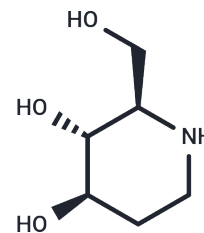


Fagomine

Chemical Properties

CAS No. :	53185-12-9
Formula:	C ₆ H ₁₃ NO ₃
Molecular Weight:	147.17
Storage:	Store at low temperature Powder: -20°C for 3 years In solvent: -80°C for 1 year <small>Actual storage temperature shall be subject to the COA.</small>



Biological Description

Description	Fagomine (D-Fagomine) is a mild glycosidase inhibitor, an analog of 1-deoxynojirimycin (DNJ) with hypoglycemic activity, and Fagomine reduces intracellular reactive oxygen species (ROS) production and malondialdehyde (MDA) levels.
Targets(IC50)	Glucosidase, glycosidase, ROS
In vitro	Fagomine (D-fagomine), a subamino sugar, exhibits selective agglutination of Escherichia coli in vitro. It selectively aggregates flagellated E. coli, inhibiting their adherence to the intestinal mucosa. This effect may be attributed to its structural similarity with sugar moieties binding to lectins, such as mannose. Fagomine has the ability to alter the impact of a high-fat high-sucrose diet (HFHS) on the ratio of Enterobacteriaceae and Bacteroides in the gut[3].
In vivo	Fagomine (D-fagomine), a natural subamino sugar, can counteract the short-term effects of a high-energy density diet on body weight, fasting blood glucose levels, and intestinal Enterobacteriaceae[3]. When compared to the standard group, rats fed a high-fat high-sucrose diet (HFHS) along with D-fagomine exhibited a significantly lower increase in body weight (15.3%), in contrast to rats fed only HFHS (20.9%)[2].
Kinase Assay	Lysosomal enzyme activities in cell lysates are determined. Briefly, cells are scraped in ice-cold 0.1% Triton X-100 in water. After centrifugation (6000 rpm for 15 min at 4°C) to remove insoluble materials, protein concentrations are determined using Protein Assay Rapid Kit. The lysates are incubated at 37°C with the corresponding 4-methylumbelliferyl β-D-glycopyranoside solution in 0.1 M citrate buffer (pH 4). The liberated 4-methylumbelliferone is measured with a fluorescence plate reader (excitation 340 nm; emission 460 nm). For enzyme inhibition assay, cell lysates from normal skin fibroblasts are mixed with the 4-methylumbelliferyl β-D-glycopyranoside substrates in the absence or presence of increasing concentrations of Fagomine [1].
Cell Research	Human skin fibroblasts from a healthy and three Gaucher disease patients (with N188S/G183W, V230G/R296X, and L444P/L444P mutations) are maintained in DMEM supplemented with 10% FBS as the culture medium. For enzyme activity enhancement assay, cells are cultured in the presence of different concentrations of Fagomine or DMSO alone (as a control) for 5 days and harvested by scraping. Cytotoxicity of Fagomine is monitored by measuring the lactate dehydrogenase activities in the cultured supernatants [1].

A DRUG SCREENING EXPERT

Animal Research	Sprague-Dawley rats (male, 22 weeks old) are randomly assigned to one of the three dietary groups: the control group fed a standard diet (STD); a group fed HFHS (modified high-fat high-sucrose diet); a group fed HFHS supplemented with 0.065% Fagomine (HFHS+FG). The percentage of Fagomine is adjusted so that its ratio to sucrose is 2 mg/g, as defined before from the results of post-prandial tests. The modified diets are processed. Feed consumption is monitored every day throughout the experiment and body weight is measured before and at the end of the nutritional intervention. All animal manipulations are carried out in the morning to minimize the effects of circadian rhythms [3].
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Solubility Information

Solubility	H2O: 30 mg/mL (203.85 mM), Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
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Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	6.7949 mL	33.9743 mL	67.9486 mL
5 mM	1.359 mL	6.7949 mL	13.5897 mL
10 mM	0.6795 mL	3.3974 mL	6.7949 mL
50 mM	0.1359 mL	0.6795 mL	1.359 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

- Mena-Barragán T, et al. Inhibitor versus chaperone behaviour of d-fagomine, DAB and LAB sp2-iminosugar conjugates against glycosidases: A structure-activity relationship study in Gaucher fibroblasts. *Eur J Med Chem.* 2015 Aug 3 pii: S0223-5234(15)30222-1.
- Molinar-Toribio E, et al. D-Fagomine attenuates metabolic alterations induced by a high-energy-dense diet in rats. *Food Funct.* 2015 Aug;6(8):2614-9.
- Ramos-Romero S, et al. Effect of (D)-fagomine on excreted Enterobacteria and weight gain in rats fed a high-fat high-sucrose diet. *Obesity (Silver Spring).* 2014 Apr;22(4):976-9.

Inhibitor · Natural Compounds · Compound Libraries · Recombinant Proteins

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