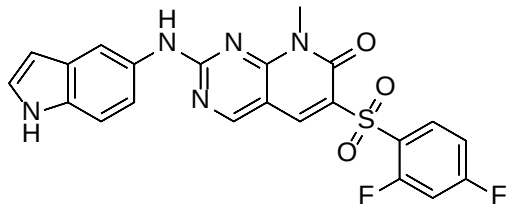
Product data sheet

MedKoo Cat#: 206799 Name: ON1231320 CAS: 1312471-39-8 Chemical Formula: $C_{22}H_{15}F_2N_5O_3S$ Exact Mass: 467.0864 Molecular Weight: 467.4508	
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:
ON1231320, also known as GBO-006, is a Polo-like kinase 2 (PLK2) inhibitor. In vitro testing revealed that ON1231320 is a selective inhibitor of PLK2 with no inhibitory activity against PLK1, PLK3 and PLK4. The cytotoxic effect of the drug is mediated by apoptosis as evidenced by the induction of Caspase 3/7 activity and by the cleavage of PARP in a dose dependent manner. ON1231320 affects cell cycle progression by blocking tumor cells in the G2/M phase however it does not affect normal human fibroblasts.

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	35.5	75.94

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.14 mL	10.70 mL	21.39 mL
5 mM	0.43 mL	2.14 mL	4.28 mL
10 mM	0.21 mL	1.07 mL	2.14 mL
50 mM	0.04 mL	0.21 mL	0.43 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. Ding Y, Liu H, Zhang C, Bao Z, Yu S. Polo-like kinases as potential targets and PLK2 as a novel biomarker for the prognosis of human glioblastoma. Aging (Albany NY). 2022 Mar 7;14(5):2320-2334. doi: 10.18632/aging.203940. Epub 2022 Mar 7. PMID: 35256538; PMCID: PMC8954957.
2. Reddy MV, Akula B, Jatiani S, Vasquez-Del Carpio R, Billa VK, Mallireddigari MR, Cosenza SC, Venkata Subbaiah DR, Bharathi EV, Pallela VR, Ramkumar P, Jain R, Aggarwal AK, Reddy EP. Discovery of 2-(1H-indol-5-ylamino)-6-(2,4-difluorophenylsulfonyl)-8-methylpyrido[2,3-d]pyrimidin-7(8H)-one (7ao) as a potent selective inhibitor of Polo like kinase 2 (PLK2). Bioorg Med Chem. 2016 Feb 15;24(4):521-44. doi: 10.1016/j.bmc.2015.11.045. Epub 2015 Dec 1. PMID: 26762835; PMCID: PMC5947326.

In vivo study

1. Ding Y, Liu H, Zhang C, Bao Z, Yu S. Polo-like kinases as potential targets and PLK2 as a novel biomarker for the prognosis of human glioblastoma. Aging (Albany NY). 2022 Mar 7;14(5):2320-2334. doi: 10.18632/aging.203940. Epub 2022 Mar 7. PMID: 35256538; PMCID: PMC8954957.

2. Reddy MV, Akula B, Jatiani S, Vasquez-Del Carpio R, Billa VK, Mallireddigari MR, Cosenza SC, Venkata Subbaiah DR, Bharathi EV, Pallela VR, Ramkumar P, Jain R, Aggarwal AK, Reddy EP. Discovery of 2-(1H-indol-5-ylamino)-6-(2,4-difluorophenylsulfonyl)-8-methylpyrido[2,3-d]pyrimidin-7(8H)-one (7ao) as a potent selective inhibitor of Polo like kinase 2 (PLK2). Bioorg Med Chem. 2016 Feb 15;24(4):521-44. doi: 10.1016/j.bmc.2015.11.045. Epub 2015 Dec 1. PMID: 26762835; PMCID: PMC5947326.

7. Bioactivity

Biological target:

ON1231320 is a highly specific polo like kinase 2 (PLK2) inhibitor with an IC_{50} of 0.31 μM.

In vitro activity

ON1231320 dampened the growth of human glioma cells. The data illustrated that inoculation with 200 nm ON1231320 caused remarkable glioma cell growth dampening at 24, 48 h and 72 h (Figure 8A). Meanwhile ON1231320 promoted cleaved PARP expression and dampened the expression of PLK2 in a dose-dependent approach. These data suggest that ON1231320 shows its antitumor properties in glioma cells.

Reference: Aging (Albany NY). 2022 Mar 7;14(5):2320-2334. https://pubmed.ncbi.nlm.nih.gov/35256538/

In vivo activity

To determine the efficacy of compound 7ao in vivo using a tumor xenograft model, MDAMB-231 triple negative breast cancer cells were injected subcutaneously into nude mice. Once the tumors reached an average volume of 70 mm3, 7ao was administered on alternate days (Q2D) via intraperitoneal (IP) injection at a dose of 75 mg/kg body weight. This treatment with 7ao resulted in significant inhibition of tumor growth (86.5%) as compared to the control group (Fig. 6A), and no overt signs of toxicity were observed in the 7ao treated group (body weights shown in Fig. 6B).

Reference: Bioorg Med Chem. 2016 Feb 15;24(4):521-44. https://pubmed.ncbi.nlm.nih.gov/26762835/