

Product Name:	Mecillinam
Product Number:	M001
CAS Number:	32887-01-7
Molecular Formula:	$C_{15}H_{23}N_3O_3S$
Molecular Weight:	325.43
Form:	Powder
Appearance:	White or off-white crystalline powder
Solubility:	sparingly soluble in aqueous solution (0.98 mg/ml)
Source:	Semi-synthetic
Water Content (Karl Fischer):	$\leq 1.0\%$
pH:	4.0-6.2
Storage Conditions:	2-8°C
Description:	Mecillinam is a broad-spectrum β -lactam antibiotic in the penicillin class, specifically an amidinopenicillin. This compound was described in 1972 by Lund and Tybring. It is effective against Gram-negative bacteria. Mecillinam is sparingly soluble in aqueous solution.
Mechanism of Action:	β -lactams interfere with penicillin binding protein (PBP) activity involved in the final phase of peptidoglycan synthesis. PBP's catalyze a pentaglycine crosslink between alanine and lysine residues providing additional strength to the cell wall. Without a pentaglycine crosslink, the integrity of the cell wall is severely compromised and ultimately leads to cell lysis and death. Resistance to β -lactams is commonly due to cells containing plasmid encoded β -lactamases.
Spectrum:	Mecillinam targets primarily Gram-negative bacteria involved in urinary tract infections. It has minimal activity against Gram-positive organisms.
Microbiology Applications	Mecillinam is commonly used in clinical <i>in vitro</i> microbiological antimicrobial susceptibility tests (panels, discs, and MIC strips) against Gram-negative microbial isolates. Medical microbiologists use AST results to recommend antibiotic treatment options . Representative MIC values include: <ul style="list-style-type: none">• <i>Escherichia coli</i> 8 μg/mL• For a complete list of Mecillinam MIC values, click here.

References:

Lund, F., and L. Tybring. 1972. 6-amidinopenicillanic acids -a new group of antibiotics. *Nat. New Biol.* 236(66):135-137 PMID 4402006

Maioli E, Debbia EA, Gualco L, Marchese A (2008) In vitro interaction between mecillinam and piperacillin-tazobactam in the presence of azithromycin against members of the Enterobacteriaceae family and *Pseudomonas aeruginosa*. *New Microbiol.*31(1):37-46 PMID 18437840

New HC (1976) Mecillinam, a novel penicillanic acid derivative with unusual activity against Gram-negative bacteria. *Antimicrob. Agents. Chemother.* 9(5):793-790

Pitout JD, Sanders CC, Sanders WE (1997) Antimicrobial resistance with focus on beta-lactam resistance in gram-negative bacilli. *Am J Med* 103:51

Thomas K, Weinbren MJ, Warner M, Woodford N and Livermore D (2006) Activity of mecillinam against ESBL producers *in vitro*. *J. Antimicrob. Chemother.* 57(2):367-368

Tybring L and Melchior NH (1975) Mecillinam (FL 1060), a 6 β -Amidinopenicillanic acid derivative: Bactericidal action and synergy in vitro. *Antimicrob. Agents Chemother.* 8 (3):271-276 PMID 170856

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