Leptomycin B

Nuclear export inhibitor

Catalog code: inh-lep-10

https://www.invivogen.com/leptomycin-b

For research use only

Version 23L08-MM

PRODUCT INFORMATION

Contents

• 10 x 5 µg of Leptomycin B provided as 930 µL of a 10 µM solution (5.4 µg/ml in ethanol)

Note: This product is packaged under argon gas.

Storage and stability

- Leptomycin B is shipped at room temperature. Upon receipt, store at -20 $^{\circ}\text{C}.$

STABILITY WARNING: Leptomycin B in any quantity is unstable when dried down into a film. Thus, under no circumstances should the solvent be removed from solutions of Leptomycin B, because rapid decomposition and loss of recoverable material will result.

Quality Control:

- The absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using HEK-Blue[™] TLR2 and HEK-Blue[™] TLR4 cells.

DESCRIPTION

Leptomycin B (LMB), an antifungal antibiotic from *Streptomyces* species, is a specific inhibitor of nuclear export^{1,3}. Its cellular target is chromosomal region maintenance 1 protein (CRM1), also known as exportin 1 or Xpo1³. Notably, CRM1 is the major receptor for the export of proteins out of the nucleus and is also required for the transport of RNA containing a nuclear export signal (NES)^{1,2}. Hence, LMB is a valuable tool for studying nucleocytoplasmic translocation of proteins and ribonucleoprotein complexes.

Specifically, LMB blocks nuclear export by binding to CRM1 at Cys528 residing in its NES-binding groove and inhibits the binding of the cargo to CRM1⁴. By inhibiting nuclear export LMB can cause the nuclear accumulation of proteins that shuttle between the cytosol and nucleus such as the DNA sensor cGAS¹, the serine kinase IRAK-1² and the NOD-like receptor (NLR) family member NLRC5³.

Of note, by inducing the nuclear accumulation of cGAS, LMB impairs the production of interferons in response to DNA stimulation¹. LMB has also been reported to inhibit the degradation and subsequently lead to the accumulation of p53 within the nucleus⁴. Moreover, research has demonstrated that LMB displays anti-tumor properties by inhibiting the proliferation, migration, and invasion of carcinoma cells⁵.

1. Sun H. et al., 2021. A nuclear export signal is required for cGAS to sense cytosolic DNA Cell Rep. 34(1):108586. 2. Liu G. et al., 2008. Interleukin-1 receptor-associated kinase (IRAK)-1-mediated NF-kB activation requires cytosolic and nuclear activity. FASEB J 22(7): 2285-96. 3. Benko S. et al., 2010. NLRC5 limits the activation of inflammatory pathways. J Immunol. 185(3):1681-91. 4. Kudo N. et al., 1999. Leptomycin B inactivates CRM1/exportin 1 by covalent modification at a cysteine residue in the central conserved region. PNAS. 96(16):9112-7. 5. Zhu H. et al., 2020. Leptomycin B inhibits the proliferation, migration, and invasion of cultured gastric carcinoma cells. Biosci Biotechnol Biochem. 84(2):290-296.

CHEMICAL PROPERTIES

CAS number: 87081-35-4 **Formula:** C₃₃H₄₈O₆

Molecular weight: 540.73 g/mol

Structure:

PROTOCOLS

For reference only; as described in the indicated publications.

Cell Culture Assay¹ Cells: HeLa cells

Working concentration: 20 nM Incubation time: 3 hours

Method: Localization of nuclear and cytoplasmic fractions of cGAS

using immunofluorescence imaging and Western blotting.

Cell Culture Assay³ Cells: HeLa cells

Working concentration: 50 nM Incubation time: 4 hours

Method: Localization of nuclear and cytoplasmic fractions of NLRC5

using immunofluorescence imaging and Western blotting.

RELATED PRODUCTS

Product	Description	Cat. Code
Brefeldin A	Protein trafficking inhibitor	inh-bfa
G140	Human cGAS inhibitor	inh-g140
H-151	STING inhibitor	inh-h151
RU.521	Murine cGAS inhibitor	inh-ru521-2



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