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_2O)
Source:	*Streptomyces griseochromogenes*
Potency (on a dry basis):	≥850µg/mg
Storage Conditions:	2-8°C;
Description:	Blasticidin S HCl is a peptidyl nucleoside produced by several species of *Streptomyces* that was first isolated from *S. griseochromogenes* 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.

TOKU-E carries three forms of Blasticidin S:

- Blasticidin S HCl (B001)
- Blasticidin S (B052)
- Blasticidin S HCl Solution (10 mg/ml in 20 mM HEPES)(B006-B007)

Blasticidin S is soluble in water (5-10 mg/ml) and acetic acid.

This product is considered a dangerous good. Quantities above 1 g may be subject to additional shipping fees.

Mechanism of Action: Blasticidin 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 blasticidin 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 blasticidin S deaminase which catalyzes the reaction of blasticidin S to deaminohydroxyblasticidin S. Deaminohydroxyblasticidin S is a biologically inactive derivative of blasticidin 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 blasticidin 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 blasticidin S from inhibiting protein synthesis.

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

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

References:

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