Amoxicillin Trihydrate
PRODUCT DATA SHEET

issue date 01/06/2020

Product Name:	Amoxicillin Trihydrate
Product Number:	A004
CAS Number:	61336-70-7
Molecular Formula:	$C_{16}H_{19}N_3O_5S \cdot 3H_2O$
Molecular Weight:	419.45
Form:	Powder
Appearance:	White or almost white crystalline powder
Solubility:	Benzene: Insoluble Carbon tetrachloride: Insoluble Chloroform: Insoluble Methanol: Slightly soluble Water: Slightly soluble
Source:	Semi-synthetic
Water Content (Karl Fischer):	11.5%-14.5%
pH:	3.5 - 6.0
Storage Conditions:	2-8°C
Description:	Amoxicillin is an extended spectrum β-lactam antibiotic similar in structure to Ampicillin. Resistance to Amoxicillin can be attributed to β-lactamase enzymes secreted by resistant cells. TOKU-E offers three forms of Amoxicillin: • Amoxicillin Trihydrate (A004) • Amoxicillin Sodium (A059) • Amoxicillin : Potassium Clavulanate (2:1) (A054) Amoxicillin Trihydrate is effective against a variety of Gram-negative and Gram-positive bacteria. The compound is slightly soluble in water.
Mechanism of Action:	Like all β-lactams, amoxicillin targets PBP's (penicillin binding proteins) 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 the death of the cell.

Spectrum: Amoxicillin targets a wide range of β-lactamase negative Gram positive and Gram negative bacteria including E. coli and a number of *Streptococcus* and *Staphylococcus* species. Interestingly, amoxicillin has been found to be effective against certain β-lactam sensitive VRE or vancomycin resistant *Enterococcus*; a glycopeptide antibiotic resistant "superbug."

Microbiology Applications Amoxicillin 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:

- *Neisseria gonorrhoeae* 0.3 µg/mL - 32 µg/mL
- *Haemophilus influenzae* 0.125 µg/mL — >64 µg/mL
- For a complete list of Amoxicillin MIC values, click here.

References:

Ogese MO (2017) Characterization of Drug-Specific Signaling Between Primary Human Hepatocytes and Immune Cells. Toxicol Sci. 158(1):76-89 PMID 28444390

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

Worlitzch D et al (2001) Effects of amoxicillin, gentamicin, and moxifloxacin on the hemolytic activity of Staphylococcus aureus in vitro and in vivo. Antimicrob Agents Chemother. 45(1):196-202 PMID 11120965