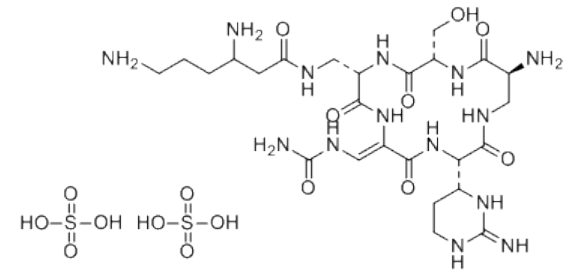
Product data sheet

MedKoo Cat#: 329207 Name: Capreomycin Sulfate CAS#: 1405-37-4 (sulfate) Chemical Formula: $C_{25}H_{48}N_{14}O_{16}S_2$ Molecular Weight: 864.861	
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:
Capreomycin Sulfate, also known as HSDB-3211 and Capostatin, is a ribosomal subunit inbihitor used to treat tuberculosis.

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
Water	37	49.28

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.16 mL	5.78 mL	11.56 mL
5 mM	0.23 mL	1.16 mL	2.31 mL
10 mM	0.12 mL	0.58 mL	1.16 mL
50 mM	0.02 mL	0.12 mL	0.23 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. Siddiqi MK, Alam P, Chaturvedi SK, Khan MV, Nusrat S, Malik S, Khan RH. Capreomycin inhibits the initiation of amyloid fibrillation and suppresses amyloid induced cell toxicity. Biochim Biophys Acta Proteins Proteom. 2018 Apr;1866(4):549-557. doi: 10.1016/j.bbapap.2018.02.005. Epub 2018 Feb 26. Erratum in: Biochim Biophys Acta Proteins Proteom. 2020 Jun;1868(6):140407. PMID: 29496560.

In vivo study

1. Gonzalez-Juarrero M, Woolhiser LK, Brooks E, DeGroote MA, Lenaerts AJ. Mouse model for efficacy testing of antituberculosis agents via intrapulmonary delivery. Antimicrob Agents Chemother. 2012 Jul;56(7):3957-9. doi: 10.1128/AAC.00464-12. Epub 2012 Apr 30. PMID: 22547626; PMCID: PMC3393411.

7. Bioactivity
Biological target:

Capreomycin sulfate is a peptide antibiotic, commonly grouped with the aminoglycosides, which is given in combination with other antibiotics for MDR-tuberculosis.

In vitro activity

Time course of insulin fibrillation in the absence and presence of capreomycin (CN) (mixture of four isoforms) was studied by a ThT fluorescence assay and shown in Fig. 1. Initially, to monitor CN's behavior towards insulin fibril formation, different concentrations of CN (from 0 to 200 μM) were tested. Drop in ThT fluorescence was observed with increase in the concentration of CN and saturated at

100 μM of CN (Fig. 1A), indicates that CN inhibits fibril formation in a concentration dependent manner, maximum at ≈100 μM of CN. ThT fluorescence spectra of free insulin and insulin incubated with CN showed that ThT fluorescence reduced from 295 to 135 and 48 in the presence of 75 and 100 μM of CN, respectively (Supplementary Fig. S1). In other words, we can say that CN inhibits the aggregation process of insulin up to 83% as compared to the control (Supplementary Fig. S2). Even at 75 μM, CN showed the delaying effect in fibrillation process (54% effective). The IC50 value of CN was also evaluated to be 69.98 μM, from the dose response curve (Fig. 2). Furthermore, we also tested whether CN would hamper the elongation phase or not. To test this hypothesis, we added the CN (100 μM) at two different points along the aggregation pathway (Fig. 3). The addition of CN at the midpoint arrested aggregation completely, but did not decrease the ThT fluorescence significantly, suggests CN may block aggregation in log phase. Similarly, adding CN at the end of lag phase reduced the yield of fibril. Ratha et. Al. also described that novel amphipathic heptapeptide inhibits insulin fibril formation, similar to action of CN. Overall these results concluded that either the premixing of CN with insulin or the addition of CN during the growing phase retards the amyloid fibril formation. Importantly, these observed results were due to the cumulative effect of different isoform of CN viz. IA, IB, IIA and IIB, since, individually these isoforms may behave differentially.

Reference: Biochim Biophys Acta Proteins Proteom. 2018 Apr;1866(4):549-557. https://linkinghub.elsevier.com/retrieve/pii/S1570-9639(18)30021-9

In vivo activity

The efficacy of the intrapulmonary aerosol delivery for capreomycin and amikacin is shown in Fig. 2. Neither capreomycin nor amikacin is orally bioavailable. Mice treated by the intrapulmonary aerosol or by subcutaneous injection of capreomycin or amikacin demonstrated similar reductions of the pulmonary bacterial load after 3 weeks of treatment. During the 3 weeks of treatment, mice treated with capreomycin or amikacin received a total of 9 doses when delivered by intrapulmonary aerosol or a total of 15 doses by subcutaneous injection. Similarly, both drugs were administered at 500 μg/dose when delivered by the intrapulmonary aerosol and at 3,300 μg/dose when delivered by subcutaneous injection. The bacterial loads of controls treated with sterile phosphate-buffered saline (PBS) (diluents for the drugs) were statistically similar to those of untreated mice ($P > 0.05$). The bacterial load in the spleen of mice treated by either intrapulmonary aerosol or subcutaneous injection with capreomycin or amikacin did not differ significantly from that of the control mice treated with the drug diluents ($P > 0.05$) (data not shown).

Reference: Antimicrob Agents Chemother. 2012 Jul;56(7):3957-9. https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/22547626/