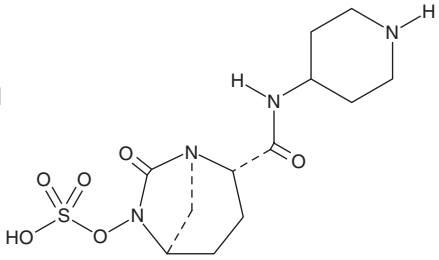
PRODUCT INFORMATION

MK-7655

Item No. 23890

CAS Registry No.:	1174018-99-5
Formal Name:	mono[(1R,2S,5R)-7-oxo-2-[(4-piperidinylamino)carbonyl]-1,6-diazabicyclo[3.2.1]oct-6-yl] ester, sulfuric acid
MF:	$C_{12}H_{20}N_4O_6S$
FW:	348.4
Purity:	≥98%
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

MK-7655 is supplied as a crystalline solid. A stock solution may be made by dissolving the MK-7655 in the solvent of choice. MK-7655 is soluble in organic solvents such as DMSO and dimethyl formamide, which should be purged with an inert gas. The solubility of MK-7655 in these solvents is approximately 10 and 1 mg/ml, respectively.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of MK-7655 can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of MK-7655 in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

MK-7655 is a β-lactamase inhibitor that inhibits hydrolysis of nitrocefin by KPC-2 β-lactamase from *K. pneumoniae* and AmpC β-lactamase from *P. aeruginosa* (IC_{50}s = 210 and 465 nM, respectively).[1] It restores imipenem-susceptibility in imipenem-resistant *K. pneumoniae* and *P. aeruginosa* when used at concentrations of 12.5 and 4.7 µM, respectively. MK-7655 also restores imipenem sensitivity to resistant clinical isolates of *P. aeruginosa* and *K. pneumoniae* (MIC_{50}s = 0.25-2 and 8-16 µM in the presence and absence of MK-7655, respectively), but not *A. baumannii*.[2] *In vivo*, MK-7655 (48.9 mg/kg per day) produces a bacteriostatic effect in mouse thigh models of *K. pneumoniae* and *P. aeruginosa* infection when administered with imipenem (Item No. 16039) and cilastatin (Item No. 23511).[3]

References

1. Blizzard, T.A., Chen, H., Kim, S., *et al.* Discovery of MK-7655, a β-lactamase inhibitor for combination with Primaxin®. *Bioorg. Med. Chem. Lett* **24(3)**, 780-785 (2014).
2. Lob, S.H., Hackel, M.A., Kazmierczak, K.M., *et al. In Vitro* activity of imipenem-relebactam against Gram-negative ESKAPE pathogens Isolated by clinical laboratories in the United States in 2015 (results from the SMART global surveillance program). *Antimicrob. Agents Chemother.* **61(6)**, e02209-16 (2017).
3. Mavridou, E., Melchers, R.J.B., van Mil, A.C.H.A.M., *et al.* Pharmacodynamics of imipenem in combination with β-lactamase inhibitor MK7655 in a murine thigh model. *Antimicrob. Agents Chemother.* **59(2)**, 790-795 (2015).

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