

| | |
|--------------------------------------|---|
| Product Name: | Cefazolin sodium, USP |
| Product Number: | C006 |
| CAS Number: | 27164-46-1 |
| Molecular Formula: | $C_{14}H_{13}N_8NaO_4S_3$ |
| Molecular Weight: | 476.49 |
| Form: | Powder |
| Appearance: | White or almost white powder |
| Solubility: | Water: Freely soluble |
| Source: | Semi-synthetic |
| Water Content (Karl Fischer): | ≤6.0% |
| pH: | 4.0-6.0 |
| Optical Rotation: | -10° to -24° |
| Storage Conditions: | -20°C |
| Description: | Cefazolin sodium, USP is a first generation cephalosporin. It is a semi-synthetic, broad-spectrum β -lactam with bactericidal activity. Cefazolin sodium is sparingly soluble in aqueous solution. (0.47 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: | Cefazolin sodium is effective against Gram-positive and Gram-negative bacteria, especially those species causing skin infections. |

Microbiology Applications Cefazolin sodium 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:

- *Staphylococcus aureus* 0.25 µg/mL -32 µg/mL
- *Staphylococcus epidermidis* ≤0.06 µg/mL — >128 µg/mL
- For a complete list of cefazolin MIC values, [click here](#).

Media Supplement

Colistin is routinely used as a selection agent in several types of isolation media:

Columbia Blood Agar - *Campylobacter* selective supplement (Butzler)

References:

Georgopapadakou, NH (1992) Mechanisms of Action of Cephalosporin 3'-quinolone Esters, Carbamates, and Tertiary Amines in Escherichia Coli. 37(3): 559-565. Antimicrob. Agents and Chemother.

Hottendorf GH, Laska DA, Williams PD & Ford SM (1987) Role of desacetylation in the detoxification of cephalothin in renal cells in culture, Journal of Toxicology and Environmental Health, 22(1): 101-111 PMID 3612832

Pedroso TM and Salgado HRN (2014) Development and validation of a microbiological assay by turbidimetry to determine the potency of cefazolin sodium in the lyophilized powder form. Anal. Methods 6:1391-1396

Reller LB, Karney WW, Beaty HN, Holmes KK, Turck M (1973) Evaluation of cefazolin, a new cephalosporin antibiotic. Antimicrob Agents Chemother. 3(4):488-97. PMID 4790605

Ries K, Matthew E. Levison ME and Kaye D (1973) Clinical and *In Vitro* Evaluation of Cefazolin, a New Cephalosporin Antibiotic. Antimicrob. Agents and Chemother. 3 (2) 168-174 PMID 4790605

Temel Y, Ayna A, Shafeeq IH and Ciftci M (2018) *In vitro* effects of some antibiotics on glucose-6-phosphate dehydrogenase from rat (*Rattus norvegicus*) erythrocyte. Drug and Chem. Toxicol. Jun 27:1-5. PMID 29947262