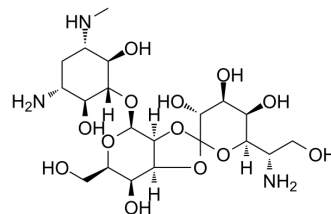


## Hygromycin B

<b>Cat. No.:</b>	HY-B0490												
<b>CAS No.:</b>	31282-04-9												
<b>Molecular Formula:</b>	C <sub>20</sub> H <sub>37</sub> N <sub>3</sub> O <sub>13</sub>												
<b>Molecular Weight:</b>	527.52												
<b>Target:</b>	Bacterial; Fungal; Antibiotic												
<b>Pathway:</b>	Anti-infection												
<b>Storage:</b>	<table border="0"> <tr> <td>Powder</td> <td>-20°C</td> <td>3 years</td> </tr> <tr> <td></td> <td>4°C</td> <td>2 years</td> </tr> <tr> <td>In solvent</td> <td>-80°C</td> <td>6 months</td> </tr> <tr> <td></td> <td>-20°C</td> <td>1 month</td> </tr> </table>	Powder	-20°C	3 years		4°C	2 years	In solvent	-80°C	6 months		-20°C	1 month
Powder	-20°C	3 years											
	4°C	2 years											
In solvent	-80°C	6 months											
	-20°C	1 month											



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : 100 mg/mL (189.57 mM; ultrasonic and warming and heat to 60°C)  
 H<sub>2</sub>O : 50 mg/mL (94.78 mM; Need ultrasonic)

	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	1.8957 mL	9.4783 mL	18.9566 mL
	5 mM	0.3791 mL	1.8957 mL	3.7913 mL
	10 mM	0.1896 mL	0.9478 mL	1.8957 mL

Please refer to the solubility information to select the appropriate solvent.

#### In Vivo

- Add each solvent one by one: PBS  
Solubility: 100 mg/mL (189.57 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
Solubility: ≥ 5 mg/mL (9.48 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
Solubility: ≥ 5 mg/mL (9.48 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility: ≥ 5 mg/mL (9.48 mM); Clear solution
- Add each solvent one by one: 5% DMSO >> 40% PEG300 >> 5% Tween-80 >> 50% saline  
Solubility: ≥ 2.5 mg/mL (4.74 mM); Clear solution
- Add each solvent one by one: 5% DMSO >> 95% (20% SBE-β-CD in saline)  
Solubility: ≥ 2.5 mg/mL (4.74 mM); Clear solution
- Add each solvent one by one: 1% DMSO >> 99% saline  
Solubility: ≥ 0.5 mg/mL (0.95 mM); Clear solution

## BIOLOGICAL ACTIVITY

<b>Description</b>	Hygromycin B is an aminoglycoside antibiotic active against prokaryotic and eukaryotic cells.
<b>IC<sub>50</sub> &amp; Target</b>	Target Antibacterial; Antifungal <sup>[1]</sup>
<b>In Vitro</b>	<p>Hygromycin B, an aminocyclitol antibiotic that strongly inhibits both 70S and 80S ribosomes, is synthesized by <i>Streptomyces hygroscopicus</i><sup>[1]</sup>. Hygromycin B at 0.38 mM concentration completely halts yeast cell growth in rich media, presumably by preventing protein synthesis by cytoplasmic ribosomes. Polypeptide synthesis in cell-free extracts from rabbit reticulocytes, wheat germ and yeast is strongly blocked by low concentrations of hygromycin B. The antibiotic inhibits peptide chain elongation by yeast polysomes by preventing elongation factor EF-2-dependent translocation. The inhibition of translocation by hygromycin B might result from the stabilization of peptidyl-tRNA bound to the ribosomal acceptor site<sup>[2]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
<b>In Vivo</b>	<p>Hygromycin B inhibits protein synthesis by blocking ribosomal translocation without causing significant misreading in vivo<sup>[3]</sup>. Constitutive expression of the bacterial <i>hyg<sup>R</sup></i> gene in transgenic mice in vivo confers resistance to hygromycin B<sup>[4]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

## PROTOCOL

<b>Animal Administration</b> <sup>[4]</sup>	<p>Hygromycin B is dissolved in sterile water. The mice C57BL/6J-TgN(pPWL512hyg)1Ems carrying <i>hyg<sup>R</sup></i> are treated with a single dose of hygromycin B i.p. at doses that starts at 2.7 mg/kg and increases by 50% for each consecutive dose. Control wild-type C57BL/6J mice are treated with the same volume of sterile saline. Total volume injected is 0.5 mL. The health status and body weights of animals are monitored daily for 10 consecutive days<sup>[4]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
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## CUSTOMER VALIDATION

- Am J Transl Res. 2021 Apr 15;13(4):2331-2349.
- Biochem Biophys Res Commun. 6 August 2022.

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## REFERENCES

- [1]. Pardo JM, et al. Biochemical basis of resistance to hygromycin B in *Streptomyces hygroscopicus*--the producing organism. J Gen Microbiol. 1985 Jun;131(6):1289-98.
- [2]. González A, et al. Studies on the mode of action of hygromycin B, an inhibitor of translocation in eukaryotes. Biochim Biophys Acta. 1978 Dec 21;521(2):459-69.
- [3]. Pfister P, et al. Role of 16S rRNA Helix 44 in Ribosomal Resistance to Hygromycin B. Antimicrob Agents Chemother. 2003 May;47(5):1496-502.

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**Caution: Product has not been fully validated for medical applications. For research use only.**

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