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DATASHEET

Rapamycin

Product overview

Name Rapamycin
Cat No HB2779
Alternative names Sirolimus
Antibiotic Spectrum yeast and fungi
Purity >98%

Description mTOR inhibitor and potent immunosuppressant. Also used in inducible gene editing methods (e.g.

CRISPR/Cas9) and promotes hPSC differentiation.

Biological Data

Biological description

Overview

Rapamycin is an mTOR inhibitor and potent immunosuppressant. It complexes with FKBP12 to bind mTORC1 to inhibit mTOR activity and block subsequent activation of p70 s6 kinase ($IC_{50} = 50 \text{ pM}$).

Active in vivo.

Uses and applications

Rapamcyin shows a variety of bioloigical actions. E.g it induces autophagy and apoptosis.

Promotes hPSC differentiation to blood progenitor and mesendoderm cells.

It can also be used in inducible CRISPR/Cas9 systems to enable inducible gene editing.

Used as a chemical dimerizer in Chemically-inducible dimerization (CID).

As mTOR is a central inflammation regulator, rapamycin has recently been investigated as part of cytokine storm / COVID-19 related research.

Solubility & Handling

Solubility overview Storage instructions Storage of solutions

Shipping Conditions

Important

Soluble in ethanol (20 mM) and DMSO (50 mM)

-20°C

Prepare and use solutions on the same day if possible. Store solutions at -20°C for up to one month if storage is required. Equilibrate to RT and ensure the solution is precipitate free before use.

Stable for ambient temperature shipping. Follow storage instructions on receipt.

This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not

for human or veterinary use.

Chemical Data

Chemical name

(3S,6R,7E,9R,10R,12R,14S,15E,17E,19E,21S,23S,26R,27R,34aS)-9,10,12,13,14,21,22,23,24,25,2 6,27,32,33,34,34a-Hexadecahydro-9,27-dihydroxy-3-[(1R)-2-[(1S,3R,4R)-4-hydroxy-3-methoxycycloh

exyl]-1-methylethyl]-10,21-dimethoxy-6,8,12,14,20,26-hexamethyl-23,27-epoxy-3H-pyrido[2,1-c][1,4]oxaazacyclohentriacontine-1,5,11,28,29(4H,6H,31H)-pentone

Molecular Weight Chemical structure 914.18

SMILES C[C@@H]1CC[C@H]2C[C@@H](/C(=C/C=C/C=C/[C@H](C(=O)[C@@H]([C@@H](/C(=C

4CC[C@H]([C@@H](C4)OC)O)C)/C)O)OC)C)/C)OC

InChiKey QFJCIRLUMZQUOT-HPLJOQBZSA-N

MDL numberMFCD00867594AppearanceWhite to off-white

References

Rapamycin, a specific inhibitor of the mammalian target of rapamycin, suppresses lymphangiogenesis and lymphatic metastasis.

Kobayashi et al (2007) Cancer Sci 98(5) **PubMedID** 17425689

Rapamycins: mechanism of action and cellular resistance.

Huang et al (2003) Cancer Biol Ther 2(3) **PubMedID** 12878853

Chemical modulators of autophagy as biological probes and potential therapeutics.

Flemin et al (2011) Nat Chem Biol 7(1) **PubMedID**21164513

A split-Cas9 architecture for inducible genome editing and transcription modulation.

Zetsche et al (2015) Nat Biotechnol 33(2) **PubMedID** 25643054

Targeting T-cell senescence and cytokine storm with rapamycin to prevent severe progression in COVID-19

Mahe et al (2020) Clin Immunol. 216

PubMedID 32405269