

Aztreonam

Aztreonam (trade name Azactam) is a monobactam antibiotic resistant to beta lactamases, but it may be inactivated by extended spectrum beta lactamases. It has a special affinity for penicillin binding protein 3 and inhibits bacterial cell wall synthesis. It does not work well against gram positive and anaerobic bacteria because it does not bind to their penicillin binding proteins as strongly. It is classified as a bactericidal antibiotic. Aztreonam can be used synergistically with aminoglycosides, and one of the key benefits is that it does not cause penicillin allergy.



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Monobactam

[Mono-man-backgammon](#)

Monobactams differ from the other beta lactam antibiotics by having a standalone beta lactam ring with a special affinity for penicillin binding protein 3, PBP3.

Resistant to beta lactamases

[Resisting \(B lac\) Black Beta-fish wearing Resistance-bandana](#)

As a monobactam antibiotic, aztreonam is resistant to beta lactamases but may still be susceptible to extended spectrum beta lactamases.

Binds to penicillin binding protein (PBP)

[PBJ-sandwich](#)

Aztreonam has a special affinity for penicillin binding protein 3 but has a low affinity for penicillin binding protein of gram positives and anaerobes.

Inhibit cell wall synthesis

[Disrupted Cell Wall](#)

Like the other beta lactam antibiotics, aztreonam works by inhibiting bacterial cell wall synthesis.

No Activity on Gram-Positives or Anaerobes

[No Activity on Graham-cracker Positive-angel or Ant-robe](#)

Aztreonam is limited in clinical use to gram negative bacteria because of no useful activity against gram positives. Aztreonam also has no activity against anaerobes and therefore can only be used for aerobic organisms.

Gram-Negative Rods

[Graham-cracker Negative-devil with Rod](#)

Aztreonam has strong activity against susceptible gram negative bacteria, especially gram negative bacilli, including organisms like Pseudomonas, Enterobacter, E. Coli, Haemophilus, Klebsiella, and Proteus.

Non allergenic to penicillin

[Nun Allergy-alligator with Pencil-villain](#)

Aztreonam is structurally different enough from penicillin that there is no cross reactivity to individuals with penicillin allergies. Therefore, this antibiotic is often used in patients who have penicillin allergies.

Synergistic with aminoglycosides

Amigo-glider

Many studies demonstrate synergism between aztreonam and aminoglycoside antibiotics like Gentamicin and tobramycin, especially against *Pseudomonas aeruginosa*.