



Blasticidin S Hydrochloride PRODUCT DATA SHEET

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Product Name:	Blasticidin S Hydrochloride
Product Number:	B001
CAS Number:	3513-03-9
Molecular Formula:	$C_{17}H_{26}N_8O_5 \cdot HCl$
Molecular Weight:	458.90
Form:	Powder
Appearance:	White or off-white powder
Solubility:	Clear and colorless or slight light yellow solution (5mg/mL in H ₂ O)
Source:	<i>Streptomyces griseochromogenes</i>
Potency (on a dry basis):	≥850µg/mg
Storage Conditions:	2-8°C;
Description:	<p>Blasticidin S HCl is a peptidyl nucleoside produced by several species of <i>Streptomyces</i> that was first isolated from <i>S. griseochromogenes</i> in 1958. Blasticidin S inhibits protein synthesis and is active against bacteria, fungi, nematodes, and tumor cells. The compound is used as a selection antibiotic for both eukaryotic and prokaryotic cells, and a marker for strain manipulation.</p> <p>TOKU-E carries three forms of Blasticidin S:</p> <ul style="list-style-type: none">• Blasticidin S HCl (B001)• <u>Blasticidin S (B052)</u>• <u>Blasticidin S HCl Solution (10 mg/ml in 20 mM HEPES)(B006-B007)</u> <p>Blasticidin S is soluble in water (5-10 mg/ml) and acetic acid.</p> <p>This product is considered a dangerous good. Quantities above 1 g may be subject to additional shipping fees.</p>

Mechanism of Action: Blastidicin S HCl inhibits protein synthesis in prokaryotic and eukaryotic cells by binding to the ribosomal P-site which strengthens tRNA binding and slows down and prevents subsequent peptide synthesis.

Mechanisms of resistance

Resistance to blastidicin S is conferred by *bsr*, *BSD*, and *bls* resistance genes isolated from *Bacillus cereus* K55-S1, *Aspergillus terreus*, and *Streptoverticillum* spp, respectively.

The ***bsr* resistance gene** is a 420 bp fragment and encodes a 15 kDa blastidicin S deaminase which catalyzes the reaction of blastidicin S to deaminohydroxyblastidicin S. Deaminohydroxyblastidicin S is a biologically inactive derivative of blastidicin S and does not interact with or inhibit prokaryotic or eukaryotic ribosomes.

The ***bsd* resistance gene** is a 393 bp fragment and also encodes a blastidicin S deaminase enzyme which catalyzes a similar reaction to the BSR deaminase. A study by Kimura et al. found the transfection frequency with *bsd* to be 80X greater than with *bsr* when using FM3A cells.

The ***bls* gene resistance gene** encodes an acetyltransferase which interacts with acetyl-coenzyme A and prevents blastidicin S from inhibiting protein synthesis.

Spectrum: Blastidicin S HCl is biologically active against susceptible mammalian and prokaryotic cells.

Microbiology Applications Blastidicin S HCl can be used as a selection agent after transformation of prokaryotic (bacterial) cells, namely *E. coli*. Optimal Blastidicin S HCl selection concentrations range from 25 - 100 µg/mL and should be tested for each experimental condition. Selective media containing Blastidicin S HCl should contain a low salt concentration (<90mM) and pH ≤7 to avoid blastidicin degradation.

References:

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