



# Blasticidin S PRODUCT DATA SHEET

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**Product Name:** Blasticidin S

**Product Number:** B052

**CAS Number:** 2079-00-7

**Molecular Formula:**  $C_{17}H_{26}N_8O_5$

**Molecular Weight:** 422.4

**Appearance:** White solid

**Storage Conditions:** -20°C

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

Blasticidin S is soluble in water, methanol, DMF or DMSO.

**Mechanism of Action:** Blastidicin S 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 is active against mammalian and prokaryotic cells.

**Microbiology Applications** Blastidicin S can be used as a selection agent after transformation of prokaryotic cells such as *E. coli*.

**Plant Biology Applications** Blastidicin S is an antifungal agent with particularly potent activity against the rice pathogen, *Piricularia oryzae*, for which it was used commercially in Japan.

**References:**

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