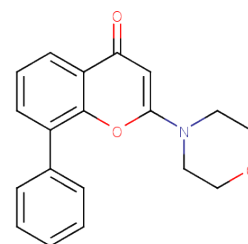


LY294002

Chemical Properties

CAS No. : 154447-36-6
Formula: C₁₉H₁₇NO₃
Molecular Weight: 307.34
Appearance: no data available
Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year



Biological Description

Description	LY294002 (SF 1101) is a broad-spectrum inhibitor of PI3K, inhibiting PI3K α , PI3K δ , and PI3K β (IC ₅₀ =0.5/0.57/0.97 μ M). LY294002 is also an inhibitor of DNA-PK (IC ₅₀ =1.4 μ M) and an inhibitor of CK2 (IC ₅₀ =98 nM). LY294002 activates apoptosis and autophagy.
Targets(IC ₅₀)	Apoptosis,DNA-PK,Casein Kinase,PI3K,Autophagy
In vitro	METHODS: Human pancreatic cancer cells AsPC-1, BxPC-3 and PANC-1 were treated with LY294002 (5-45 μM) for 24 h. Cell growth inhibition was detected by MTT. RESULTS: LY294002 dose-dependently induced the growth of AsPC-1, BxPC-3 and PANC-1 cells with IC₅₀ of 40 μM, 5 μM and 35 μM, respectively.[1] METHODS: Chinese hamster ovary cells CHO-IR expressing human insulin receptor were treated with LY294002 (5 μM) for 5 min and stimulated with Insulin (1 nM, 10 min), and the expression levels of target proteins were detected by Western Blot. RESULTS: LY294002 blocked insulin-induced phosphorylation of PKB Ser473 in CHO-I R cells. [2] METHODS: Human nasopharyngeal carcinoma cells CNE-2Z were treated with LY294002 (10-75 μmol/L) for 24-48 h. Apoptosis was detected by Flow Cytometry. RESULTS: LY294002 dose-dependently induced apoptosis in CNE-2Z cells. [3]
In vivo	METHODS: To detect anti-tumor activity in vivo, LY294002 (25 mg/kg twice weekly) and cisplatin (5 mg/kg once weekly) were intraperitoneally injected into BALB/C nu/nu mice harboring human pancreatic cancer tumor AsPC-1 for three weeks. RESULTS: Tumor volume increased in the control mice, while the cisplatin or LY294002 treatment groups showed a 77% and 70% reduction in tumor volume, respectively. The combination treatment group was more effective, with tumor volume growth decreasing to 44% of the control group's volume. [4] METHODS: To investigate whether pharmacological blockade of PI3K could ameliorate the development of LPS-induced acute liver injury in mice, LY294002 (40 μM; 10 μL) was administered by single intraperitoneal injection to the LPS-induced acute hepatic injury BALB/c mouse model. RESULTS: In LPS-induced hepatitis, LY294002 treatment markedly inhibited the intrahepatic synthesis of various disease-associated pro-inflammatory cytokines, including tumor necrosis factor-α, IL-6, IL-1β, and INF-γ. Significant inhibition of IκB phosphorylation was observed in liver samples from LPS-injured mice with LY294002. Therefore, LY294002 may protect the liver from LPS-induced injury by inhibiting the IκB nuclear factor κ light chain enhancer of the activated B cell-dependent signaling pathway. [5]

Kinase Assay	PI3K inhibition by LY294002 was determined in a radiometric assay using purified, recombinant enzymes (class IA and class IB) with 1 μ M ATP. The kinase reaction was carried out for 1 h at room temperature (24 $^{\circ}$ C) and was terminated by addition of PBS. IC50 values were subsequently determined using a sigmoidal dose-response curve fit (variable slope). CK2 and GSK3 β (glycogen synthase kinase 3 β) inhibition were established by kinase selectivity screening. Inhibitor (10 μ M; LY294002) was tested against the Upstate panel of kinases in 10 μ M ATP [4].
Cell Research	The cells were seeded into 96-well plates at 5000 cells/well. Twenty-four hours after cells were seeded, the medium was removed and replaced in the presence of LY294002 (0 μ mol/L, 10 μ mol/L, 25 μ mol/L, 50 μ mol/L, and 75 μ mol/L) dissolved in DMSO or DMSO only for an additional 24 h and 48 h. To avoid any nonspecific toxic effects of DMSO on cell growth, DMSO concentrations were maintained at 0.5% in all experiments. MTT dye (5 mg/mL) was added to each well. The reaction was stopped by the addition of DMSO, and optical density was measured at 490 nm on a multiwell plate reader. Background absorbance of the medium in the absence of cells was subtracted. All samples were assayed in triplicate, and the mean for each experiment was calculated. Results were expressed as a percentage of control, which was considered to be 100% [3].
Animal Research	Athymic nude mice were used when they were 6-8 weeks. Mice were randomly divided into five groups (n = 4 mice). Mice were housed in the same environment with controlled temperature, humidity, and a 12 h light/dark cycle. Mice were inoculated subcutaneously with CNE-2Z cells (1×10^6 cells/mouse in 200 μ l of RPMI-1640) into the flank. The tumor take rate was 100%. After 1 week, an intraperitoneal injection was performed to the xenograft mice with different dosage of LY294002 (10 mg/kg, 25 mg/kg, 50 mg/kg, and 75 mg/kg twice weekly (n = 4 mice), each group for 4 weeks. Treated mice have monitored any signs. Body weight and tumors size were measured twice a week. Tumor size was measured using calipers and tumor volume was calculated (volume = long axis $\times$ short axis ²). At the end of the treatment, all mice were euthanized. One part of tumor tissue was fixed in formalin and embedded in paraffin, and another part was stored at -70 $^{\circ}$ C [3].

Solubility Information

Solubility	Ethanol: 10 mg/mL(32.5 mM), H2O: < 1 mg/mL (insoluble or slightly soluble), DMSO: 34 mg/mL (110.6 mM), < 1 mg/ml refers to the product slightly soluble or insoluble)
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Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.2537 mL	16.2686 mL	32.5373 mL
5 mM	0.6507 mL	3.2537 mL	6.5075 mL
10 mM	0.3254 mL	1.6269 mL	3.2537 mL
50 mM	0.0651 mL	0.3254 mL	0.6507 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.

Reference

Mao Y, et al. Regulation of cell apoptosis and proliferation in pancreatic cancer through PI3K/Akt pathway via Polo-like kinase Oncol Rep. 2016 Jul;36(1):49-56.

Inhibitor · Natural Compounds · Compound Libraries · Recombinant Proteins

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