

Product Data Sheet

Product Name: NSC 405020

Cat. No.: GC14210

Chemical Properties

Cas. No. 7497-07-6

Chemical Name 3,4-dichloro-N-pentan-2-ylbenzamide

SMILES CCCC(C)NC(=O)C1=CC(=C(C=C1)Cl)Cl

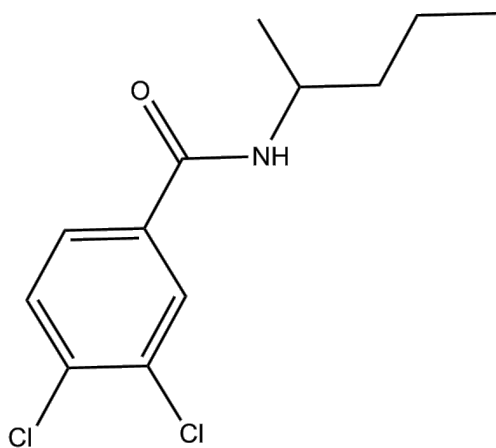
Formula $C_{12}H_{15}Cl_2NO$ M.Wt 260.16

Solubility ≥ 11.4 mg/mL in DMSO, ≥ 96.4 mg/mL in EtOH Storage Store at $-20^{\circ}C$

General tips For obtaining a higher solubility, please warm the tube at $37^{\circ}C$ and shake it in the ultrasonic bath for a while. Stock solution can be stored below $-20^{\circ}C$ 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 184B5-MT and MCF7- β 3/MT 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

Preparation Method	Assays were conducted in wells of a 96-well flat bottom, white wall plates.
	184B5-MT and MCF7-β3/MT cells (5×10^4) were grown for 16 hours in MEGM-10% FBS and DMEM-10% FBS, respectively. 184B5-MT cells were replenished with fresh MEGM (0.1mL per well) and incubated for an additional 24 hours in the presence of the NSC 405020 (100μmol/L) or vehicle (1% dimethyl sulfoxide; DMSO). MCF7-β3/MT cells were replenished with fresh DMEM-10% FBS (0.1mL per well) and incubated for an additional 6 hours in the presence of the NSC 405020 (400μmol/L) or vehicle (2%DMSO). The viable cells were counted using a luminescent ATP-Lite assay (PerkinElmer).
Reaction Conditions	400μmol/L; 6h
Applications	NSC 405020 (400μmol/L) did not show any cytotoxicity in MCF7-β3/MT cells and it can significantly inhibit the growth and invasive capacity of tumor cells.

Animal experiment [2]:

Animal models	BALB/c mice
Preparation Method	In pharmacological inhibition experiments, mice were allocated randomly into three treatment groups: control group, SR-Ag (Saccharopolyspora rectivirgula antigen) group, and SR-Ag + inhibitor group. The NSC 405020 (20mg/kg/mice for 2 days per week for 3 weeks) was injected intraperitoneally into the mice before SR-Ag intratracheal installation. On day 22, mice were sacrificed and lung tissues were dissected and analyzed.
Dosage form	20mg/kg; 2 days per week for 3 weeks

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 NSC 405020 has inhibitory effects on RAW264.7 cells exposed to SR-Ag (Saccharopolyspora rectivirgula antigen). Treatment with NSC 405020 at a concentration of 100nM significantly decreased the protein and mRNA levels of MMP14 in macrophages exposed to SR-Ag.

