Ampicillin/Sulbactam (2:1)
PRODUCT DATA SHEET

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Product Name:	Ampicillin/Sulbactam (2:1)
Product Number:	A071
CAS Number:	117060-71-6
Molecular Formula:	Ampicillin: $C_{16}H_{19}N_3O_4S$ Sulbactam: $C_8H_{11}NO_5S$
Molecular Weight:	Mixture
Form:	Powder
Appearance:	White or almost white crystalline powder
Water Content (Karl Fischer):	≤2.0%
pH:	8.0-10.0
Description:	Ampicillin/Sulbactam is a combination of a β-lactam similar in structure to penicillin, with a β-lactamase inhibitor used to increase potency of β-lactam antibiotics. TOKU-E offers five forms of Ampicillin: • Ampicillin/Sulbactam (2:1) (A071) • Ampicillin Anhydrous (A043) • Ampicillin Sodium (A042) • Ampicillin Trihydrate, USP (A009) • Ampicillin Trihydrate, EP (A020) It is used for microbiological *in vitro* susceptibility tests, and studies in pharmacokinetics and pharmacodynamics.
Mechanism of Action:	Like all β-lactams, Ampicillin interferes with PBP (penicillin binding protein) activity otherwise involved in the final phase of peptidoglycan synthesis. PBP's are enzymes which catalyze a pentaglycine crosslink between alanine and lysine residues. Without a pentaglycine crosslink, the integrity of the cell wall is severely compromised ultimately leading to cell lysis.
Spectrum:	Ampicillin targets Gram-negative non ESBL (Extended Spectrum β-lactamase) bacteria including *Staphylococcus* and *Streptococcus* and medically important enteric pathogens such as *Shigella* and *Salmonella*. Ampicillin has been found to be effective against certain β-lactam sensitive VRE or vancomycin resistant *Enterococcus*; a glycopeptide antibiotic resistant "superbug."

Microbiology Applications Ampicillin/Sulbactam 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.

Media Supplements

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

Aeromonas Medium Base - Ampicillin Selective Supplement

References:

Pitout JD, Sanders CC, Sanders WE (1997) Antimicrobial resistance with focus on beta-lactam resistance in Gram-negative bacilli. Am. J. Med 103(1):51-59 PMID 9236486

Waxman DJ and Strominger JL (1983) Penicillin-binding proteins and the mechanism of action of beta-lactam antibiotics. Ann. Rev. Biochem 52:825-869 PMID 6351730

Yang W, Zhang L, Lu Z, Tao W, Zhai Z (2001) A new method for protein coexpression in *Escherichia coli* using two incompatible plasmids. Protein. Expr. Purif. 22(3):472-478 PMID 11483011