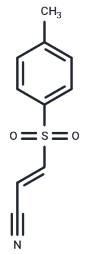
# Data Sheet (Cat.No.T1902)

TargetMol

## BAY 11-7082

### Chemical Properties



CAS No. : 19542-67-7

Formula: C10H9NO2S

Molecular Weight: 207.25

Storage: Store at low temperature,Keep away from direct sunlight,Store under nitrogen
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

### Biological Description

| | |
|---|---|
| Description | BAY 11-7082 (BAY 11-7821) is an NF-κB inhibitor that suppresses TNFα-induced IκBα phosphorylation (IC50=10 μM) and also inhibits the ubiquitin-specific proteases USP7 and USP21 (IC50=0.19/0.96 μM). |
| Targets(IC50) | Apoptosis,NF-κB,Autophagy,DUB,IκB/IKK |
| In vitro | **METHODS**: Human colorectal cancer cells HT29 were treated with BAY 11-7082 (10-100 μM) for 1 h, followed by stimulation with TNF (50 ng/mL) for 3-10 min or Flag-TWEAK (200 ng/mL) for 8 h. The expression levels of target proteins were detected by Western Blot.<br>**RESULTS**: Bay 11-7082 inhibited TWEAK-induced p100 processing and TNF-induced phosphorylation and degradation of IκBα. Both NFκB pathways were significantly blocked at concentrations of 30-100 μM of Bay 11-7082. [1]<br>**METHODS**: Macrophage RAW264.7 was treated with BAY 11-7082 (15 μM) and LPS (1 μg/mL) for 6 h, and TNF-α levels were measured by ELISA Assay.<br>**RESULTS**: BAY 11-7082 blocked TNF-α production in LPS-treated RAW264.7 cells, which is an inflammatory response generated by activated NF-κB. [2] |
| In vivo | **METHODS**: To investigate the immunomodulatory effects, BAY 11-7082 (5-10 mg/kg) was injected intraperitoneally into C57BL/6 mice, followed 1 h later by intravenous injection of poly U (50 μg/head) + in vivo-jetPEI.<br>**RESULTS**: Treatment with BAY 11-7082 inhibits the IFN response in vivo by limiting pDC function when stimulated with TLR ligands. [3]<br>**METHODS**: To investigate the effects on psoriasiform dermatitis, BAY 11-7082 (20 mg/kg) was injected intraperitoneally into C57BL/6 and NLRP3 KO mice with IMQ-induced psoriasiform lesions once daily for seven days.<br>**RESULTS**: BAY 11-7082 blunted epidermal thickness, acanthosis and inflammatory infiltrates.BAY 11-7082 decreased the expression of pNF-κB, NLRP3, TNF-α, IL-6 and IL-1β, attenuated the phosphorylation of signal transducers and STAT3, and lowered IL-23 levels. [4] |
| Kinase Assay | UBE1 (0.17 μM) in 22.5 μL of 20 mM Hepes, pH 7.5, containing 10 μM ubiquitin is incubated for 45 min at 21°C with 1 μL of DMSO or 1 μL of BAY 11-7082 in DMSO. A 2.5 μL solution of 10 mM magnesium acetate and 0.2 mM ATP is added, incubated for 10 min at 30°C, and the reactions are terminated by the addition of 2.5 μL of 10% (w/v) SDS and |

| | |
|---|---|
| Kinase Assay | heating for 6 min at 75°C. The samples are subjected to SDS/PAGE in the absence of any thiol. The gels are stained for 1 h with Coomassie Instant Blue and destained by washing with water. The loading of ubiquitin to E2 conjugating enzymes is carried out in an identical manner, except that UBE1 (0.17 μM) is mixed with Ubc13 (2.4 μM) or UbcH7 (2.9 μM) prior to incubation with BAY 11-7082[3]. |
| Cell Research | Cells are transfected with siRNA in 96-well microtiter plates and then cultured for 72 hours in complete NSCLC medium, treated with BAY 11-7082 for 12 hours. Cells are incubated with [3H]thymidine for 3 hours. The cells are collected on filters using an automatic cell harvester and radioactivity on the filters is measured by β-scintillation counting.(Only for Reference) |

## Solubility Information

| | |
|---|---|
| Solubility | Ethanol: 5.2 mg/mL (25.09 mM),Sonication is recommended.<br>DMSO: 29.6 mg/mL (142.82 mM),Sonication is recommended.<br>(< 1 mg/ml refers to the product slightly soluble or insoluble) |
| In vivo Formulation | 10% DMSO+40% PEG300+5% Tween 80+45% Saline: 2.08 mg/mL (10.04 mM),Solution.<br>*Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.* |

