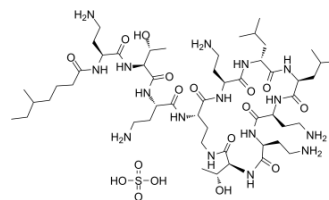


Colistin sulfate

Cat. No.:	HY-A0089		
CAS No.:	1264-72-8		
Molecular Formula:	C ₅₂ H ₁₀₀ N ₁₆ O ₁₇ S		
Molecular Weight:	1253.51		
Target:	Bacterial; Autophagy; Antibiotic		
Pathway:	Anti-infection; Autophagy		
Storage:	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

H₂O : 100 mg/mL (79.78 mM; Need ultrasonic)
 DMSO : < 1 mg/mL (insoluble or slightly soluble)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	0.7978 mL	3.9888 mL	7.9776 mL
	5 mM	0.1596 mL	0.7978 mL	1.5955 mL
	10 mM	0.0798 mL	0.3989 mL	0.7978 mL

Please refer to the solubility information to select the appropriate solvent.

BIOLOGICAL ACTIVITY

Description

Colistin sulfate is a polypeptide antibiotic which inhibits gram-negative bacteria by binding to lipopolysaccharides and phospholipids in the outer cell membrane of gram-negative bacteria.

In Vitro

Colistins are bactericidal to gram-negative bacteria by a detergent-like mechanism. This mechanism involves interaction with lipopolysaccharides and phospholipids of the outer membrane and electrostatic interference with the outer membrane by competitively displacing divalent cations (calcium and magnesium) from the negatively charged phosphate groups of membrane lipids^[1]. Colistin (polymyxin E) owns favorable properties of rapid bacterial killing, a narrow spectrum of activity, and an associated slow development of resistance for the treatment of infections caused by multidrug-resistant gram-negative bacteria. There are two forms of colistin available commercially: colistin (sulfate) mainly for topical use and colistin methanesulfonate (sodium) for parenteral use^[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

High concentrations of colistin in rat ELF are achieved as a result of slow and sustained CMS conversion following i.t. instillation^[3]. Colistin is often used in piglets but underdosing and overdosing are frequent. Under- or overdoses of colistin

do not result in any major disturbance of piglet fecal microbiota and rarely select for chromosomal resistance in the dominant *E. coli* population^[4].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration ^[3]

Rats: Colistin methanesulfonate (sodium) and colistin (sulfate) dosing solutions are freshly prepared in sterile 0.9% sodium chloride. For the i.v. studies, colistin methanesulfonate (CMS) or sulfate solutions are administered by a bolus injection via the jugular vein cannula. Intratracheal (i.t.) instillation is utilized as the technique for pulmonary administration. Animals are administered i.v. CMS at doses of 14 mg/kg of body weight, 28 mg/kg or 56 mg/kg. In an independent study, rats are administered i.v. colistin at doses of 0.21 mg/kg, 0.41 mg/kg, or 0.62 mg/kg^[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Adv Sci (Weinh). 2020 Jul 21;7(17):2001374.
- Clin Microbiol Infect. 2020 Sep;26(9):1264-1265.
- J Antibiot (Tokyo). 2019 Aug;72(8):600-604.
- Patent. US20200101105A1.

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REFERENCES

[1]. Hancock RE et al. Peptide antibiotics. *Antimicrob Agents Chemother.* 1999 Jun;43(6):1317-23.

[2]. Li J, et al. In vitro pharmacodynamic properties of colistin and colistin methanesulfonate against *Pseudomonas aeruginosa* isolates from patients with cystic fibrosis. *Antimicrob Agents Chemother.* 2001 Mar;45(3):781-5.

[3]. W S Yapa S, et al. Population pharmacokinetics of colistin methanesulfonate in rats: achieving sustained lung concentrations of colistin for targeting respiratory infections. *Antimicrob Agents Chemother.* 2013 Oct;57(10):5087-95.

[4]. Fleury MA, et al. Impact of two different colistin dosing strategies on healthy piglet fecal microbiota. *Res Vet Sci.* 2016 Aug;107:152-60.

Caution: Product has not been fully validated for medical applications. For research use only.

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