

<b>Product Name:</b>	Aztreonam
<b>Product Number:</b>	A017
<b>CAS Number:</b>	78110-38-0
<b>Molecular Formula:</b>	C <sub>13</sub> H <sub>17</sub> N <sub>5</sub> O <sub>8</sub> S <sub>2</sub>
<b>Molecular Weight:</b>	435.43
<b>Form:</b>	Powder
<b>Appearance:</b>	White crystalline powder
<b>Solubility:</b>	ethanol (20 mg/ml), DMSO (20 mg/ml) and DMF (30 mg/ml).
<b>Source:</b>	Synthetic
<b>Water Content (Karl Fischer):</b>	≤ 2.0%
<b>Optical Rotation:</b>	-26° to -32°
<b>Storage Conditions:</b>	2-8 °C
<b>Description:</b>	<p>Aztreonam is a β-lactam antibiotic originally isolated from <i>Chromobacterium violaceum</i>. It is categorized as a monobactam as it contains a single β-lactam ring instead of the fused β-lactam and thiazolidine rings found in generic β-lactams. Due to its unique structure, Aztreonam is not typically inactivated by β-lactamases. Aztreonam is used to combat Gram-negative bacteria in microbiology, cancer therapy, and plant tissue culture. It is insoluble in water but is soluble in ethanol (20 mg/ml), DMSO (20 mg/ml) and DMF (30 mg/ml).</p> <p>TOKU-E offers 2 forms of Aztreonam:</p> <ul style="list-style-type: none"><li>• Aztreonam (A017)</li><li>• <u>Aztreonam, Solubilized (A038)</u></li></ul>
<b>Mechanism of Action:</b>	<p>β-lactams interfere with PBP (penicillin binding protein) activity involved in the final phase of peptidoglycan synthesis. PBP's are enzymes which 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.</p>
<b>Spectrum:</b>	Aztreonam is effective against Gram-negative bacteria.

**Microbiology Applications** Aztreonam is commonly used in clinical *in vitro* microbiological antimicrobial susceptibility tests (panels, discs, and MIC strips) against negative microbial isolates. Aztreonam has also shown high potency against high-resistant superbug strains. Medical microbiologists use AST results to recommend antibiotic treatment options for infected patients. Representative MIC values include:

- *Pseudomonas aeruginosa* ≤0.12 µg/mL — >16 µg/mL
- *Proteus mirabilis* ≤0.12 µg/mL — >16 µg/mL
- For a complete list of aztreonam MIC values, [click here](#).

**Plant Biology Applications**

Aztreonam is a broad-spectrum antibiotic commonly used in plant tissue culture to control bacterial contamination from Gram-negative species.

**Cancer Applications**

Aztreonam was effective as the single active antibiotic in the treatment of Gram-negative infections in neutropenic patients; however, it must be used in combination with another antibiotic to provide Gram-positive coverage.

**References:**

Jones PG et al (1986) Aztreonam therapy in neutropenic patients with cancer. Am. J. Med. 81(2):243-248. PMID 3526885

Moreau-Marquis S, Coutemars B, Stanton BA (2015) Combination of hypothiocyanite and lactoferrin (ALX-109) enhances the ability of tobramycin and aztreonam to eliminate biofilms growing on cystic fibrosis airway epithelial cells. J. Antimicrob. Chemother 70(1):160-166. PMID 25213272

Pitout JD, Sanders CC, Sanders WE (1997) Antimicrobial resistance with focus on beta-lactam resistance in Gram-negative bacilli. Am. J. Med. 1997; 103(1):51-59 PMID 9236486

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