Datasheet

Rosuvastatin calcium

Product Name	Rosuvastatin calcium
Catalogue Number	BSV-S2169
Chemical Formula	$C_{22}H_{28}FN_3O_6S.1/2Ca$
Function	HMG-CoA reductase inhibitor
CAS No.:	147098-20-2

Description:

Rosuvastatin Calcium is a competitive inhibitor of **HMG-CoA reductase** with **IC50** of 11 nM in a cell-free assay.

Product Details:

Target: HMG-CoA reductase [1] 11nM

Chemical name: calcium (3R,5S,E)-7-(4-(4-fluorophenyl)-6-isopropyl-2-(N-methylmethan-3-ylsulfonamido)pyrimidin-5-yl)-3,5-dihydroxyhept-6-enoate

Formula: $C_{22}H_{28}FN_3O_6S.1/2Ca$

Molecular weight: 500.57

Purity: 99.78 %

Solubility: 100 mg/mL (DMSO) **warmed with 50ºC water bath**

Storage: 3 years -20°C powder, 2 years -80°C in solvent

Preparing stock solutions

Concentration/ Mass	1 mg	5 mg	10 mg
1 mM	1.9977 mL	9.9886 mL	19.9772 mL
5 mM	0.3995 mL	1.9977 mL	3.9954 mL
10 mM	0.1998 mL	0.9989 mL	1.9977 mL
50 mM	0.0400 mL	0.1998 mL	0.3995 mL

Biological Activity:

In vitro:

Rosuvastatin is relatively hydrophilic and is highly selective for hepatic cells; its uptake is mediated by the liver-specific organic anion transporter OATP-C. Rosuvastatin is a high-affinity substrate for OATP-C with apparent association constant of 8.5 μM. [1] Rosuvastatin inhibits cholesterol biosynthesis in rat liver isolated hepatocytes with IC50 of 1.12 nM. Rosuvastatin causes approximately 10 times greater increase of mRNA of LDL receptors than pravastatin. [2] Rosuvastatin (100 μM) decreases the extent of U937 adhesion to TNF-α-stimulated HUVEC. Rosuvastatin inhibits the expressions of ICAM-1, MCP-1, IL-8, IL-6, and COX-2 mRNA and protein levels through inhibition of c-Jun N-terminal kinase and nuclear factor-kB in endothelial cells. [3]

In vivo:

Rosuvastatin is efficient on reducing plasma liquids. Rosuvastatin (3 mg/kg) daily administration for 14 days decreases plasma cholesterol levels by 26% in male beagle dogs with normal cholesterol levels. In cynomolgus monkeys, Rosuvastatin decreases plasma cholesterol levels by 22% [2] Rosuvastatin (20 mg/kg/day) administration for 2 weeks, significantly reduces very low-density lipoproteins (VLDL) in diabetes mellitus rats induced by Streptozocin. [4] Rosuvastatin shows antiatherothromhotic effects in vivo. Rosuvastatin (1.25 mg/kg) significantly inhibits thrombin-induced transmigration of monocytes across mesenteric venules via inhibition of the endothelial cell surface expression of P-selectin, and increases the basal rate of nitric oxide in aortic segments by 2-fold times. [5] Rosuvastatin (20 mg/kg) inhibits ROS production, normalizes NO-dependent endothelial function and reduces platelet activation in diabetic rats induced by Streptozocin. [6] Rosuvastatin displays cardioprotective effects in vivo. Rosuvastatin (80 mg) is shows to decrease infarct size and improve cardiac mechanical function after ischemia/reperfusion in animal model. The cardioprotective properties of Rosuvastatin may be due to the improvement of coronary blood flow, decrease in resistance of coronary arteries mediated by enhanced eNOS expression, and the subsequent increase in the production of vascular endothelial NO. [7] Rosuvastatin (2.0 mg/kg) attenuates left ventricular hypertrophy produced by transaortic constriction in mice through regulation of Racl protein and NADPH oxidase activities. [8]

Protocol *(Only for Reference)*

Kinase Assay: [9]

HMG-CoA reductase activity assay	The total volume of each assay is 95 μL and the reaction mixture contained 10 μL of the inhibiting compound to be tested and 85 μL of the incubating buffer containing 2 mg/mL liver microsomes, 0.1 M KH2P04, pH 7.2, 5.7 mM dithiothreitol, 10 mM glucose-6-phosphate, 2 U/mL glucose-6-phosphate dehydrogenase, 1 mM NADP, 10 μM miconazole. Control experiments are done without NADPH generating system. All samples are incubated 10 min at 37°C

	before addition of 5µL of substrate (unlabelled and 14C-HMG-3-hydroxy-3-methyl glutaryl CoA, final concentration 50 µM, 2.5 nCi/nmole). After 30 min at 37°C, the reaction is stopped by adding 27 µL 1N HCl and 20 µL of unlabelled mevalonolactone (200 µg/assay). The conversion of mevalonic acid to lactone is performed at room temperature for 60 min.

References:

[1] Schneck DW, et al. Clin Pharmacol Ther, 2004, 75(5), 4554-63.
[2] Watanabe M, et al. Bioorg Med Chem, 1997, 5(2), 437-444.
[3] Kim YS, et al. J Cardiovasc Pharmacol, 2007, 49(6), 376-383.
[4] Carswell CI, et al. Drugs, 2002, 62(14), 2075-2085
[5] Stalker TJ, et al. Br J Pharmacol, 2001, 133(3), 406-412.
[6] Sch?fer A, et al. Biochem Pharmacol, 2007, 73(9), 1367-1375.
[7] Bulhak AA, et al. Acta Physiol Scand, 2005, 183(2), 151-159.
[8] Custodis F, et al. Cardiovasc Res, 2006 Jul 15, 71(2), 342-351.
[9] Dansette PM, et al. Exp Toxicol Pathol, 2000, 52(2), 145-148.