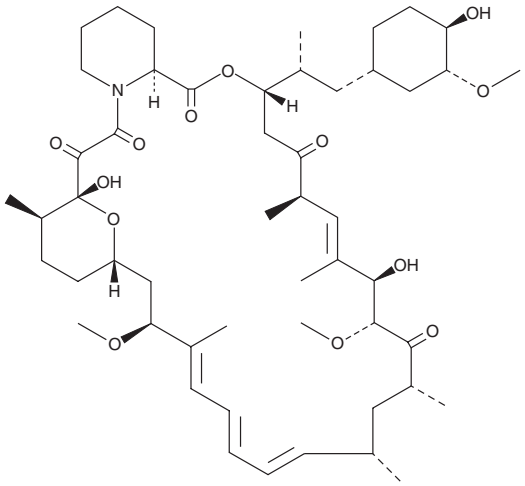
PRODUCT INFORMATION

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
Synonyms: AY 22989, NSC 226080, Sirolimus, Wy 090217
MF: $C_{51}H_{79}NO_{13}$
FW: 914.2
Purity: ≥95%
UV/Vis.: λ_{max}: 268, 278, 289 nm
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years
Item Origin: Bacterium/*Streptomyces hygroscopicus*



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

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

Description

Rapamycin is an allosteric inhibitor of the mammalian target of rapamycin (mTOR) complex 1 (mTORC1) originally isolated from *S. hygroscopicus*.[1] It interacts with FKBP prolyl isomerase 1A (FKBP12) to form a complex that binds to and inhibits the kinase activity of mTORC1. Rapamycin inhibits growth of Rh1 and Rh30 rhabdomyosarcoma cells in serum-free medium, with 50% inhibition observed at concentrations of 0.1 and 0.5 ng/ml, respectively, and increases apoptosis in these cells at 100 ng/ml.[2] It also induces autophagy in a variety of cell types.[1] Rapamycin inhibits IL-2-induced proliferation of IL-2-dependent T cells by 50% when used at concentrations less than 5 pM.[3] Formulations containing rapamycin have been used as immunosuppressive agents in the prevention of organ transplant rejection.

References

1. Kim, Y.C. and Guan, K.-L. mTOR: A pharmacological target for autophagy regulation. *J. Clin. Invest.* **125(1)**, 25-32 (2015).
2. Hosoi, H., Dilling, M.B., Shikata, T., *et al.* Rapamycin causes poorly reversible inhibition of mTOR and induces p53-independent apoptosis in human rhabdomyosarcoma cells. *Cancer Res.* **59(4)**, 886-894 (1999).
3. Kay, J.E., Kromwel, L., Doe, S.E.A., *et al.* Inhibition of T and B lymphocyte proliferation by rapamycin. *Immunology* **72(4)**, 544-549 (1991).

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

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