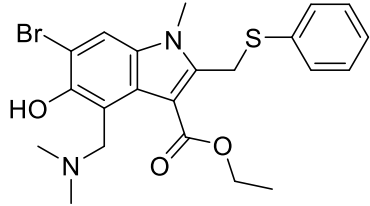


Product data sheet



MedKoo Cat#: 319804 Name: Umifenovir HCl CAS#: 131707-23-8 (HCl) Chemical Formula: C ₂₂ H ₂₆ BrClN ₂ O ₃ S Molecular Weight: 513.88	 H-Cl
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:

Umifenovir, also known as arbidol, is an antiviral treatment used in Russia and China for influenza infection. Since 2005 it has been the number one best-selling over-the-counter drug in Russia. Umifenovir inhibits membrane fusion. Umifenovir prevents contact between the virus and target host cells. Fusion between the viral capsid and the cell membrane of the target cell is inhibited. This prevents viral entry to the target cell, and therefore protects it from infection.

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	48.5	94.38
Ethanol	28.0	54.49

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.95 mL	9.73 mL	19.46 mL
5 mM	0.39 mL	1.95 mL	3.89 mL
10 mM	0.19 mL	0.97 mL	1.95 mL
50 mM	0.04 mL	0.19 mL	0.39 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

- Haviernik J, Štefánek M, Fojtíková M, Kali S, Tordo N, Rudolf I, Hubálek Z, Eyer L, Ruzek D. Arbidol (Umifenovir): A Broad-Spectrum Antiviral Drug That Inhibits Medically Important Arthropod-Borne Flaviviruses. *Viruses*. 2018 Apr 10;10(4):184. doi: 10.3390/v10040184. PMID: 29642580; PMCID: PMC5923478.
- Herod MR, Adeyemi OO, Ward J, Bentley K, Harris M, Stonehouse NJ, Polyak SJ. The broad-spectrum antiviral drug arbidol inhibits foot-and-mouth disease virus genome replication. *J Gen Virol*. 2019 Sep;100(9):1293-1302. doi: 10.1099/jgv.0.001283. Epub 2019 Jun 4. PMID: 31162013.

In vivo study

- Li H, Liu R, Zhang R, Zhang S, Wei Y, Zhang L, Zhou H, Yang C. Protective Effect of Arbidol Against Pulmonary Fibrosis and Sepsis in Mice. *Front Pharmacol*. 2021 Jan 27;11:607075. doi: 10.3389/fphar.2020.607075. PMID: 33584285; PMCID: PMC7873045.
- Du Q, Gu Z, Leneva I, Jiang H, Li R, Deng L, Yang Z. The antiviral activity of arbidol hydrochloride against herpes simplex virus type II (HSV-2) in a mouse model of vaginitis. *Int Immunopharmacol*. 2019 Mar;68:58-67. doi: 10.1016/j.intimp.2018.09.043. Epub 2019 Jan 3. PMID: 30612085; PMCID: PMC7106079.

Product data sheet



7. Bioactivity

Biological target:

Umifenovir hydrochloride is a broad-spectrum antiviral that is used as an anti-influenza virus agent.

In vitro activity

ARB (arbidol) inhibits multiple enveloped viruses in vitro and the primary mode of action is inhibition of virus entry and/or fusion of viral membranes with intracellular endosomal membranes. ARB is also an effective inhibitor of non-enveloped poliovirus types 1 and 3. In the current report, the antiviral potential of ARB against another picornavirus, foot-and-mouth disease virus (FMDV), a member of the genus is evaluated. Aphthovirus and an important veterinary pathogen. ARB inhibits the replication of FMDV RNA sub-genomic replicons. ARB inhibition of FMDV RNA replication is not a result of generalized inhibition of cellular uptake of cargo, such as transfected DNA, and ARB can be added to cells up to 3 h post-transfection of FMDV RNA replicons and still inhibit FMDV replication. ARB prevents the recovery of FMDV replication upon withdrawal of the replication inhibitor guanidine hydrochloride (GuHCl). Although restoration of FMDV replication is known to require de novo protein synthesis upon GuHCl removal, ARB does not suppress cellular translation or FMDV internal ribosome entry site (IRES)-driven translation. ARB also inhibits infection with the related Aphthovirus, equine rhinitis A virus (ERAV). Collectively, the data demonstrate that ARB can inhibit some non-enveloped picornaviruses.

Reference: J Gen Virol. 2019 Sep;100(9):1293-1302. <https://pubmed.ncbi.nlm.nih.gov/31162013/>

In vivo activity

Here, a mouse model of bleomycin-induced pulmonary fibrosis and a mouse model of fecal dilution-induced sepsis to evaluate the effects of arbidol on pulmonary fibrosis and cytokine storm were used. As showed in Figures 2A,B, compared with model group, arbidol significantly decreased Ri, but have no effect of Re. Arbidol could reduce the airway resistance induced by BLM in mice, and thus alleviate the pulmonary function impairment caused by pulmonary fibrosis in mice. Cldyn is often used to detect the elastic resilience of lung tissue and determine the severity of obstructive lung disease As showed in Figures 2C,D, compared with the model group, arbidol significantly increased Cldyn and FVC. These data suggested arbidol could restore some lung function impairment indicators in pulmonary fibrosis mice. Treatment with arbidol promoted reduced sepsis severity 48 h after sepsis induction, based on weight, murine sepsis score and survival rate. Arbidol observably alleviates inflammatory infiltrates and injury in the lungs and liver. Finally, it was also found that arbidol reduced serum levels of pro-inflammatory factors such as TNF- α and IL-6 induced by fecal dilution. In conclusion, the results indicate that arbidol can alleviate the severity of pulmonary fibrosis and sepsis, and provide some reference for the treatment of cytokine storm and sequelae of pulmonary fibrosis in patients with COVID-19.

Reference: Front Pharmacol. 2021 Jan 27;11:607075. <https://pubmed.ncbi.nlm.nih.gov/33584285/>

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.