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\textsubscript{17}H\textsubscript{26}N\textsubscript{8}O\textsubscript{5} · 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\textsubscript{2}O)
Source: \textit{Streptomyces griseochromogenes}
Potency (on a dry basis): \geq 850\mu g/mg
Storage Conditions: 2-8°C

Description: Blasticidin S hydrochloride (HCl) is a nucleoside antibiotic derived from \textit{Streptomyces griseochromogenes}. Blasticidin S HCl is routinely used in cell culture gene selection applications as a selectable agent to isolate blasticidin S resistant mammalian and bacterial cells. TOKU-E recommends preparing stock solutions at 5-10 mg/mL in water or 20mM HEPES. Stock solutions can be stored at 4°C for short term storage and -20°C for long term storage.

TOKU-E also supplies:

- **Blasticidin S HCl Solution (10 mg/mL in 20mM HEPES)**

For more blasticidin products, click here.

This product is considered a dangerous good. Quantities above 1 g may be subject to additional shipping fees. Please contact us for specific questions.

\textbf{Lu et al.} used blasticidin S HCl and puromycin dihydrochloride from TOKU-E to select for transfected AS-B145 and BT-474 cells. "Ovatodiolide Inhibits Breast Cancer Stem/Progenitor Cells through SMURF2-Mediated Downregulation of Hsp27"
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:


