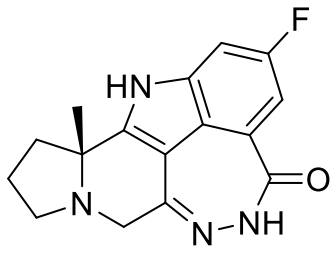
Product data sheet

MedKoo Cat#: 561124 Name: Pamiparib free base CAS: 1446261-44-4 (free base) Chemical Formula: $C_{16}H_{15}FN_4O$ Exact Mass: 298.123 Molecular Weight: 298.3214	
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:
Pamiparib, also known as BGB-290, is a highly potent and selective PARP inhibitor with favorable drug metabolism and pharmacokinetic properties. BGB-290 selectively binds to PARP and prevents PARP-mediated repair of single-strand DNA breaks via the base-excision repair (BER) pathway. This enhances the accumulation of DNA strand breaks, promotes genomic instability, and eventually leads to apoptosis. BGB-290 may both potentiate the cytotoxicity of DNA-damaging agents and reverse tumor cell chemo- and radioresistance.

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
DMF	20.0	67.04
DMF:PBS (pH 7.2) (1:10)	0.09	0.30
DMSO	40.83	136.88
Ethanol	45.0	150.84

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	3.35 mL	16.76 mL	33.52 mL
5 mM	0.67 mL	3.35 mL	6.70 mL
10 mM	0.34 mL	1.68 mL	3.35 mL
50 mM	0.07 mL	0.34 mL	0.67 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. Wang Y, Zheng K, Xiong H, Huang Y, Chen X, Zhou Y, Qin W, Su J, Chen R, Qiu H, Yuan X, Wang Y, Zou Y. PARP Inhibitor Upregulates PD-L1 Expression and Provides a New Combination Therapy in Pancreatic Cancer. Front Immunol. 2021 Dec 17;12:762989. doi: 10.3389/fimmu.2021.762989. PMID: 34975854; PMCID: PMC8718453.
2. Xiong Y, Guo Y, Liu Y, Wang H, Gong W, Liu Y, Wang X, Gao Y, Yu F, Su D, Wang F, Zhu Y, Zhao Y, Wu Y, Qin Z, Sun X, Ren B, Jiang B, Jin W, Shen Z, Tang Z, Song X, Wang L, Liu X, Zhou C, Jiang B. Pamiparib is a potent and selective PARP inhibitor with unique potential for the treatment of brain tumor. Neoplasia. 2020 Sep;22(9):431-440. doi: 10.1016/j.neo.2020.06.009. Epub 2020 Jul 8. PMID: 32652442; PMCID: PMC7350150.

In vivo study

Product data sheet

1. Wang Y, Zheng K, Xiong H, Huang Y, Chen X, Zhou Y, Qin W, Su J, Chen R, Qiu H, Yuan X, Wang Y, Zou Y. PARP Inhibitor Upregulates PD-L1 Expression and Provides a New Combination Therapy in Pancreatic Cancer. Front Immunol. 2021 Dec 17;12:762989. doi: 10.3389/fimmu.2021.762989. PMID: 34975854; PMCID: PMC8718453.
2. Xiong Y, Guo Y, Liu Y, Wang H, Gong W, Liu Y, Wang X, Gao Y, Yu F, Su D, Wang F, Zhu Y, Zhao Y, Wu Y, Qin Z, Sun X, Ren B, Jiang B, Jin W, Shen Z, Tang Z, Song X, Wang L, Liu X, Zhou C, Jiang B. Pamiparib is a potent and selective PARP inhibitor with unique potential for the treatment of brain tumor. Neoplasia. 2020 Sep;22(9):431-440. doi: 10.1016/j.neo.2020.06.009. Epub 2020 Jul 8. PMID: 32652442; PMCID: PMC7350150.

7. Bioactivity

Biological target:

Pamiparib (BGB-290) is an orally active, potent, highly selective PARP inhibitor, with IC_{50} values of 0.9 nM and 0.5 nM for PARP1 and PARP2, respectively.

In vitro activity

Further detection of cell cycle distribution by flow cytometry revealed that SW1990 cells were significantly blocked in G2/M phase upon pamiparib treatment in a time-dependent manner (all P values less than 0.01; Figure 1B). This suggests that pamiparib can significantly induce apoptosis and block cell cycle progression of pancreatic cancer cells in vitro.

Reference: Front Immunol. 2021 Dec 17;12:762989. https://pubmed.ncbi.nlm.nih.gov/34975854/

In vivo activity

Then, the PD effect of pamiparib was evaluated *in vivo* by directly measurement of PAR level in tumor site. MDA-MB-436 xenograft mice were treated once orally with the vehicle or pamiparib, at a dose ranging from 0.17 to 10.9 mg/kg. A single dose of pamiparib at 1.5 mg/kg induced 89% PARylation inhibition at 0.5 h post treatment which remained at ~81% throughout the first 12 h. Meanwhile a single dose of olaparib at 25 mg/kg induced ~100% PARylation inhibition but dropped to 72% by 12 h post treatment. These results suggest that pamiparib exhibits approximately 16-fold higher efficacy than olaparib in this model, likely due to higher drug exposure in body.

Reference: Neoplasia. 2020 Sep;22(9):431-440. https://pubmed.ncbi.nlm.nih.gov/32652442/