitor PRT062070 (Cerdulatinib) demonstrates efficacy in models of autoimmunity and B-cell cancer. J Pharmacol Exp Ther. 2014 Dec;351(3):538-48. doi: 10.1124/jpet.114.218164. Epub 2014 Sep 24. PMID: 25253883.

7. Bioactivity

Biological target:

Cerdulatinib (PRT062070) is a selective Tyk2 inhibitor with an IC50 of 0.5 nM.

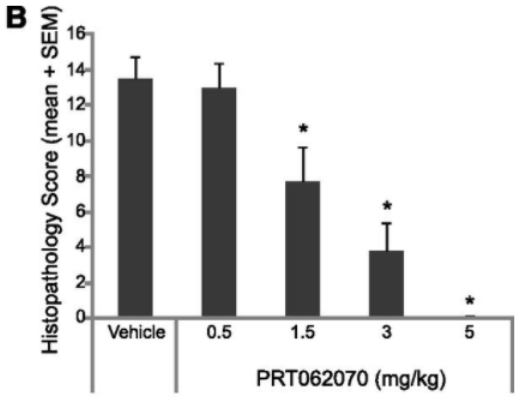
In vitro activity

In order to determine whether cerdulatinib is effective against CLL in the presence of microenvironmental support, this study first tested the effects of cerdulatinib in two in vitro CLL co-culture models mimicking the in vivo microenvironment. Addition of 2μM cerdulatinib significantly reduced CLL cell viability throughout the 7-day course, even when cells were co-cultured over either NKTert or HS-5, human bone marrow stromal cell lines (Figure 3A). The anti-survival effect became more pronounced as the dose of cerdulatinib was escalated from 1 to 4 uM with both models (Figure 3B).

Reference: Oncotarget. 2017 Feb 21; 8(8): 12953–12967. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5355069/

In vivo activity

This study tested the potential for PRT062070 to modulate inflammation in the rat CIA treatment model after oral dosing. Animals treated with vehicle control exhibited a rapid onset of hind paw inflammation within 2–3 days of boosting with adjuvant, with maximal inflammation occurring by day 7. Treatment with 0.5 mg/kg PRT062070 (attaining average C_{max} plasma concentration at 2 hours of 0.18 μM) resulted in a nonstatistically significant trend toward reduced ankle inflammation, whereas significant reductions in inflammation were achieved with the 1.5, 3, and 5 mg/kg doses, with average C_{max} plasma concentrations at 2 hours of 0.52, 0.58, and 1.49 μM, respectively. Inflammation was abolished at the 3 mg/kg dose and reversed relative to pretreatment levels at 5 mg/kg (**Fig. 6A**). Significant improvements in inflammatory infiltrate within the synovium and the integrity of the articular cartilage were observed in a dose-dependent manner (**Fig. 6B**). Representative histologic evaluations are shown in Supplemental Fig. 3.



Reference: J Pharmacol Exp Ther. 2014 Dec;351(3):538-48. https://jpet.aspetjournals.org/content/351/3/538.long

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.