

Product Name:	Cefprozil
Product Number:	C017
CAS Number:	92665-29-7
Molecular Formula:	C ₁₈ H ₁₉ N ₃ O ₅ S
Molecular Weight:	389.43 g/mol
Form:	Powder
Appearance:	White powder
Solubility:	DMSO (10 mg/ml). It is sparingly soluble in water (0.055 mg/ml).
Source:	Semi-synthetic
Storage Conditions:	-20°C
Description:	Cefprozil is a semisynthetic, second-generation cephalosporin beta-lactam antibiotic with bactericidal activity. Cefprozil is soluble in DMSO (10 mg/ml). It is sparingly soluble in water (0.055 mg/ml).
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.
Spectrum:	Cefprozil is a broad spectrum antibiotic targeting Gram-negative and Gram-positive bacteria such as those causing ear, nose, throat, and skin infections.
Microbiology Applications	Cefprozil is commonly used in clinical <i>in vitro</i> 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: <ul style="list-style-type: none">• <i>Streptococcus pyogenes</i> 0.015 µg/mL – 0.06 µg/mL• <i>Haemophilus influenzae</i> 4 µg/mL – 32 µg/mL• For a complete list of cefprozil MIC values, click here.

Cancer Applications

When cells become malignant, they often lose their primary cilium, a microtubule-based sensory organelle. Thus, the potential to restore the cilium is being investigated as a therapeutic approach to attenuate tumor growth in cancer research. Commonly used chemotherapeutic drugs like Cefprozil can restore ciliogenesis, and thus they are referred to as ciliogenic drugs. Using pancreatic cancer cell lines CFPAC-1 and PANC-1, researchers found a causative link between secreted ATP and cilia induction via an autocrine/paracrine loop involving extracellular ATP-purinergic receptor signaling pathway (Khan et al, 2017).

References:

Barriere SL (1992) Pharmacology and Pharmacokinetics of Cefprozil, Clin. Infect. Dis. 14 (2): S184–S188

Khan, N et al (2017) Drug-induced ciliogenesis in pancreatic cancer cells is facilitated by the secreted ATP-purinergic receptor signaling pathway. Oncotarget 9 (3):3507-3518 PMID 29423062

Naito T et al (1987) Synthesis and structure-activity relationships of a new oral cephalosporin, BMY-28100 and related compounds. J Antibiot (Tokyo) 40(7):991-1005. PMID 3624077

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