

Product Information

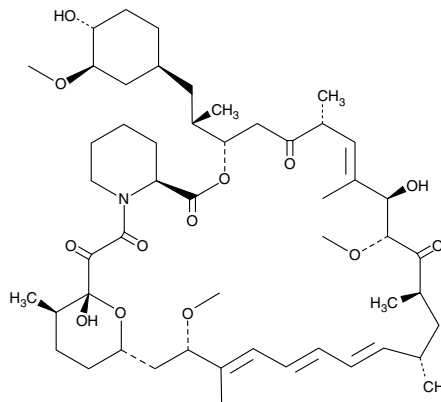


Rapamycin

Item No. 13346

CAS Registry No.: 53123-88-9
Formal Name: (3S,6R,7E,9R,10R,12R,14S,15E,17E,19E,21S,23S,26R,27R,34aS)9,10,12,13,14,21,22,23,24,25,26,27,32,33,34,34a-hexadecahydro-9,27-dihydroxy-3-[(1R)-2-[(1S,3R,4R)-4-hydroxy-3-methoxycyclohexyl]-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

Synonym: Sirolimus
MF: C₅₁H₇₉NO₁₃
FW: 914.2
Purity: ≥95%
Stability: ≥2 years at -20°C
Supplied as: A crystalline solid



Laboratory Procedures

For long term storage, we suggest that rapamycin be stored as supplied at -20°C. It should be stable for at least two years.

Rapamycin is supplied as a crystalline solid. A stock solution may be made by dissolving the rapamycin in an organic solvent purged with an inert gas. Solvents such as ethanol, DMSO, and dimethyl formamide (DMF) purged with an inert gas can be used. The solubility of rapamycin in ethanol is approximately 0.25 mg/ml and approximately 10 mg/ml in DMSO and DMF.

If aqueous stock solutions are required for biological experiments, they can best be prepared by diluting the organic solvent into aqueous buffers or isotonic saline. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. We do not recommend storing the aqueous solution for more than one day.

Rapamycin is an immunosuppressant that is used primarily to prevent the rejection of organ and bone marrow transplant. It was first described as a potent inhibitor of interleukin-2 (IL-2) activation of lymphocytes (IC₅₀ = 5 pM).¹ It is now known that rapamycin specifically interacts with the cytosolic FK-binding protein 12 (FKBP12) to form a complex which inhibits the mammalian target of rapamycin (mTOR) pathway by directly binding to mTOR Complex 1 (mTORC1). Rapamycin and other inhibitors of mTORC1 signaling show potential in treating cancer, adipogenesis, diabetes, tuberous sclerosis, and cardiovascular disease.²⁻⁴

References

1. Kay, J.E., Kromwel, L., Doe, S.E.A., *et al.* Inhibition of T and B lymphocyte proliferation by rapamycin. *Immunology* **72**, 544-549 (1991).
2. Akcakanat, A., Zhang, L., Tsavachidis, S., *et al.* The rapamycin-regulated gene expression signature determines prognosis for breast cancer. *Molecular Cancer* **8**(75), (2009).
3. Zhang, H.H., Huang, J., Düvel, K., *et al.* Insulin stimulates adipogenesis through the Akt-TSC2-mTORC1 pathway. *PLoS One* **4**(7), (2009).
4. Balgi, A.D., Fonseca, B.D., Donohue, E., *et al.* Screen for chemical modulators of autophagy reveals novel therapeutic inhibitors of mTORC1 signaling. *PLoS One* **4**(9), (2009).

Related Products

For a list of related products please visit: www.caymanchem.com/catalog/13346

WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY: NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

MATERIAL SAFETY DATA

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some, but not all, of the information required for the safe and proper use of this material. Before use, the user must review the complete Material Safety Data Sheet, which has been sent via email to your institution.

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