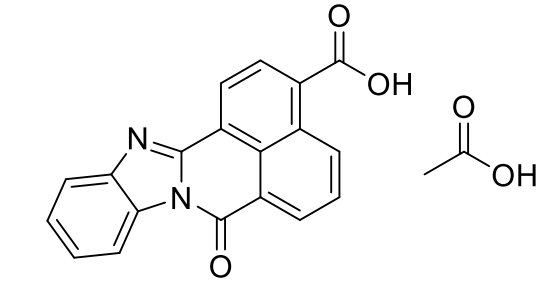
Product data sheet

MedKoo Cat#: 555213 Name: STO-609 acetate CAS#: 1173022-21-3 (acetate) Chemical Formula: $C_{21}H_{14}N_2O_5$ Molecular Weight: 374.35	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

STO-609 is a specific inhibitor of the Ca(2+)/calmodulin-dependent protein kinase kinase. STO-609 inhibits the activities of recombinant CaM-KK alpha and CaM-KK beta isoforms, with K(i) values of 80 and 15 ng/ml, respectively, and also inhibits their autophosphorylation activities. STO-609 is highly selective for CaM-KK without any significant effect on the downstream CaM kinases (CaM-KI and -IV), and the IC(50) value of the compound against CaM-KII is approximately 10 microg/ml. STO-609 is a selective and cell-permeable inhibitor of CaM-KK and that it may be a useful tool for evaluating the physiological significance of the CaM-KK-mediated pathway in vivo as well as in vitro.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	4.85	2.67
100 mM NaOH	10	26.71

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.67 mL	13.36 mL	26.71 mL
5 mM	0.53 mL	2.67 mL	5.34 mL
10 mM	0.27 mL	1.34 mL	2.67 mL
50 mM	0.05 mL	0.27 mL	0.53 m

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Ma Z, Wen D, Wang X, Yang L, Liu T, Liu J, Zhu J, Fang X. Growth inhibition of human gastric adenocarcinoma cells in vitro by STO-609 is independent of calcium/calmodulin-dependent protein kinase kinase-beta and adenosine monophosphate-activated protein kinase. Am J Transl Res. 2016 Feb 15;8(2):1164-71. PMID: 27158402; PMCID: PMC4846959.
2. Balasubramanian R, Maruoka H, Jayasekara PS, Gao ZG, Jacobson KA. AMP-activated protein kinase as regulator of P2Y(6) receptor-induced insulin secretion in mouse pancreatic β-cells. Biochem Pharmacol. 2013 Apr 1;85(7):991-8. doi: 10.1016/j.bcp.2012.11.029. Epub 2013 Jan 17. PMID: 23333427; PMCID: PMC3594329.

In vivo study

1. York B, Li F, Lin F, Marcelo KL, Mao J, Dean A, Gonzales N, Gooden D, Maity S, Coarfa C, Putluri N, Means AR. Pharmacological inhibition of CaMKK2 with the selective antagonist STO-609 regresses NAFLD. Sci Rep. 2017 Sep 18;7(1):11793. doi: 10.1038/s41598-017-12139-3. PMID: 28924233; PMCID: PMC5603587.

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7. Bioactivity

Biological target:

STO-609 is a CaMKK inhibitor (IC50s = 120 and 40 ng/ml for CaMKK α and CaMKK β, respectively). It is selective for CaMKKs over CaMKI, CaMKII, CaMKIV, MLCK, PKC, PKA, and p42 MAPK (IC50s = ≥10,000 ng/ml for all).

In vitro activity

STO-609, a CaMKK inhibitor, blocked MRS2957-induced AMPK activation in MIN6 cells. Silencing the CaMKKβ gene in MIN6 cells also reduced AMPK phosphorylation when treated with MRS2957, confirming that P2Y6R activates AMPK via the CaMKKβ pathway.

Reference: Biochem Pharmacol. 2013 Apr 1; 85(7): 991–998. https://pubmed.ncbi.nlm.nih.gov/23333427/

In vivo activity

STO-609 treatment to inhibit CaMKK2 function confers protection against non-alcoholic fatty liver disease. In a murine model, STO-609S treatment significantly improved hepatic steatosis. Prolonged STO-609S treatment had no effect on body weight but slightly improved glycemia, which is consistent with its acute effects.

Reference: Sci Rep. 2017; 7: 11793. https://pubmed.ncbi.nlm.nih.gov/28924233/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.