Ceftazidime Hydrochloride
PRODUCT DATA SHEET

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Product Name:	Ceftazidime Hydrochloride
Product Number:	C020
CAS Number:	73547-70-3
Molecular Formula:	$C_{22}H_{22}N_6O_7S_2 \cdot 2HCl$
Molecular Weight:	619.505
Appearance:	white or off-white powder
Solubility:	sparingly soluble in aqueous solution. Organic solvents are commonly used to facilitate dissolution.
Source:	semi-synthetic
pH:	5 mg/ml in water: 1.0 - 2.3
Storage Conditions:	-20°C
Description:	Ceftazidime Hydrochloride is the non-toxic hydrochloride salt derivative of Ceftazidime, a broad-spectrum, third-generation, β-lactam cephalosporin that interferes with bacterial cell wall synthesis. Patented in 1979 by Glaxo Group, it came into commercial use in 1984. It is derived from cephaloridine. It is sparingly soluble in aqueous solution, and it can generate degradation products in aqueous solutions that are actually inhibitory to HIV-1 cell lines *in vitro.*
Mechanism of Action:	Like β-lactams, cephalosporins 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 cephalosporins is commonly due to cells containing plasmid encoded β-lactamases, however, ceftazidime is stable in the presence of β-lactamases.
Spectrum:	Ceftazidime solubilized is broad-spectrum, targeting both Gram-negative and Gram-positive bacteria, but is most effective for Gram-negative strains including *Pseudomonas aeruginosa* and *Enterobacteriaceae* (including β-lactamase positive strains). It is also used against *Streptococcus pneumoniae*, and *S. pyogenes.*

Microbiology Applications Ceftazidime is commonly used in clinical *in vitro* 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:

- *Pseudomonas aeruginosa* 1 µg/mL – 64 µg/mL
- *Escherichia coli* 0.06 µg/mL – >32 µg/mL
- For a representative list of Ceftazidime MIC values, click here.

Media Supplements

Ceftazidime can be used as a selective agent in several types of isolation media:

PALCAM Agar - PALCAM Selective Supplement

Chromogenic*Listeria* Agar - Chromogenic *Listeria* Selective Supplement

Chromogenic*Listeria* Agar - Chromogenic *Listeria* Differential Supplement

References:

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Hobi R et al (2001) Anti-HIV-1 activity *in vitro* of Ceftazidime degradation products. Antivir. Chem. and Chemother. 12(2):109-118

Randell SH, Walstad DL, Schwab UE, Grubb BR and Yankaskas JR (2001) Isolation and culture of airway epithelial cells from chronically infected human lungs. In Vitro Cell. Dev. Biol.-Animal 37: 480