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# Rapamycin

## Catalog No: tcsc0063

### Available Sizes

**Size:** 50mg

**Size:** 100mg

**Size:** 200mg

**Size:** 500mg

**Size:** 1g

**Size:** 2g

**Size:** 5g

### Specifications

**CAS No:**
53123-88-9

**Formula:**
$C_{51}H_{79}NO_{13}$

**Pathway:**
Anti-infection; Apoptosis; Autophagy; Immunology/Inflammation; Metabolic Enzyme/Protease; PI3K/Akt/mTOR

**Target:**
Antibiotic; Autophagy; Endogenous Metabolite; FKBP; Fungal;mTOR

**Form:**
White to off-white (Solid)

**Purity / Grade:**
99.94%

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**Solubility:**
H2O : Ethanol : 50 mg/mL (54.69 mM; Need ultrasonic).

**Storage Instruction:**
2-8°C

**Alternative Names:**
Sirolimus; AY 22989

**Observed Molecular Weight:**
914.17

## References

[1]. Edwards SR, et al. The rapamycin-binding domain of the protein kinase mammalian target of rapamycin is a destabilizing domain. J Biol Chem, 2007, 282(18), 13395-13401. [2]. Rangaraju S, et al. Rapamycin activates autophagy and improves myelination in explant cultures from neuropathicmice. J Neurosci. 2010 Aug 25;30(34):11388-97. [3]. Niu H, et al. Rapamycin potentiates cytotoxicity by RP-56976 possibly through downregulation of Survivin in lung cancer cells. J Exp Clin Cancer Res. 2011 Mar 10;30:28. [4]. Zhang JW, et al. Metformin synergizes with rapamycin to inhibit the growth of pancreatic cancer in vitro and in vivo. Oncol Lett. 2018 Feb;15(2):1811- 1816.

## Product Description

Rapamycin (Sirolimus) is a potent and specific **mTOR** inhibitor with an **$IC_{50}$** of 0.1 nM.

IC50 & Target: IC50: 0.1 nM (mTOR)[1]

***In Vitro:*** Rapamycin inhibits endogenous mTOR activity in HEK293 cells with $IC_{50}$ of 0.1 nM, more potently than iRap and AP21967 with $IC_{50}$ of 5 nM and 10 nM, respectively[1]. Rapamycin exerts its antitumor effect on malignant glioma cells by inducing autophagy and suggest that in malignant glioma cells a disruption of the PI3K/Akt signaling pathway could greatly enhance the effectiveness of mTOR inhibitors. Rapamycin inhibits cell viability in all three cell lines in a dose-dependent manner, but their sensitivities varied. The $IC_{50}$ levels of T98G, U87-MG, and U373-MG cells are 2 nM, 1 μM, and >25 μM, respectively[3].

***In Vivo:*** Treatment with Rapamycin (i.p, 1.5 mg/kg) almost completely prevents the hypertrophic increases in plantaris muscle weight and fibre size at 7 and 14 days[4]. WT or *LS*/+ mice are treated daily Rapamycin (2 mg/kg body weight i.p.) for 4 weeks, follows by an additional 4 weeks of weekly injections of the same dose. There is significant reversal of the abnormal fetal gene expression profile of hearts from Rapamycin-treated *LS*/+ mice[5].

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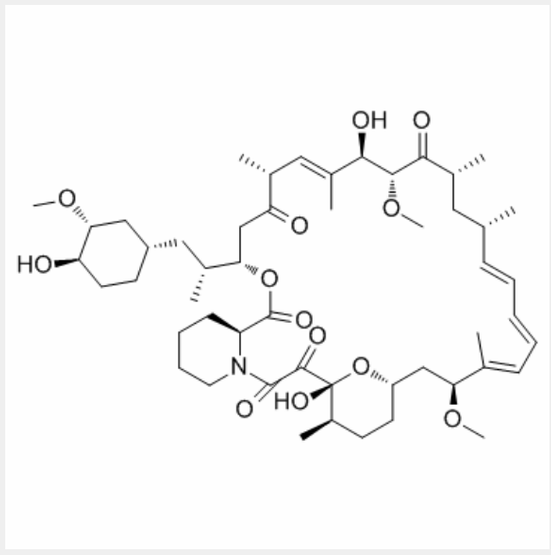


All products are for RESEARCH USE ONLY. Not for diagnostic & therapeutic purposes!