

Product Data Sheet

Product Name: MHY1485

Cat. No.: GC13790

Chemical Properties

Cas. No. 326914-06-1

Chemical Name 4,6-dimorpholino-N-(4-nitrophenyl)-1,3,5-triazin-2-amine

SMILES [O-][N+](C1=CC=C(C(NC2=NC(N3CCOCC3)=NC(N4CCOCC4)=N2)C=C1)=O

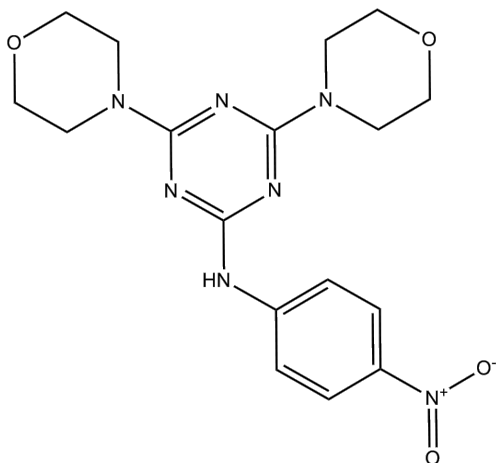
Formula $C_{17}H_{21}N_7O_4$ M.Wt 387.39

Solubility $\geq 19.35\text{mg/mL}$ 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

CT26 cells (murine colon carcinoma cell line), LLC cells (murine Lewis lung carcinoma cell line)

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Preparation Method	CT26 and LLC cells were maintained in respective media at 37°C, 5% CO ₂ . Cells were treated with 10μM MHY1485 for 24 hours, then exposed to 6Gy X-ray irradiation, and cultured for another 24 hours. After treatment, ATP release (CellTiter-Glo), HMGB1 release (ELISA), cell surface calreticulin/H-2Kd/PD-L1 (flow cytometry), and γH2AX levels (flow cytometry) were measured.
Reaction Conditions	10μM; 24h pretreatment
Applications	MHY1485 increased ATP and HMGB1 release, increased cell surface calreticulin and H-2Kd expression, did not alter PD-L1 expression, and increased γH2AX levels in CT26 and LLC cells with or without irradiation.
Animal experiment [2]:	
Animal models	8-week-old wild-type C57BL/6J mice and intestinal epithelial PBLD-deficient (PBLDIEC ^{-/-}) mice
Preparation Method	Mice were administered 2.5% dextran sulfate sodium in drinking water for 5 days to induce colitis. MHY1485 was intraperitoneally injected at 2.5mg/kg/day for 2 days before dextran sulfate sodium induction, and then continued for 3 days at the end of dextran sulfate sodium induction. Daily disease activity index was recorded; body weight, colon length, survival rate, colon histology (H&E), immunohistochemistry for PBLD/ZO-1/occludin, and in vivo intestinal permeability (FITC-dextran) were assessed.
Dosage form	2.5mg/kg/day; i.p.; 2 days pre-treatment + 3 days post-induction (11 days)

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Applications	MHY1485 caused greater body weight loss, shorter colon length, lower survival rate, higher disease activity index scores, and worse histological scores than dextran sulfate sodium alone. MHY1485 decreased PBLD, ZO-1 and occludin staining intensity in colon tissue, and increased in vivo intestinal permeability to FITC-dextran in mice.
References: [1] Sun L, Morikawa K, Sogo Y, et al. MHY1485 potentialtes immunogenic cell death induction and anti-cancer immunity following irradiation. Journal of Radiation Research. 2024;65(2):205-14. [2] Xu Y, Ou J, Zhang C, et al. Rapamycin promotes the intestinal barrier repair in ulcerative colitis via the mTOR/PBLD/AMOT signaling pathway. BBA-Molecular Basis of Disease. 2024 Jun 9;1870(7):167287.	

Background

MHY1485 is a cell-permeable mTOR activator. MHY1485 upregulates the phosphorylation of mTOR at Ser2448 and its downstream targets 4E-BP1 and S6K1 to activate the mTOR signaling pathway. MHY1485 blocks the fusion of autophagosomes with lysosomes to inhibit autophagic flux and induce LC3-II accumulation. MHY1485 can be used in research related to cancer, neurodegenerative diseases, metabolic diseases, and autophagy^[1-4].

