

Product Data Sheet

Product Name: 9-ING-41
Cat. No.: GC39152

Chemical Properties

Cas. No. 1034895-42-5

SMILES O=C(C(C1=COC2=CC=C(F)C=C12)=C3C4=CN(C)C5=C4C=C6C(OCO6)=C5)NC3=O

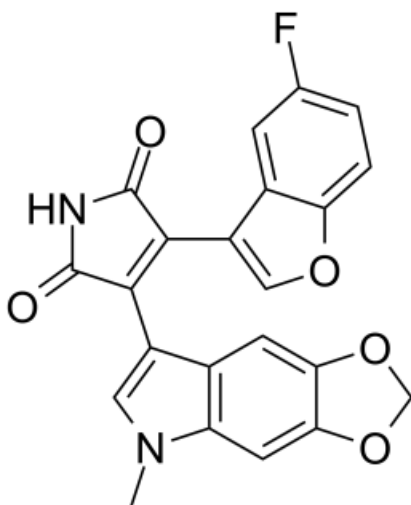
Formula $C_{22}H_{13}FN_2O_5$ M.Wt 404.35

Solubility DMSO: 250 mg/mL (618.28 mM) 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 SUDHL-4 cells

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

SUDHL-4 cells were cultured in RPMI 1640 medium supplemented 0.3g/ml glutamine, 10% FBS, and antibiotic and antimycotic reagent (100units/ml penicillin G, 100µg/ml streptomycin sulfate, and 250ng/ml amphotericin B) in an incubator at 37°C, 100% humidity and 5% CO₂. 1×10^5 cells/well were added to 96-well plates, and after overnight cell attachment, the cells were treated with different concentrations of 9-ING-41 (0.5, 1, 2, 5, and 10µM) for 72h to analyze cell viability.

Reaction Conditions 0.5, 1, 2, 5, and 10µM; 72h

Applications 9-ING-41 treatment decreased the cell viability of SUDHL-4 cells in a dose-dependent manner.

Animal experiment [2]:

Animal models Male nude mice

Male nude mice, aged 6 to 8 weeks, were housed in a specific pathogen clearance grade (SPF) animal house. 5×10^6 786-O cells were suspended in 100µl PBS and injected subcutaneously into the left abdomen of mice. After the tumors grew for 21 days without any treatment, the mice were randomly divided into two groups (6 mice in each group). Group 1 was treated with PBS solution containing 50% polyethylene glycol (PEG-400), while Group 2 was treated with the 9-ING-41 solution prepared with the PBS at a dose of 20mg/kg, administered intraperitoneally three times a week. After 4 weeks of treatment, all tumor-bearing mice were euthanized by carbon dioxide asphyxiation; the tumors were removed and weighed.

Dosage form 20mg/kg; three times a week for 4 weeks; i.p.

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Applications 9-ING-41 treatment suppressed 786-O tumor growth in mice.

References:

- [1] Karmali R, Chukkapalli V, Gordon L I, et al. GSK-3 β inhibitor, 9-ING-41, reduces cell viability and halts proliferation of B-cell lymphoma cell lines as a single agent and in combination with novel agents[J]. Oncotarget, 2017, 8(70): 114924.
- [2] Pal K, Cao Y, Gaisina I N, et al. Inhibition of GSK-3 induces differentiation and impaired glucose metabolism in renal cancer[J]. Molecular cancer therapeutics, 2014, 13(2): 285-296.

Background

9-ING-41 is a selective and potent GSK-3 β inhibitor with an IC₅₀ value of 0.71 μ M^[1]. 9-ING-41 targets NF- κ B, thereby leading to the inhibition of downstream NF- κ B target moleculars, such as cyclin D1, Bcl-2, anti-apoptotic protein (XIAP), and B-cell lymphoma-extra large (Bcl-XL)^[2]. 9-ING-41 has been widely used to regulate cytokine levels and enhance the cytotoxicity of NK cells and T cells against tumor cells^[3].

In vitro, 9-ING-41 treatment for 72 hours significantly inhibited the proliferation of VAESBJ cells, G402 cells, and IB112 cells with the IC₅₀ values were 0.2271 μ M, 0.1741 μ M, and 0.3210 μ M, respectively^[4]. Treatment with 1 μ M 9-ING-41 for 3 days significantly induced apoptosis in SUDHL-4 cells and inhibited cell proliferation, accompanied by a significant increase in Caspase 3/7 activity^[5]. Treatment with 1 μ M 9-ING-41 for 24 hours induced cell cycle arrest in T24 cells and decreased the expression of anti-apoptotic molecules Bcl-2 and XIAP^[6].

In vivo, three intraperitoneal injections of 9-ING-41 were administered weekly at a dose of 20mg/kg for 4 weeks, which significantly inhibited the tumor growth in the 786-O cell-xenograft mouse model^[7]. Continuous intraperitoneal injection of 9-ING-41 (30mg/kg/day) for 7 consecutive days can significantly inhibit the progression of lung fibrosis in mice mediated by TGF- β and bleomycin, and reduce collagen deposition^[8].

References:

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

- [1] Gaisina I N, Gallier F, Ougolkov A V, et al. From a natural product lead to the identification of potent and selective benzofuran-3-yl-(indol-3-yl) maleimides as glycogen synthase kinase 3 β inhibitors that suppress proliferation and survival of pancreatic cancer cells[J]. Journal of medicinal chemistry, 2009, 52(7): 1853-1863.
- [2] Park R, Coveler A L, Cavalcante L, et al. GSK-3 β in pancreatic cancer: Spotlight on 9-ING-41, its therapeutic potential and immune modulatory properties[J]. Biology, 2021, 10(7): 610.
- [3] Huntington K E, Zhang S, Carneiro B A, et al. GSK3 β inhibition by small molecule 9-ING-41 decreases VEGF and other cytokines, and boosts NK and T cell-mediated killing of colorectal tumor cells[J]. Cancer Research, 2021, 81(13_Supplement): 2676-2676.
- [4] Verbeke S, Perret R, Chaire V, et al. GSK3-beta as a candidate therapeutic target in soft tissue sarcomas[J]. Journal of Hematology & Oncology, 2021, 14(1): 202.
- [5] Karmali R, Chukkapalli V, Gordon L I, et al. GSK-3 β inhibitor, 9-ING-41, reduces cell viability and halts proliferation of B-cell lymphoma cell lines as a single agent and in combination with novel agents[J]. Oncotarget, 2017, 8(70): 114924.
- [6] Kuroki H, Anraku T, Kazama A, et al. 9-ING-41, a small molecule inhibitor of GSK-3beta, potentiates the effects of anticancer therapeutics in bladder cancer[J]. Scientific reports, 2019, 9(1): 19977.
- [7] Pal K, Cao Y, Gaisina I N, et al. Inhibition of GSK-3 induces differentiation and impaired glucose metabolism in renal cancer[J]. Molecular cancer therapeutics, 2014, 13(2): 285-296.
- [8] Jeffers A, Qin W, Owens S, et al. Glycogen synthase kinase-3 β inhibition with 9-ING-41 attenuates the progression of pulmonary fibrosis[J]. Scientific Reports, 2019, 9(1): 18925.

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA