

Hygromycin B

Hygromycin B is an aminoglycoside antibiotic used for the selection and maintenance of prokaryotic and eukaryotic cells transformed with *hph*, the Hygromycin B resistance gene. Produced by *Streptomyces hygrosopicus*, this bacteriocidal antibiotic inhibits protein synthesis in bacteria, fungi, and higher eukaryotic cells that do not carry the *hph* gene.

Inhibition of protein synthesis is due to mistranslation resulting from the disruption of translocation at the 70S ribosome. The gene *hph* encodes a 39 kDa protein (Hygromycin phosphotransferase) that inactivates Hygromycin B through phosphorylation and restores protein synthesis.

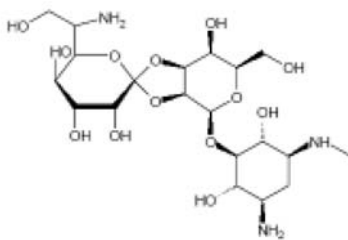
The appropriate working concentration of Hygromycin B for selection will vary with cell type, media, growth conditions, and the cell's metabolic rate and cycle stage. For example, cell sensitivity is dependent on the pH of the medium, such that sensitivity increases directly with pH. Antibiotic potency is also dependent on cell density; a higher dosage may be required to kill susceptible cells in high density cultures. This characteristic may be due to detoxification from limited endogenous phosphotransferase.

To overcome these variables and ensure success, the working concentration should ideally be determined experimentally for each unique culture system, as well as whenever new variables are introduced. The working concentration may be determined by performing a dose response curve.

Molecular Weight and Formula:

563.5, C₂₀H₃₇N₃O₁₃

Molecular Structure:



Mode of Action:

Binds to the 30S ribosomal subunit and affects the fidelity of translation.

Conferred Resistance:

Aminoglycoside-modifying enzymes, a change in cell permeability, or a change in ribosomal structure.

Spectrum:

Gram (+)

Gram (-) bacilli aerobes and facultative anaerobes, only.

Microbiological Potency:

50 mg/mL in PBS

Effective Concentration:

50 µg/mL to 1 mg/mL

Appearance:

Amber-colored liquid (light yellow to dark brown)

Storage:

Refrigerated (2-8°C), protected from light. Do not autoclave.

Warning:

Hygromycin B is a hazardous compound. Avoid contact with skin and eyes.

Product Description	Catalog No.	Size
Hygromycin B Solution 50 mg/mL	30-240-CR	1 x 20 mL

References:

1. Champoux et al. 1994. Sherris Medical Microbiology: An Introduction to Infectious Diseases. Ryan KJ, Editor. 3rd ed. Stamford: Appleton and Lange
2. Goodman and Gilman. 1996. The Pharmacological Basis of Therapeutics. Hardman JG, Limbird LE, editors. 9th ed. New York (NY): McGraw-Hill Health Professions Division.