Nifuroxazide

Cat. No.: HY-B1436

CAS No.: 965-52-6

Molecular Formula: $C_{12}H_9N_3O_5$

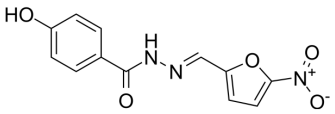
Molecular Weight: 275.22

Target: STAT; Bacterial; Antibiotic

Pathway: JAK/STAT Signaling; Stem Cell/Wnt; Anti-infection

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 155 mg/mL (563.19 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.6335 mL	18.1673 mL	36.3346 mL
5 mM	0.7267 mL	3.6335 mL	7.2669 mL
10 mM	0.3633 mL	1.8167 mL	3.6335 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: ≥ 2.58 mg/mL (9.37 mM); Suspended solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.58 mg/mL (9.37 mM); Suspended solution

BIOLOGICAL ACTIVITY

Description

Nifuroxazide is an effective inhibitor of STAT3, also exerts potent anti-tumor and anti-metastasis activity. Nifuroxazide is an orally active nitrofuran antibiotic.

IC_{50} & Target

STAT3

In Vitro

When U266 cells are incubated with Nifuroxazide, a significant dose-dependent decrease in STAT3 tyrosine phosphorylation is observed. This inhibition of STAT3 tyrosine phosphorylation is rapid, occurring as early as 1 h after treatment, and is sustained for at least 24 h. Treatment of U266 or INA6 cells with Nifuroxazide for 48 hours result in a dose-dependent loss of cell viability with an EC_{50} of approximately 4.5 μM in both cell types. Notably, the MM cells lacking constitutive STAT3

	activation show little toxicity to Nifuroxazide[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Compared with the vehicle group, treatment with Nifuroxazide could inhibit tumor growth and tumor weight in a dose-dependent manner, with the inhibition rate of tumor volumes being 43.0% and 62.1% at 25 mg/kg and 50 mg/kg, respectively. It is also shown that Nifuroxazide significantly inhibits the proliferation of nuclear Ki-67-positive cells and induces apoptosis cells of cleaved caspase-3-positive cells. Besides, it is found that treatment with Nifuroxazide could inhibit the expression of MMP-2, MMP-9 and p-Stat3 in A375 tumor tissues. What's more, Nifuroxazide inhibits the infiltration of MDSCs into the lung, which might be associated with suppression of distant colonization of tumor cells in B16-F10 melanoma metastasis model[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [2]	Mice[2] Mice engrafted subcutaneously with 1×10^7 A375 cells are randomly divided into groups when tumor volume is around 100 mm^3 and are administrated intraperitoneally injected with Nifuroxazide 25 mg/kg, 50 mg/kg or vehicle once daily. The tumor size and body weight are measured every 3 days. C57Bl/6J mice are engrafted by injecting intravenously via the tail vein with 2×10^5 B16-F10 cells to produce experimental lung metastasis. They are randomly assigned to groups on day 6 and are intraperitoneally injected with Nifuroxazide 50 mg/kg or vehicle once daily. Black dots on lung surface are counted and confirmed as melanoma metastases[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Insect Mol Biol. 2021 Feb;30(1):102-112.

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REFERENCES

[1]. Nelson EA, et al. Nifuroxazide inhibits survival of multiple myeloma cells by directly inhibiting STAT3. Blood. 2008 Dec 15;112(13):5095-102.

[2]. Zhu Y, et al. Nifuroxazide exerts potent anti-tumor and anti-metastasis activity in melanoma. Sci Rep. 2016 Feb 2;6:20253.

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