References:

- [1] Remacle, A. G., Golubkov, V. S., Shiryayev, S. A., Dahl, R., Stebbins, J. L., Chernov, A. V., Cheltsov, A. V., Pellecchia, M., & Strongin, A. Y. (2012). Novel MT1-MMP small-molecule inhibitors based on insights into hemopexin domain function in tumor growth. Cancer research, 72(9), 2339–2349. <https://doi.org/10.1158/0008-5472.CAN-11-4149>.
- [2] Peng, D., Li, J., Li, Y., Bai, L., Xiong, A., He, X., Li, X., Ran, Q., Zhang, L., Jiang, M., Wang, J., Leung, E. L., Yang, P., & Li, G. (2024). MMP14high macrophages orchestrate progressive pulmonary fibrosis in SR-Ag-induced hypersensitivity pneumonitis. Pharmacological research, 200, 107070. <https://doi.org/10.1016/j.phrs.2024.107070>.

Background

NSC 405020 is a specific membrane matrix metalloproteinase (MT1-MMP) small molecule inhibitor^[1]. NSC 405020 can activate pro-MMP-2, degrade various ECM components such as collagen, fibronectin, and laminin, thereby promoting tissue remodeling and cell migration^[2]. The binding of NSC 405020 to the PEX domain of MMP-14 can effectively reduce the inflammation and fibrosis of mouse lungs induced by rectal polysaccharide antigen (SR Ag)^[3].

In vitro, NSC 405020 (50μM) treatment of LEC and WM852 co cultures for 96 hours resulted in a 42% decrease in the expression of full-length and active lytic Notch3 (NICD3) in WM852 cells^[4].

In vivo, intratumoral injection of NSC 405020 (0.5mg/kg, 3 times/week, 2 weeks) into BALB/c-nu/nu mice xenografted with MCF7-β3/WT and MCF7-β3/ΔPEX cells significantly inhibited tumor growth and induced fibrotic ΔPEX like tumor phenotype in vivo^[5].

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] Menzel, L., Zschummel, M., Crowley, T., Franke, V., Grau, M., Ulbricht, C., Hauser, A., Siffrin, V., Bajénoff, M., Acton, S. E., Akalin, A., Lenz, G., Willmsky, G., Höpken, U. E., & Rehm, A. (2021). Lymphocyte access to lymphoma is impaired by high endothelial venule regression. *Cell reports*, 37(4), 109878. <https://doi.org/10.1016/j.celrep.2021.109878>.
- [2] Vieira, D., Barralet, J., Harvey, E. J., & Merle, G. (2022). Detecting the PEX Like Domain of Matrix Metalloproteinase-14 (MMP-14) with Therapeutic Conjugated CNTs. *Biosensors*, 12(10), 884. <https://doi.org/10.3390/bios12100884>.
- [3] Peng, D., Li, J., Li, Y., Bai, L., Xiong, A., He, X., Li, X., Ran, Q., Zhang, L., Jiang, M., Wang, J., Leung, E. L., Yang, P., & Li, G. (2024). MMP14high macrophages orchestrate progressive pulmonary fibrosis in SR-Ag-induced hypersensitivity pneumonitis. *Pharmacological research*, 200, 107070. <https://doi.org/10.1016/j.phrs.2024.107070>.
- [4] Pekkonen, P., Alve, S., Balistreri, G., Gramolelli, S., Tatti-Bugaeva, O., Paatero, I., Niiranen, O., Tuohinto, K., Perälä, N., Taiwo, A., Zinovkina, N., Repo, P., Icaý, K., Ivaska, J., Saharinen, P., Hautaniemi, S., Lehti, K., & Ojala, P. M. (2018). Lymphatic endothelium stimulates melanoma metastasis and invasion via MMP14-dependent Notch3 and β 1-integrin activation. *eLife*, 7, e32490. <https://doi.org/10.7554/eLife.32490>.
- [5] Remacle, A. G., Golubkov, V. S., Shiryaev, S. A., Dahl, R., Stebbins, J. L., Chernov, A. V., Cheltsov, A. V., Pellecchia, M., & Strongin, A. Y. (2012). Novel MT1-MMP small-molecule inhibitors based on insights into hemopexin domain function in tumor growth. *Cancer research*, 72(9), 2339–2349. <https://doi.org/10.1158/0008-5472.CAN-11-4149>.

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