

Product Name:	Cefpodoxime, Free Acid
Product Number:	C016
CAS Number:	80210-62-4
Molecular Formula:	$C_{15}H_{17}N_5O_6S_2$
Molecular Weight:	427.46 g/mol
Form:	Powder
Appearance:	Brown color powder
Source:	Synthetic
Water Content (Karl Fischer):	Not more than 5.0%
Storage Conditions:	-20°C, protect from light
Description:	<p>Cefpodoxime free acid is a third-generation cephalosporin β-lactam antibiotic. TOKU-E offers three forms of cefpodoxime: <u>Cefpodoxime Proxetil (C015)</u>, <u>Cefpodoxime Sodium (C096)</u>, and Cefpodoxime Free Acid (C016). All forms are soluble in DMSO (dimethyl sulfoxide).</p> <p>Alm et al. used cefpodoxime from TOKU-E against Escherichia coli NDM isolates in microdilution MIC assays. "<u>Characterization of Escherichia coli NDM isolates with decreased susceptibility to aztreonam/avibactam: role of a novel insertion in PBP3.</u>"</p>
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, like many cephalosporins, cefpodoxime is stable in the presence of β -lactamases.
Spectrum:	Cefpodoxime free acid is a broad spectrum antibiotic which targets a wide variety of gram positive and gram negative bacteria especially those which cause otitis media and pharyngitis.

Microbiology Applications TOKU-E cefpodoxime was used in a study by **Lahiri et al.** : Activity of avibactam against *Enterobacter cloacae* producing an extended-spectrum class C B-lactamase enzyme.

Cefepime was used by **Correa-Martínez, C. L. et al.** as part of a screening panel for rapid detection of ESBL, and AmpC β -Lactamases in *Enterobacterales*. Read more here: Rapid Detection of Extended-Spectrum β -Lactamases (ESBL) and AmpC β -Lactamases in *Enterobacterales*: Development of a Screening Panel Using the MALDI-TOF MS-Based Direct-on-Target Microdroplet Growth Assay.

Cefpodoxime free acid is commonly used in clinical *in vitro* microbiological antimicrobial susceptibility tests (panels, discs, and MIC strips) against gram positive and gram negative microbial isolates. Medical microbiologists use AST results to recommend antibiotic treatment options for infected patients. Representative MIC values include:

- *Klebsiella pneumoniae* 8 $\mu\text{g/mL}$ - 64 $\mu\text{g/mL}$
- *Haemophilus influenzae* 0.032 $\mu\text{g/mL}$ – 1 $\mu\text{g/mL}$
- For a complete list of cefpodoxime MIC values, [click here](#).

References:

Georgopapadakou, N. H. "Mechanisms of Action of Cephalosporin 3'-quinolone Esters, Carbamates, and Tertiary Amines in Escherichia Coli." *American Society for Microbiology* 37.3 (1992): 559-65. *Antimicrobial Agents and Chemotherapy*. Web. 21 Aug. 2012.

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