Ceftazidime, Delta-3-Isomer, EvoPure®
PRODUCT DATA SHEET

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Product Name:	Ceftazidime, Delta-3-Isomer, EvoPure®
Product Number:	C121
CAS Number:	Not Established
Molecular Formula:	$C_{22}H_{22}N_6O_7S_2 \cdot 5H_2O$
Molecular Weight:	636.65
Form:	Powder
Storage Conditions:	-20°C

Description:

Ceftazidime, Delta-3-Isomer, EvoPure® is an isomer and degradation product of Ceftazidime. It can be used as a reference standard to trace Ceftazidime. This isomer was formerly known as Delta-2.

Ceftazidime is a broad-spectrum, third-generation, β-lactam cephalosporin that interferes with bacterial cell wall synthesis. Patented in 1979 by Glaxo Group, Ceftazidime came into commercial use in 1984. It is sparingly soluble in aqueous solution.

EvoPure® products are highly purified compounds that can be used for *in vitro* applications like analytical reference standards, upstream pharmaceutical product manufacturing, gene selection, and toxicity studies.

For additional EvoPure® products, click here.

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

Technical Data: HPLC, NMR, FTIR, and MS analysis may be available. For more info, please email info@toku-e.com.

References:

Georgopapadakou NH (1992) Mechanisms of action of cephalosporin 3'-quinolone esters, carbamates, and tertiary amines in Escherichia coli. Antimicrob. Agents. Chemother. 37(3): 559-565 PMID 8384817
Fischer J and Ganellin R (2006). Analogue-based Drug Discovery. John Wiley & Sons. p. 495

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

Hsu Y et al (2014) Biodegradable drug-eluting nanofiber-enveloped implants for sustained release of high bactericidal concentrations of vancomycin and ceftazidime: *In vitro* and *in vivo* studies." *Int. J. Nanomed.* 9:4347-4355

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