Preparing Stock Solutions

| | 1mg | 5mg | 10mg |
|---|---|---|---|
| 1 mM | 4.8251 mL | 24.1255 mL | 48.2509 mL |
| 5 mM | 0.965 mL | 4.8251 mL | 9.6502 mL |
| 10 mM | 0.4825 mL | 2.4125 mL | 4.8251 mL |
| 50 mM | 0.0965 mL | 0.4825 mL | 0.965 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.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Rauert-Wunderlich H, et al. The IKK inhibitor Bay 11-7082 induces cell death independent from inhibition of activation of NFκB transcription factors. PLoS One. 2013;8(3):e59292.
Ye Z, Ai X, Yang K, et al.Targeting Microglial Metabolic Rewiring Synergizes with Immune Checkpoint Blockade Therapy for Glioblastoma.Cancer Discovery.2023
Gao J, Wang Y, Zhang W, et al. C20orf27 Promotes Cell Growth and Proliferation of Colorectal Cancer via the TGFβR-TAK1-NFκB Pathway[J]. Cancers. 2020, 12(2): 336.
Du T, Yan Z, Zhu S, et al. QKI deficiency leads to osteoporosis by promoting RANKL-inducedosteoclastogenesis and disrupting bone metabolism. Cell Death and Disease. 2020
Chen J, Liu G, Wang X, et al. Glioblastoma stem cell-specific histamine secretion drives pro-angiogenic tumor microenvironment remodeling. Cell Stem Cell. 2022
Ouyang P, Tao Y, Wei W, et al.Spring Viremia of Carp Virus Infection Induces Carp IL-10 Expression, Both In Vitro and In Vivo.Microorganisms.2023, 11(11): 2812.
Zheng M, Zhai Y, Yu Y, et al.TNF compromises intestinal bile-acid tolerance dictating colitis progression and limited infliximab response.Cell Metabolism.2024
Lee J, et al. BAY 11-7082 is a broad-spectrum inhibitor with anti-inflammatory activity against multiple targets. Mediators Inflamm. 2012;2012:416036.
Jiang Y, Zhao X, Chen J, et al.PM2. 5 induces cardiac malformations via PI3K/akt2/mTORC1 signaling pathway in zebrafish larvae.Environmental Pollution.2023: 121306.
Yu D, Cai W, Shen T, et al.PM2. 5 exposure increases dry eye disease risks through corneal epithelial inflammation and mitochondrial dysfunctions.Cell Biology and Toxicology.2023: 1-16.
Miyamoto R, et al. Inhibitor of IkappaB kinase activity, BAY 11-7082, interferes with interferon regulatory factor 7 nuclear translocation and type I interferon production by plasmacytoid dendritic cells. Arthritis Res Ther. 2010;12 (3):R87.
Tang S, Zhong W, Li T, et al.Isochlorogenic acid A alleviates dextran sulfate sodium-induced ulcerative colitis in mice through STAT3/NF-κB pathway.International Immunopharmacology.2023, 118: 109989.
Irrera N, et al. BAY 11-7082 inhibits the NF-κB and NLRP3 inflammasome pathways and protects against IMQ-induced psoriasis. Clin Sci (Lond). 2017 Mar 1;131(6):487-498.
Goffi F, et al. Neurosci Lett, 2005, 377(3), 147-151.
Gao J, Wang Y, Zhang W, et al. C20orf27 Promotes Cell Growth and Proliferation of Colorectal Cancer via the TGFβR-TAK1-NFκB Pathway. Cancers. 2020, 12(2): 336
Yu Y, Li Z, Guo R, et al. Ononin, sec-O-β-D-glucosylhamaudol and astragaloside I: antiviral lead compounds identified via high throughput screening and biological validation from traditional Chinese medicine Zhongjing formulary. Pharmacological Research. 2019 May 11;145:104248
Jun Jacob Hu, et al. Identification of pyroptosis inhibitors that target a reactive cysteine in gasdermin D. The Preprint Server For Biology, 2018,Jul. 10.
Shen S C, He F, Cheng C, et al. Uric acid aggravates myocardial ischemia-reperfusion injury via ROS/NLRP3 pyroptosis pathway[J]. Biomedicine & Pharmacotherapy . 2020, 133: 110990.
Chen H, He A, Li H, et al. TSSK4 upregulation in alveolar epithelial type-II cells facilitates pulmonary fibrosis through HSP90-AKT signaling restriction and AT-II apoptosis. Cell Death & Disease. 2021, 12(10): 1-1
Shen S C, He F, Cheng C, et al. Uric acid aggravates myocardial ischemia-reperfusion injury via ROS/NLRP3 pyroptosis pathway. Biomedicine & Pharmacotherapy. 2020, 133: 110990.
Yu Y, Li Z, Guo R, et al. Ononin, sec-O-β-D-glucosylhamaudol and astragaloside I: antiviral lead compounds identified via high throughput screening and biological validation from traditional Chinese medicine Zhongjing formulary[J]. Pharmacological Research. 2019 May 11;145:104248.
Du T, Yan Z, Zhu S, et al. QKI deficiency leads to osteoporosis by promoting RANKL-inducedosteoclastogenesis and disrupting bone metabolism. Cell Death and Disease. 2020