Product Data Sheet

Product Name: RR6
Cat. No.: GC32740

Chemical Properties

Cas. No.	1351758-37-6		
SMILES	CC(C)(CO)[C@@H](O)C(NCCC(CC1=CC=CC=C1)=O)=O		
Formula	$C_{16}H_{23}NO_4$	M.Wt	293.36
Solubility	DMSO : ≥ 100 mg/mL (340.88 mM)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure	RR6		

Protocol

Cell experiment [1]:

Cell lines	HepG2 cells

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Preparation Method	HepG2 cells were cultured in complete Dulbecco's Modified Eagle Medium (DMEM) supplemented with 4.5g/L glucose, 2mM L-glutamine, 1mM sodium pyruvate, 100U/mL penicillin-streptomycin, and 10% (v/v) fetal bovine serum (FBS) at 37°C in a humidified 5% CO_2 atmosphere. Cells were seed in a six-well plate. After the confluence rate was approximately 70%, 2μg of plasmid DNA (human Vanin-1 gene, cDNA clone expressing plasmid with the OFPSpark tag) and 2.5μL of lipofectamine 2000 were added to the serum-free medium. After 6h of culture, the culture medium was replaced with a complete medium for another 24h. Then cells were treated with or without 100μM RR6 for 30min. After treatments, all of the experimental cells were incubated with Cy-Pa at 37°C for 30min, and imaging was performed by laser scanning confocal microscopy.
Reaction Conditions	100μM; 30 min
Applications	RR6 lowered intracellular Vanin-1 level and raised total GSH level in HepG2 cells.

Animal experiment [2]:

Animal models	Male Zucker Diabetic Fatty rats
Preparation Method	Male Zucker Diabetic Fatty (ZDF) rats of 8 weeks old were housed in a temperature (23±1℃) and humidity (50%) controlled animal facility with 12:12h light-dark cycle. Food and water were available ad libitum. Rats were treated with the pantetheinase (vanin) inhibitor RR6 (3mg/mL; dissolved in drinking water) or vehicle for 8 days. Rats were sacrificed at the end of the RR6 treatment (non-fasted; between 9 am and 11am) and blood and organs were collected for further analysis. Each test was repeated three times, and the data was averaged.

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Dosage form	3mg/mL; drinking water; 8 days
Applications	RR6 almost completely suppressed plasma vanin activity but did not alter hepatic steatosis, insulin sensitivity or glucose production in ZDF diabetic rats.

References:
[1] Lu P, Zhang C, Fu L, et al. Near-Infrared Fluorescent Probe for Imaging and Evaluating the Role of Vanin-1 in Chemotherapy. *Anal Chem*. 2021;93(29):10378-10387.
[2] van Diepen JA, Jansen PA, Ballak DB, et al. Genetic and pharmacological inhibition of vanin-1 activity in animal models of type 2 diabetes. *Sci Rep*. 2016;6:21906.

Background

RR6 is a potent, selective, reversible, competitive and orally active vanin inhibitor with an IC_{50} of 540nM for recombinant vanin-1[1]. Vanin is a membrane-bound pantetheinase that hydrolyzes pantetheine to cysteamine and regulates oxidative stress and inflammation[2]. RR6 is usually used in the studies of infection, inflammation and

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metabolism[3][4].

In vitro, RR6 (100μM; 30min) lowered intracellular Vanin-1 level and raised total GSH level in HepG2 cells[5].

In vivo, RR6 (3mg/mL; drinking water; 8 days) almost completely suppressed plasma vanin activity but did not alter hepatic steatosis, insulin sensitivity or glucose production in ZDF diabetic rats[6]. RR6 (3mg/mL; drinking water; 4 weeks) reduced neointima area and neointima/media ratio, and suppressed neointimal macrophage influx in Dark-Agouti-to-Brown-Norway rat aortic allografts[7].

References:
[1] Jansen PA, van Diepen JA, Ritzen B, et al. Discovery of small molecule vanin inhibitors: new tools to study metabolism and disease. *ACS Chem Biol*. 2013;8(3):530-534.
[2] Bartucci R, Salvati A, Olinga P, Boersma YL. Vanin 1: Its Physiological Function and Role in Diseases. *Int J Mol Sci*. 2019;20(16):3891.
[3] Schalkwijk J, Jansen P. Chemical biology tools to study pantetheinases of the vanin family. *Biochem Soc Trans*. 2014;42(4):1052-1055.
[4] Lv L, Wang T, Xie W, et al. Revealing VNN1: An Emerging and Promising Target for Inflammation and Redox Balance. *Immun Inflamm Dis*. 2025;13(10):e70274.
[5] Lu P, Zhang C, Fu L, et al. Near-Infrared Fluorescent Probe for Imaging and Evaluating the Role of Vanin-1 in Chemotherapy. *Anal Chem*. 2021;93(29):10378-10387.
[6] van Diepen JA, Jansen PA, Ballak DB, et al. Genetic and pharmacological inhibition of vanin-1 activity in animal models of type 2 diabetes. *Sci Rep*. 2016;6:21906.
[7] Wedel J, Jansen PA, Botman PN, Rutjes FP, Schalkwijk J, Hillebrands JL. Pharmacological Inhibition of Vanin Activity Attenuates Transplant Vasculopathy in Rat Aortic Allografts. *Transplantation*. 2016;100(8):1656-1666.

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