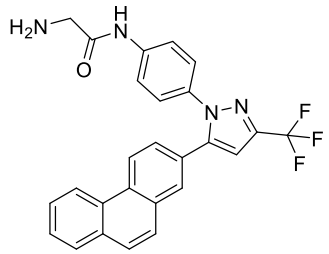
Product data sheet

MedKoo Cat#: 200272 Name: OSU-03012 CAS#: 742112-33-0 (free base) Chemical Formula: $C_{26}H_{19}F_3N_4O$ Exact Mass: 460.1511 Molecular Weight: 460.45	
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:

OSU03012; also known as AR12, is an orally available, targeted anti-cancer agent that has been shown in pre-clinical studies to inhibit PDK-1, a protein in the PI3K/Akt pathway that is involved in the growth and proliferation of cells, including cancer cells. AR-12 may also cause cell death through the induction of stress in the endoplasmic reticulum. We are currently conducting a multi-centered Phase I clinical study of AR-12 in adult patients with advanced or recurrent solid tumors or lymphoma.

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	30.0	65.2

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.17 mL	10.86 mL	21.72 mL
5 mM	0.43 mL	2.17 mL	4.34 mL
10 mM	0.22 mL	1.09 mL	2.17 mL
50 mM	0.04 mL	0.22 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. Rayner JO, Roberts RA, Kim J, Poklepovic A, Roberts JL, Booth L, Dent P. AR12 (OSU-03012) suppresses GRP78 expression and inhibits SARS-CoV-2 replication. Biochem Pharmacol. 2020 Dec;182:114227. doi: 10.1016/j.bcp.2020.114227. Epub 2020 Sep 20. PMID: 32966814; PMCID: PMC7502229.
2. Zhang S, Zou Y, Guo Q, Chen J, Xu L, Wan X, Zhang Z, Li B, Chu H. AR-12 Exhibits Direct and Host-Targeted Antibacterial Activity toward Mycobacterium abscessus. Antimicrob Agents Chemother. 2020 Jul 22;64(8):e00236-20. doi: 10.1128/AAC.00236-20. PMID: 32482678; PMCID: PMC7526805.

In vivo study

1. Ding L, Ren C, Yang L, Wu Z, Li F, Jiang D, Zhu Y, Lu J. OSU-03012 Disrupts Akt Signaling and Prevents Endometrial Carcinoma Progression in vitro and in vivo. Drug Des Devel Ther. 2021 Apr 30;15:1797-1810. doi: 10.2147/DDDT.S304128. PMID: 33958857; PMCID: PMC8096345.
2. Chan JF, Zhu Z, Chu H, Yuan S, Chik KK, Chan CC, Poon VK, Yip CC, Zhang X, Tsang JO, Zou Z, Tee KM, Shuai H, Lu G, Yuen KY. The celecoxib derivative kinase inhibitor AR-12 (OSU-03012) inhibits Zika virus via down-regulation of the PI3K/Akt pathway and protects Zika virus-infected A129 mice: A host-targeting treatment strategy. Antiviral Res. 2018 Dec;160:38-47. doi: 10.1016/j.antiviral.2018.10.007. Epub 2018 Oct 13. PMID: 30326204; PMCID: PMC7113887.

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7. Bioactivity

Biological target:

OSU-03012 (AR-12) is an inhibitor of recombinant PDK-1(phosphoinositide-dependent kinase 1) with IC50 of 5 μM.

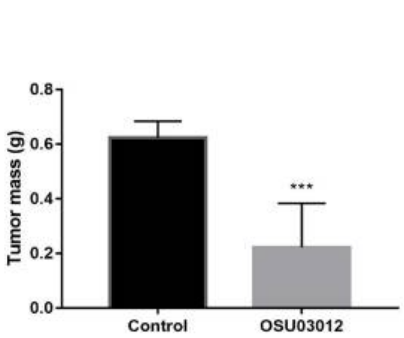
In vitro activity

Vero cells were treated with AR12 (1 μM; 2 μM) and then infected with SARS-CoV-2 at 0.01 and 0.001 multiplicities of infection (MOI). Twenty-four and forty-eight hours after infection, cells were fixed in place and permeabilized, and stained for expression of the SARS-CoV-2 spike protein, total GRP78 and total ERK2 as a loading control. In a dose-dependent fashion, AR12 suppressed the production of virus spike protein (Fig. 2 A and B). Cells were then infected and treated with AR12 (2 μM) 3 h, 6 h and 12 h after infection, with cells being fixed and stained 24 h after infection. Treatment of infected cells with AR12 significantly reduced the amount of spike protein produced in the infected cells as well as the amount of GRP78 in the cells (Fig. 2C and D).

Reference: Biochem Pharmacol. 2020 Dec; 182: 114227. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7502229/

In vivo activity

To study the effects of OSU-03012 on tumor progression in vivo, this study treated the Ishikawa xenograft with OSU-03012. First of all, compared with the control group, the tumor volume of mice in the OSU-03012 treatment group was significantly reduced (Figure 6A and B).The results showed that the mass and volume of the tumor were significantly reduced with OSU-03012 treatment (0.222 ± 0.07235g, 339.6 ± 103.2 mm3, n=5) relative to the vehicle controls (0.624 ± 0.02694 g, 1170 ± 84.51 mm3, n=5, Figure 6C and E); meanwhile, the body weights of the mice remained consistent throughout the duration of the experiment, exhibiting no serious toxicity at specified dose regimens (Figure 6D). These results demonstrate that oral administration of OSU-03012 can prevent EC progression.



Reference: Drug Des Devel Ther. 2021; 15: 1797–1810. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8096345/

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.