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#9904 Store at -20°C

Rapamycin

10 nmol

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

Background

Rapamycin is a bacterial macrolide with antifungal and immunosuppressant activities (1). Rapamycin forms a complex with the immunophilin FKBP12 which then inhibits the activity of FRAP/ mTOR (TOR in yeast) (2,3). Rapamycin treatment of cells leads to the dephosphorylation and inactivation of p70 S6 kinase. Rapamycin also leads to the dephosphorylation of 4E-BP1/PHAS1, thereby promoting its binding to and inactivation of eIF4E (4,5). This activity has been shown to be the basis for Rapamycin's ability to block protein synthesis and to arrest cell cycle progression in the G1-phase (6,7). However, it has been suggested that Rapamycin's inhibition of the G1/S transition may be the consequence of its effect on cyclin D1 mRNA and protein stability (8).

Molecular Formula

C₅₁H₇₉NO₁₃

Molecular Weight

914.17 g/mol

Purity

> 99%

CAS

53123-88-9

Solubility

Soluble in DMSO at 200mg/ml and EtOH at 50mg/ml.

Storage

Store material at -20°C, desiccated. In concentrated 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

Rapamycin is supplied in a concentrated, dried down form. For a 100 µM stock, resuspend 10 nmol (9.1 µg) in 100 µl ethanol or DMSO. For experiments with cultured cells, CST recommends pretreating with 10 nM of this inhibitor for one hour prior to stimulation.

Background References

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2. Brown, E. J. et al. (1994) *Nature* 369, 756-758.
3. Kunz, J. et al. (1993) *Cell* 73, 585-596.
4. Jefferies, H. B. et al. (1997) *EMBO J.* 15, 3693-3704.
5. Beretta, L. et al. (1996) *EMBO J.* 15, 658-664.
6. Thomas, G. and Hall, M.N. (1997) *Curr. Opin. Cell. Biol.* 9, 782-787.
7. Dennis, P. B. et al. (1999) *Curr. Opin. Genet. & Develop.* 9, 49-54.
8. Hashemolhosseini, S. et al. (1998) *J. Biol. Chem.* 273, 14424-14429.

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