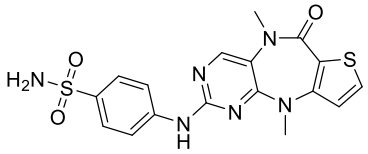
Product data sheet

MedKoo Cat#: 530548 Name: XMU-MP-1 CAS#: 2061980-01-4 Chemical Formula: $C_{17}H_{16}N_6O_3S_2$ Exact Mass: 416.0725 Molecular Weight: 416.474	
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:

XMU-MP-1 is a potent and selective MST1/2 inhibitor with IC50 values of 71.1 ± 12.9 nM and 38.1 ± 6.9 nM, respectively.. XMU-MP-1 blocked MST1/2 kinase activities, thereby activating the downstream effector Yes-associated protein and promoting cell growth. XMU-MP-1 displayed excellent in vivo pharmacokinetics and was able to augment mouse intestinal repair, as well as liver repair and regeneration, in both acute and chronic liver injury mouse models at a dose of 1 to 3 mg/kg via intraperitoneal injection.

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	33.87	81.33
Ethanol	1.25	3.0

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.40 mL	12.01 mL	24.01 mL
5 mM	0.48 mL	2.40 mL	4.80 mL
10 mM	0.24 mL	1.20 mL	2.40 mL
50 mM	0.05 mL	0.24 mL	0.48 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. Jin X, Zhu L, Xiao S, Cui Z, Tang J, Yu J, Xie M. MST1 inhibits the progression of breast cancer by regulating the Hippo signaling pathway and may serve as a prognostic biomarker. Mol Med Rep. 2021 May;23(5):383. doi: 10.3892/mmr.2021.12022. Epub 2021 Mar 24. PMID: 33760220; PMCID: PMC7986037.
2. Tian Y, Song H, Qin W, Ding Z, Zhang Y, Shan W, Jin D. Mammalian STE20-Like Kinase 2 Promotes Lipopolysaccharides-Mediated Cardiomyocyte Inflammation and Apoptosis by Enhancing Mitochondrial Fission. Front Physiol. 2020 Aug 6;11:897. doi: 10.3389/fphys.2020.00897. PMID: 32848850; PMCID: PMC7424023.

In vivo study

1. Okuyama M, Jiang W, Yang L, Subramanian V. Mst1/2 Kinases Inhibitor, XMU-MP-1, Attenuates Angiotensin II-Induced Ascending Aortic Expansion in Hypercholesterolemic Mice. Circ Rep. 2021 Apr 20;3(5):259-266. doi: 10.1253/circrep.CR-20-0104. PMID: 34007939; PMCID: PMC8099673.
2. Faizah Z, Amanda B, Ashari FY, Triastuti E, Oxtoby R, Rahaju AS, Aziz MA, Lusida MI, Oceandy D. Treatment with Mammalian Ste-20-like Kinase 1/2 (MST1/2) Inhibitor XMU-MP-1 Improves Glucose Tolerance in Streptozotocin-Induced Diabetes Mice. Molecules. 2020 Sep 24;25(19):4381. doi: 10.3390/molecules25194381. PMID: 32987643; PMCID: PMC7582334.

Product data sheet

7. Bioactivity

Biological target:

XMU-MP-1 is a reversible and selective MST1/2 inhibitor with IC50s of 71.1 and 38.1 nM, respectively.

In vitro activity

To determine whether the Hippo signaling pathway mediated the biological functions of MST1 in BCa, the Hippo signaling pathway inhibitor, XMU-MP-1 (an inhibitor of MST1/2), was used to inhibit the function of the Hippo signaling pathway in BCa cells overexpressing MST1. RT-qPCR analysis demonstrated that the treatment of MST1-overexpressing cells with the inhibitor downregulated the expression levels of MST1 (Fig. 5A). The results of the CCK-8 and EdU incorporation assays revealed that the inhibited proliferative ability in the LV-MST1 group was partially restored in the LV-MST1 + XMU-MP-1 group (Fig. 5B and C). BCa cell migration was analyzed using wound healing assays; the results revealed that cell migration was also significantly increased in the MST1 + XMU-MP-1 cell group compared with the LV-MST1 group (Fig. 5D). Finally, western blotting analysis was performed to analyze the expression levels of key proteins in the Hippo signaling pathway. The expression levels of LATS1 and Bax were significantly downregulated, while the expression levels of YAP, Bcl-2 and Ki-67 were significantly upregulated in the LV-MST1 + XMU-MP-1 group compared with the LV-MST1 group in both cell lines (Fig. 6A and B).

Reference: Mol Med Rep. 2021 May; 23(5): 383. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7986037/

In vivo activity

XMU-MP-1 administration attenuated AngII-induced aortic medial destruction in the ascending mouse aorta. In agreement with previous studies, AngII-induced medial destruction was associated with the accumulation of CD68+ macrophages throughout the intralamellar spaces on the adventitial site of the vessel wall. The beneficial effect of XMU-MP-1 on the attenuation of elastin fiber destruction in the aortic media is mainly due to its effect on the suppression of AngII-induced matrix metalloproteinases-2 (MMP2) production by infiltrated macrophages in the ascending aorta. In support, present data clearly suggested that XMU-MP-1 administration had no effect on AngII-induced macrophage infiltration into the ascending aortic medial layer or the total number of nuclei in the ascending aortic media, whereas it preserved or protected AngII-induced aortic medial destruction. These data suggest that XMU-MP-1 may exert its beneficial effect by suppressing MMP production or secretion by infiltrated macrophages into the aortic media.

Reference: Circ Rep. 2021 May 10; 3(5): 259–266. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8099673/

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.