

Store at
-20C
#12819

Tunicamycin

5 mg

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For Research Use Only. Not for Use in Diagnostic Procedures.

Background

Isolated from *Streptomyces lysosuperificus*, tunicamycin is a nucleoside antibiotic that inhibits N-linked glycosylation in glycoprotein synthesis. Composed of tunicamycins A, B, C and D, the compound competitively blocks the transfer of N-acetylglucosamine-1-phosphate (GlcNAc-1-P) from UDP-GlcNAc to dolichol-P (1,2). By preventing glycoprotein synthesis, tunicamycin inhibits the formation of the "viral coat" known as the tunica or capsid in both RNA and DNA viruses, and thus exhibits antiviral properties (3). Research studies have shown that tunicamycin will arrest cells in G1 phase, preventing them from entering S-phase and increasing the expression of PERK (4,5). Following N-linked glycosylation inhibition, tunicamycin induces autophagy in response to ER stress, ultimately upregulating CHOP and BIP (6,7).

Molecular Formula

Homolog A: C₃₇H₆₀N₄O₁₆ Homolog B: C₃₈H₆₂N₄O₁₆ Homolog C: C₃₉H₆₄N₄O₁₆ Homolog D: C₄₀H₆₆N₄O₁₆

Molecular Weight

830.9 g/mol

Purity

>98%

CAS

11089-65-9

Solubility

Soluble in DMSO at 40mg/ml and EtOH at 5mg/ml.

Storage

Store lyophilized or in solution at -20°C, desiccated. In lyophilized form, the chemical is stable for 24 months. Once in solution, use within 3 months to prevent loss of potency. Aliquot to avoid multiple freeze/thaw cycles.

Directions for Use

Tunicamycin is supplied as a lyophilized powder. For a 5 mg/ml stock, reconstitute the 5 mg in 1 ml DMSO. Working concentrations and length of treatments vary depending on the desired effect, but it is typically used at 0.1-10 µg/ml for 0.5-20 hours.

Solubility: Soluble in DMSO, DMF or Pyridine.

Background References

1. Takatsuki, A. et al. (1971) *J Antibiot (Tokyo)* 24, 215-23.
2. Kaushal, G.P. and Elbein, A.D. (1986) *Plant Physiol* 82, 748-52.
3. Hirano, T. et al. (1982) *J Biochem* 92, 765-73.
4. Brewer, J.W. and Diehl, J.A. (2000) *Proc Natl Acad Sci U S A* 97, 12625-30.
5. Harding, H.P. et al. (1999) *Nature* 397, 271-4.
6. Ding, W.X. et al. (2007) *J Biol Chem* 282, 4702-10.
7. Zinszner, H. et al. (1998) *Genes Dev* 12, 982-95.

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