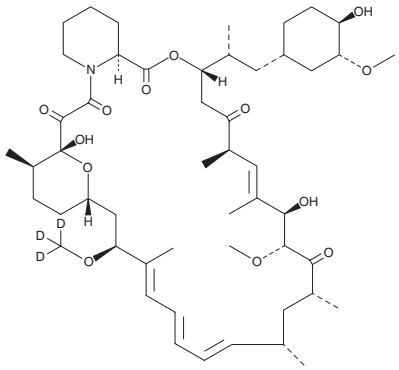
# PRODUCT INFORMATION

## Rapamycin-$d_3$

*Item No. 22093*



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|---|---|
| **CAS Registry No.:** | 392711-19-2 |
| **Formal Name:** | 7-O-demethyl-7-O-(methyl-$d_3$)-rapamycin |
| **Synonym:** | Sirolimus-$d_3$ |
| **MF:** | $C_{51}H_{76}D_3NO_{13}$ |
| **FW:** | 917.2 |
| **Chemical Purity:** | ≥80% (mixture of isomers) |
| **Deuterium Incorporation:** | ≥98% deuterated forms ($d_1$-$d_3$); ≤2% $d_0$ |
| **UV/Vis.:** | $\lambda_{max}$: 268, 278, 289 nm |
| **Supplied as:** | A solution in ethanol |
| **Storage:** | -20°C |
| **Stability:** | ≥1 year |

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

## Description

Rapamycin-$d_3$ is intended for use as an internal standard for the quantification of rapamycin (Item No. 13346) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

Rapamycin-$d_3$ is supplied as a solution in ethanol. To change the solvent, simply evaporate the rapamycin-$d_3$ under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as methanol, DMSO, and chloroform purged with an inert gas can be used. The solubility of rapamycin-$d_3$ in methanol and DMSO is approximately 25 mg/ml and approximately 5 mg/ml in chloroform.

## Description

Rapamycin is an allosteric inhibitor of the mammalian target of rapamycin (mTOR) complex 1 (mTORC1).[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).





**CAYMAN CHEMICAL**
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
**PHONE:** [800] 364-9897
[734] 971-3335
**FAX:** [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.**CAYMANCHEM**.COM