



Data Sheet

Research Use Only

Compound Name

Rapamycin

Catalog Number

SM83

Alternative Names

AY-22989, LCP-Siro, RAPA, Rapamune, Sirolimus, SILA 9268A

23,27-Epoxy-3H-pyrido[2,1-c][1,4]oxaazacyclohentriacontine

Activity

This small molecule is a specific inhibitor of mTOR (mammalian target of Rapamycin). It forms a complex with FKBP12 that binds to and inhibits the molecular target of rapamycin (mTOR). It also exhibits selective signal blocking leading to the activation of p70/85 S6 kinase, which is potentially due to the inhibition of FRAP autophosphorylation or protein kinase activity.

Effect

Rapamycin is a potent immunosuppressant and it has anticancer activity. It induces autophagy in yeast and mammalian cell lines. It is unique in its ability to inhibit lymphokine induced cell proliferation at the G1 and S phase as well as an irreversible cellular arrest at the G1 phase in *S. cerevisiae* cells. Angiogenesis inhibition is also exhibited, possibly through the inhibition of the Akt pathway. Rapamycin has been used in some endoderm differentiation studies from human embryonic stem cells (hESC).

Purity

>99%

CAS

53123-88-9

Formula

$C_{51}H_{79}NO_{13}$

Molecular Weight

914.17

Solubility

DMSO, ethanol

Stability

Stable at -20°C. Keep away from direct sunlight.

References

1. Mita, MM., et al. 2003. *Cancer Biol Ther.* 2(4 Suppl 1): S169-177. PMID: 14508096
2. Huang, S., et al. 2003. *Cancer Biol Ther.* 2(3): 222-232. PMID: 12878853
3. Tahamtani, Y., et al. 2013. *Stem Cells Dev.* 22(9): 1419-1432. PMID: 23249309