

Product Data Sheet

Product Name: Spautin-1

Cat. No.: GC13526

Chemical Properties

Cas. No. 1262888-28-7

Chemical Name (Z)-1-(4-fluorophenyl)-N-(6-fluoroquinazolin-4(3H)-ylidene)methanamine

SMILES FC1=CC=C(C/N=C2C3=C(N=CN2)C=CC(F)=C3)C=C1

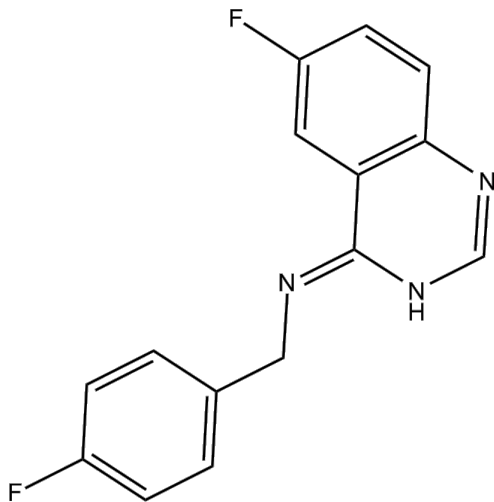
Formula $C_{15}H_{11}F_2N_3$ M.Wt 271.26

Solubility $\geq 13.5\text{mg/mL}$ in DMSO Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C 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



Protocol

Cell experiment [1]:

Cell lines A375 cells

Caution: Product has not been fully validated for medical applications. For research use only.

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Preparation Method A375 cells (2×10^3 /well) were seeded in 96-well plates and cultured in medium containing 10% fetal bovine serum overnight. The cells were then treated with different concentrations of Spautin-1 (control, 2.5, 5, 10, 20 μ M for 24, 48, and 72 hours, respectively). MTS assay was used to test the effect of Spautin-1 on cell proliferation.

Reaction Conditions 2.5, 5, 10, 20 μ M; 24, 48, and 72h

Applications Spautin-1 treatment inhibited the proliferation of A375 cells in a dose- and time-dependent manner.

Animal experiment [2]:

Animal models Female BALB/c nude mice

Preparation Method Female BALB/c nude mice (5 weeks of age) were subcutaneously injected with A20 cells (100 μ L PBS, 1×10^7 cells). When the tumor volume reached 50mm³, Spautin-1 (20mg/kg) was intraperitoneally injected daily. The whole experiment lasted for 14 days. The tumor size (longest/shortest axis) was recorded with a precision caliper, and the volume was calculated by using the $0.5 \times \text{longest} \times \text{shortest}^2$ formula. Tumor specimens were collected and analyzed by histochemical staining and H&E staining.

Dosage form 20mg/kg/day for 14 days; i.p.

Applications Spautin-1 treatment significantly inhibited tumor volume growth in mice, and resulted in tumor cell shrinkage, fragmentation and disorganization, as well as reduced PCNA expression.

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References:

- [1] Guo J, Zhang J L, Liang L, et al. Potent USP10/13 antagonist spautin-1 suppresses melanoma growth via ROS-mediated DNA damage and exhibits synergy with cisplatin[J]. Journal of Cellular and Molecular Medicine, 2020, 24(7): 4324-4340.
- [2] Wu J, Deng Y, Gao Y, et al. Spautin-1 inhibits the growth of diffuse large B-cell lymphoma by inducing mitochondrial damage-mediated PANoptosis and anti-tumor immunity[J]. Cancer Immunology, Immunotherapy, 2025, 74(9): 293.

Background

Spautin-1 inhibited the deubiquitinating activity of USP10 and USP13 with IC₅₀ values of 0.6-0.7μM [1]. As an autophagy inhibitor, Spautin-1 has been widely used to induce cell death in a variety of cancer cell models[2].

In vitro, Spautin-1 treatment for 72 hours significantly inhibited the growth of melanoma cells, with the IC₅₀ values of 1.830 and 2.062μM against A375 and SK-Mel-28, respectively [3]. Treatment of U87MG cells with 10μM Spautin-1 for 48h significantly inhibited cell viability, the RAF-ERK pathway, and glycolytic function in the cells[4]. Pretreatment of PC12 cells with 10μM Spautin-1 for 24 hours reduced the accumulation of reactive oxygen species (ROS) and the number of autophagic microsomes induced by oxygen-glucose deprivation/reoxygenation (OGD/R) treatment, and increased cell viability[5].

In vivo, Spautin-1 treatment via intraperitoneal injection at a dose of 20mg/kg/day for 14 days significantly inhibited tumor volume growth in a mouse model of the A20 cell xenograft, and resulted in tumor cell shrinkage, fragmentation, and disorganization, as well as reduced PCNA expression[6]. In a mouse model of acute lung injury (ALI), a single dose of Spautin-1 (0.5mg/kg) intratracheal administration for 72 hours effectively reversed lipopolysaccharide (LPS)-induced lung tissue structural damage, alveolar septum thickening, and peripheral neutrophil infiltration[7]. In a mouse model of prostate cancer, Spautin-1 treatment (20mg/kg/day; i.p.) for 30 days resulted in a significant reduction in tumor weight and volume without affecting mouse body weight[8].

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- [2] Schott C R, Ludwig L, Mutsaers A J, et al. The autophagy inhibitor spautin-1, either alone or combined with doxorubicin, decreases cell survival and colony formation in canine appendicular osteosarcoma cells[J]. PloS one, 2018, 13(10): e0206427.
- [3] Guo J, Zhang J L, Liang L, et al. Potent USP10/13 antagonist spautin-1 suppresses melanoma growth via ROS-mediated DNA damage and exhibits synergy with cisplatin[J]. Journal of Cellular and Molecular Medicine, 2020, 24(7): 4324-4340.
- [4] Kona S V, Kalivendi S V. The USP10/13 inhibitor, spautin-1, attenuates the progression of glioblastoma by independently regulating RAF-ERK mediated glycolysis and SKP2[J]. Biochimica et Biophysica Acta (BBA)-Molecular Basis of Disease, 2024, 1870(7): 167291.
- [5] Liu H, Zhao Z, Wu T, et al. Inhibition of autophagy-dependent pyroptosis attenuates cerebral ischaemia/reperfusion injury[J]. Journal of Cellular and Molecular Medicine, 2021, 25(11): 5060-5069.
- [6] Wu J, Deng Y, Gao Y, et al. Spautin-1 inhibits the growth of diffuse large B-cell lymphoma by inducing mitochondrial damage-mediated PANoptosis and anti-tumor immunity[J]. Cancer Immunology, Immunotherapy, 2025, 74(9): 293.
- [7] Wen H, Miao W, Liu B, et al. SPAUTIN-1 alleviates LPS-induced acute lung injury by inhibiting NF-κB pathway in neutrophils[J]. International Immunopharmacology, 2024, 130: 111741.
- [8] Liao Y, Guo Z, Xia X, et al. Inhibition of EGFR signaling with Spautin-1 represents a novel therapeutics for prostate cancer[J]. Journal of Experimental & Clinical Cancer Research, 2019, 38(1): 157.

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