

Rapamycin

✓ 10 nmol
(Lyophilized powder)

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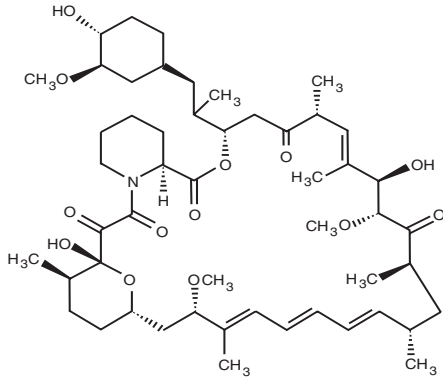
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rev. 04/28/16

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).

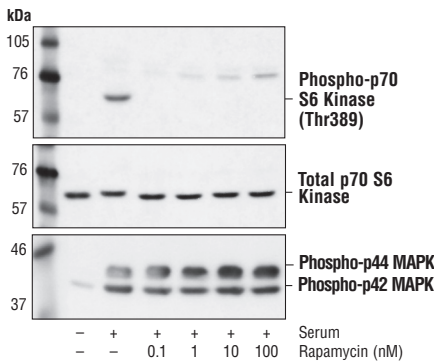
Molecular Formula: C₅₁H₇₉NO₁₃



Molecular Weight: 914.2 g/mol

Directions for Use: Rapamycin is supplied as a lyophilized powder. 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.

See enclosed Material Safety Data Sheet or refer to our website for further information.



Western blot analysis of extracts from NIH/3T3 cells, untreated or treated with serum in the presence of the indicated concentrations of Rapamycin, using Phospho-p70 S6 Kinase (Thr389) Antibody #9205 (upper), total p70 S6 kinase antibody #9202 (middle) or Phospho-p44/42 MAPK (Thr202/Tyr204) Antibody #9101 (lower).

Background References:

- (1) Dumont, F.J. et al. (1990) *J. Immunol.* 144, 251–258.
- (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.

Storage: Store lyophilized or in solution at -20°C, desiccated. In lyophilized 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.

Material Safety Data Sheet (MSDS) for FRAP/mTOR Inhibitor (Rapamycin)



I. Identification:

Product name: FRAP/mTOR Inhibitor (Rapamycin)

Product Catalog: 9904

CAS number: 53123-88-9

Manufacturer Supplier: Cell Signaling Technology
3 Trask Lane
Danvers, MA 01923 USA
1-978-867-2300 TEL
1-978-867-2400 FAX

II. Composition/Information on Ingredients:

Chemical Name: Rapamycin

CAS#: 53123-88-9

Molecular Weight: 914.19

Molecular Formula: C₅₁H₇₉NO₁₃

RTECS Number: VE6250000

Synonyms: (-)-Rapamycin, AY 22989, Antibiotic AY 22989, CCRIS 9024, HSDB 7284, NSC 226080, Rapamune, SILA 9268A, Sirolimus, WY-090217.

III. Hazard Identification: **Caution:** Avoid contact and inhalation.

May cause irritation to eyes, skin, mucous membranes.

Rapamycin is a potent immunosuppressant, and possesses both antifungal and antineoplastic properties.

IV. First Aid Measures:

Inhalation: If inhaled, remove to fresh air. If breathing is difficult, get medical attention.

Ingestion: If swallowed, wash out mouth with water provided person is conscious. Get medical attention.

Skin exposure: In case of contact, wash skin with soap and water. Get medical attention if irritation develops or persists.

Eye exposure: In case of contact with eyes, immediately flush eyes water for at least 15 minutes. Get medical attention.

V. Fire Fighting Measures:

Flash Point: NA

Autoignition Temperature: NA

Flammability: NA

Fire extinguishing media: water spray, dry chemical, alcohol foam, or carbon dioxide.

Firefighting: wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.

VI. Accidental Release Measures: Take appropriate precautions to minimize direct contact with skin, eyes, mucous membranes, and prevent inhalation of dust. Sweep up carefully to avoid raising dust and transfer to a chemical waste container for disposal according to local, state, and federal regulations. Ventilate area and wash spill site after material pickup is complete.

VII. Handling And Storage: Do not breathe vapor. Avoid contact with eyes and skin. Material may be an irritant.

VIII. Exposure Controls/Personal:

Engineering Controls: Maintain adequate ventilation, eye wash and quick-drench facilities in work area.

Personal Protective Equipment: Lab coat, chemical resistant gloves and chemical safety glasses, NIOSH/MSHA approved respirator.

Occupational Exposure Limits: data not available

IX. Physical And Chemical Properties:

Appearance: white to off-white solid powder

Odor: none

Melting Point: 173-187C

Danger of Explosion: none

Solubility: not soluble in water

Organic Solvents: soluble in DMSO or methanol

X. Stability and Reactivity:

Stability: Stable if stored as directed.

Hazardous Decomposition: may form carbon monoxide, carbon dioxide, and nitrogen oxides.

Conditions to avoid: light, heat, strong oxidizing agents.

XI. Toxicological Information:

RTECS# VE6250000

May cause skin or eye irritation.

May be toxic if absorbed through skin or ingested.

Target Organs: immune system (immunosuppressant)

XII. Ecological Information:

No data available.

XIII. Disposal Considerations: Dispose of in accordance with federal, state and local environmental regulations.

XIV. Transport Information:

D.O.T.

Proper Shipping Name: None

This substance is considered non-hazardous for transport.

IATA

Proper Shipping Name: None

This substance is considered non-hazardous for transport.

XV. Regulatory Information: This product is not classified/controlled according to EU, WHMIS, USA

XVI. Other Information:

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide for experienced personnel. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product. The burden of safe use of this material rests entirely with the user. This compound is sold only for research use by personnel familiar with chemicals and who are well trained in good laboratory habits, such as avoiding spills, keeping hands clean at all times and not rubbing eyes with hands while working in the laboratory. No other use is intended, and any other use may involve substantive hazards.

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