In vitro, ATDC5 cells were pretreated with 100nM MHY1485 for 1-4 hours and then subjected to fluid shear stress. MHY1485 increased p-EIF2AK3, CASP12 and DDIT3 protein expression, increased the number of TUNEL-positive cells, and decreased BECN1 and LC3B-II protein expression^[5]. CT26 cells and LLC cells were pretreated with 10μM MHY1485 for 24 hours and then exposed to 6Gy X-ray irradiation for 24 hours. MHY1485 increased ATP and HMGB1 release into the culture medium, increased cell surface calreticulin and H-2Kd expression, and increased γH2AX levels^[6]. HepG2 cells and doxorubicin-resistant HepG2/ADM cells were treated with 1-10μM MHY1485 for 6-12 hours. MHY1485 inhibited cell viability and proliferation, and promoted cell apoptosis^[7].

In vivo, C57BL/6J mice and intestinal epithelial PBLD knockout (PBLDIEC^{-/-}) mice were

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intraperitoneally injected with 2.5mg/kg MHY1485 for 11 consecutive days starting 2 days before colitis induction. MHY1485 caused more severe body weight loss, more pronounced colon shortening, lower survival rate, and higher disease activity index scores^[8]. HBV-infected C57BL/6J mice were intraperitoneally injected with 5mg/kg MHY1485 every three days for six days (three injections total). MHY1485 reduced serum HBsAg and HBV DNA levels, and decreased HBsAg and HBcAg expression in liver tissue^[9]. C57BL/6J mice with acute lung injury were intraperitoneally injected with a single dose of 10mg/kg MHY1485 combined with intragastric administration of 10mg/kg Isoimperatorin. MHY1485 increased serum IL-1 β , IL-6 and TNF- α levels, and aggravated lung histopathological changes including alveolar septal thickening, leukocyte aggregation in alveolar spaces, proteinaceous exudation, and erythrocyte extravasation^[10].

References:

- [1] Zhao S, Chen C, Wang S, et al. MHY1485 activates mTOR and protects osteoblasts from dexamethasone. *Biochem Biophys Res Commun*. 2016 Dec 9;481(3-4):212-218.
- [2] Rashtiani S, Goudarzi I, Jafari A, et al. Intracerebroventricular Injection of MHY1485 Blocked the Beneficial Effect of Adiponectin on Aversive Memory in the STZ Model of Dementia. *Cent Nerv Syst Agents Med Chem*. 2023 Sep 11.
- [3] Xie J, Zhang T, Li P, et al. Dihydromyricetin Attenuates Cerebral Ischemia Reperfusion Injury by Inhibiting SPHK1/mTOR Signaling and Targeting Ferroptosis. *Drug Des Devel Ther*. 2022 Sep 11;16:3071-3085.
- [4] Rakhmanova V, Jin M, Shin J. Inhibition of Mast Cell Function and Proliferation by mTOR Activator MHY1485. *Immune Netw*. 2018 Jun 4;18(3):e18.
- [5] Sun L, Morikawa K, Sogo Y, et al. MHY1485 enhances X-irradiation-induced apoptosis and senescence in tumor cells. *Journal of Radiation Research*. 2021;62(5):782-92.
- [6] Yang H, Wen Y, Zhang M, et al. MTORC1 coordinates the autophagy and apoptosis signaling in articular chondrocytes in osteoarthritic temporomandibular joint. *Autophagy*. 2020;16(2):271-88.
- [7] Guo J, Lei Y, Liu L, et al. MHY1485 promotes adriamycin sensitivity in HepG2 cells by inhibiting autophagy. *Functional & Integrative Genomics*. 2024;24:22.

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- [9] Yu Y, Wang Z, Yang A, et al. Chronic HBV infection impairs the glucose metabolism and effector function of NK cells via HBsAg/IL-15/mTOR axis. *Cell Death and Disease*. 2025;16:721.
- [10] Zhang J, Zhang Z, Cui T, et al. Prophylactic isoimperatorin protects against LPS-ALI via mTOR-dependent control of inflammation, oxidative stress and ferroptosis markers. *Journal of Ethnopharmacology*. 2026;358:120998.

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