UF010

Cat. No.: HY-18976

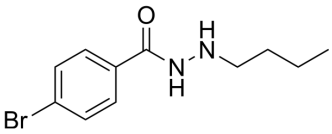
CAS No.: 537672-41-6

Molecular Formula: $C_{11}H_{15}BrN_2O$

Molecular Weight: 271.15

Target: JAK; HDAC; NF-κB; Toll-like Receptor (TLR); MyD88; Interleukin Related

Pathway: Epigenetics; JAK/STAT Signaling; Protein Tyrosine Kinase/RTK; Stem Cell/Wnt; Cell Cycle/DNA Damage; NF-κB; Immunology/Inflammation



Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year

SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (368.80 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.6880 mL	18.4400 mL	36.8800 mL
5 mM	0.7376 mL	3.6880 mL	7.3760 mL
10 mM	0.3688 mL	1.8440 mL	3.6880 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (9.22 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (9.22 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (9.22 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

UF010 is a selective inhibitor of class I HDAC. UF010 has cytotoxicity to cancer cells and reduces neuroinflammation in the hippocampus. UF010 can be used for the research of neurological diseases[1][2][3].

IC_{50} & Target

HDAC1	HDAC2	HDAC3	HDAC6
1.42 μM	0.32 μM (IC_{50})	256.7 nM (IC_{50})	18.93 μM (IC_{50})

	HDAC8 3.97 μM (IC_{50})	IL-6

In Vitro

UF010 (500 nM, 4 days) leads to a signifcant reduction in rod production with a concomitant increase in Müller cells[1].
UF010 (10-100 μM, 72 h) has cytotoxicity to B16F10 cells, MCF-7 cells, A549 cells, 4T1 cells, HEK-293 cells and HCEC cells[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Cytotoxicity Assay [2]

Cell Line:	B16F10 cells, MCF-7 cells, A549 cells, 4T1 cells, HEK-293 cells and HCEC cells
Concentration:	10 μM, 100 μM
Incubation Time:	72 h
Result:	Showed IC_{50} values of 2.41 μM for B16F10 cells, 20.81 μM for A549 cells, 17.93 μM for MCF-7 cells, 8.40 μM for 4T1 cells, 98.52 μM for HEK-293 cells, 95.4 μM for HCEC cells.

In Vivo

UF010 (15 mg/kg, Intraperitoneal injection, single dose) contributes considerably to the inflammatory regulation of hippocampal neurons in postoperative cognitive dysfunction (POCD) mice[4].
UF010 (15 mg/kg, Intraperitoneal injection, single dose) has antitumor therapeutic efficacy in the 4T1-Luc tumor-bearing mouse model[5].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	postoperative cognitive dysfunction (POCD) mice[4]
Dosage:	15 mg/kg
Administration:	Intraperitoneal injection (i.p.)
Result:	Weakened the infiltration of CD4+ T cells and NK cells in hippocampal tissues. Reduced inflammatory parameters in serum and hippocampal tissues, such as interleukin 6 (IL-6), C-reactive protein (CRP), and tumor necrosis factor alpha (TNF-α) levels. Activated the NF-κB/p65, JAK/STAT and TLR/MyD88 pathways.

Animal Model:	4T1-Luc tumor-bearing mouse model[5]
Dosage:	15 mg/kg
Administration:	Intraperitoneal injection (i.p.)
Result:	Inhibited the tumor growth rate percentage to 55.56, 38.36, 39.52% at days 7, 14, and 21. Induced high levels of ROS generation, causing apoptosis-mediated tumor cell death.

CUSTOMER VALIDATION

- J Mol Med (Berl). 2019 Aug;97(8):1183-1193.
- J Healthc Eng. 2021 Dec 3;2021:3433615.

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REFERENCES

[1]. Mattar P, et al. A Casz1–NuRD complex regulates temporal identity transitions in neural progenitors [J]. Scientific reports, 2021, 11(1): 3858.

[2]. Pulya S, et al. Selective inhibition of histone deacetylase 3 by novel hydrazide based small molecules as therapeutic intervention for the treatment of cancer [J]. European Journal of Medicinal Chemistry, 2022, 238: 114470.

[3]. Dai Y, et al. Classical HDACs in the regulation of neuroinflammation[J]. Neurochemistry International, 2021, 150: 105182.

[4]. Yang C X, et al. The inhibitory effects of class I histone deacetylases on hippocampal neuroinflammatory regulation in aging mice with postoperative cognitive dysfunction [J]. European Review for Medical & Pharmacological Sciences, 2020, 24(19).

[5]. Pulya S, et al. Selective HDAC3 Inhibitors with Potent In Vivo Antitumor Efficacy against Triple-Negative Breast Cancer [J]. Journal of Medicinal Chemistry, 2023, 66(17): 12033-12058.

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