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产品名称：N-氨基甲酰-L-谷氨酸
产品别名：卡谷氨酸；Carglumic Acid；N-Carbamyl-L-glutamic acid

生物活性：

Description	Carglumic acid (N-Carbamyl-L-glutamic acid), a functional analogue of N-acetylglutamate (NAG) and a carbamoyl phosphate synthetase 1 (CPS1) activator, is used to treat acute and chronic hyperammonemia associated with NAG synthase (NAGS) deficiency.
IC_{50} & Target	CPS1[1]
In Vitro	Carglumic acid suppresses cell viability in the pancreatic ductal adenocarcinoma cell lines, triple-negative breast cancer cell lines, hepatoma cell lines, and human non-small cell lung carcinoma cell lines in a dose-dependent manner. The 50% inhibitory concentration (IC50) of Carglumic acid against those cell lines is between 5 and 7.5 mM. The results show that Carglumic acid does not induce complete cell cycle arrest. Instead, there are more sub-G1 cells among Carglumic acid-treated AsPC1 and MDA-MB-231 cells than among untreated cells. In AsPC1 and HPDE-E6E7 cells, the IC50s of Carglumic acid are 5 mM and over 10 mM, respectively . In MDA-MB-231 and MCF-12A cells, the IC50s of Carglumic acid are 5 mM and 6 mM, respectively[1].
In Vivo	The results show that Carglumic acid, but not the vehicle control, markedly inhibits tumor growth. In the orthotopic pancreatic cancer model, tumor growth inhibition by Carglumic acid on day 21 is 80% (P<0.01). In the orthotopic triple-negative breast cancer model, tumor growth inhibition by Carglumic acid on day 20 is 82% (P<0.01). These results indicate that Carglumic acid suppresses tumor growth in pancreatic cancer and triple-negative breast cancer. On day 20, mean tumor growth inhibition in orally and intravenously treated mice is 55% and 93%, respectively, relative to untreated mice (P<0.01)[1].
Solvent&Solubility	***In Vitro:*** **H_2O : 3 mg/mL** (**15.78 mM;** Need ultrasonic and warming)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	5.2590 mL	26.2950 mL	52.5901 mL
	5 mM	1.0518 mL	5.2590 mL	10.5180 mL
	10 mM	0.5259 mL	2.6295 mL	5.2590 mL

*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液；一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。

储备液的保存方式和期限：-80°C, 6 months; -20°C, 1 month。-80°C 储存时，请在 6 个月内使用，-20°C 储存时，请在 1 个月内使用。

References	[1]. Chen CT, et al. Carglumic acid promotes apoptosis and suppresses cancer cell proliferation in vitro and in vivo. Am J Cancer Res. 2015 Nov 15;5(12):3560-9.

实验参考：

Cell Assay	Cell viability is evaluated by MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) assay. In brief, various cancer cell lines are seeded (1×10^4 cells/well) in a 96-well plate and treated with different doses of Carglumic Acid. After 48 h, 50 μL of MTT solution per well (stock solution concentration 5 mg/mL) is added to each well, and the cells are incubated for 2 h more, followed by

	addition of 100 μL of dimethyl sulfoxide to each well. Absorbance at 570 nm is measured immediately using a multiwell scanner[1].
Animal Administration	For orthotopic cancer models, AsPC1/luc human pancreatic cancer cells (1×10^6) are injected into the pancreas of nude mice or MDA-MB-231 human triple-negative breast cancer cells (3×10^6) are injected into the mammary fat pad of nude mice. Carglumic acid is administered to mice 5 days after tumor inoculation in the pancreatic cancer model and 7 days after tumor inoculation in the triple-negative breast cancer model. Tumor-bearing mice receive a Carglumic acid dose of 120 mg/kg orally every day for 10 days, 60 mg/kg orally three times per week for 2 weeks, or 60 mg/kg intravenously three times per week for 2 weeks. Tumor volume is determined by measuring luciferase signals using the in vivo imaging system in the pancreatic cancer model[1].
Kinase Assay	Caspase activity is measured by using a fluorimetric caspase-3 assay kit. In brief, cells that are treated with Carglumic Acid or that are left untreated are lysed in a lysis buffer, and 50 μg of protein lysate is incubated with Ac-DEVD-AMC substrate in the assay buffer for 1 h. The resultant fluorescence signals are read by using a fluorometer (excitation 360 nm, emission 460 nm), and the results are tabulated as fold changes relative to the untreated control cells[1].
References	[1]. Chen CT, et al. Carglumic acid promotes apoptosis and suppresses cancer cell proliferation in vitro and in vivo. Am J Cancer Res. 2015 Nov 15;5(12):3560-9.