Product Name: Hygromycin B
Product Number: H007
CAS Number: 31282-04-9
Molecular Formula: C\textsubscript{20}H\textsubscript{37}N\textsubscript{3}O\textsubscript{13}
Molecular Weight: 527.52
Form: Powder
Appearance: Off-White or Light Tan Powder
Solubility: Water: Freely Soluble
Source: *Streptomyces hygroscopicus.*
Water Content (Karl Fischer): ≤15.0%
Potency (on a dry basis): ≥900 u/mg
Melting Point: 160-180°C
Storage Conditions: 2-8°C

Description:
Hygromycin B is a unique aminoglycoside antibiotic derived from *Streptomyces hygroscopicus.* Hygromycin B is routinely used as a selection agent in transfection experiments.

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

For more Hygromycin B products, click here.

Mechanism of Action:
Hygromycin B, along with aminoglycosides, inhibits protein synthesis by strengthening the interaction of tRNA binding in the ribosomal A-site. Hygromycin B also prevents mRNA and tRNA translocation by an unknown mechanism.

Mechanism of resistance:
Hygromycin B resistance is conferred by the *hph* gene isolated from *Streptomyces hygroscopicus,* a 1467 bp fragment which encodes hygromycin B phosphotransferase (HPh). Cell lines successfully transfected with the *hph* gene produce hygromycin B phosphotransferase and convert hygromycin B to 7"-O-phosphoryl-hygromycin B by phosphorylating the 4-hydroxyl group on the cyclitol ring of hygromycin B. 7"-O-phosphoryl-hygromycin B lacks antibiotic activity and does not interact with prokaryotic or eukaryotic ribosomes.
Spectrum: Hygromycin B is effective against eukaryotic (mammalian) and prokaryotic (bacteria, fungi/yeast) cells.

Microbiology Applications Hygromycin B can be used as a selection agent to isolate Hygromycin B resistant bacteria and fungi. The following Hygromycin B selection concentrations should serve as a guide only and may vary depending on experimental conditions and cells used:

- Bacteria *(E. coli)* - 50 µg/mL - 100 µg/mL
- Fungi - 100 µg/mL - 300 µg/mL
- Yeasts - 50 µg/mL - 200 µg/mL

Plant Biology Applications Hygromycin B is routinely used as a selection agent for *Arabidopsis* plants that have been transformed with a hygromycin B resistance gene. A rapid method to screen for hygromycin B resistant *Arabidopsis* in less than four days has been developed. After *Arabidopsis* seeds have been transformed with a resistance plasmid (pBIG-HYG), they are plated on MS medium with hygromycin B and subjected to a two day stratification at 4°C in the dark. Seeds are then exposed to light for 4-6 hours to stimulate germination and then placed in the dark for another two days. Transformed seeds are selected and identified after a 24 hour period in the light. Resistant transformants are characterized by long hypocotyls. (Harrison et al, 2006).

References:


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