# Data Sheet

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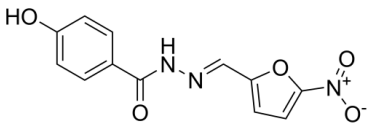
| **Product Name:** | Nifuroxazide |
| **Cat. No.:** | CS-4918 |
| **CAS No.:** | 965-52-6 |
| **Molecular Formula:** | $C_{12}H_9N_3O_5$ |
| **Molecular Weight:** | 275.22 |
| **Target:** | Antibiotic; Bacterial; STAT |
| **Pathway:** | Anti-infection; JAK/STAT Signaling; Stem Cell/Wnt |
| **Solubility:** | DMSO : ≥ 155 mg/mL (563.19 mM) |



## BIOLOGICAL ACTIVITY:

Nifuroxazide is an effective inhibitor of **STAT3**, also exerts potent anti-tumor and anti-metastasis activity. IC50 & Target: STAT[1][2]. ***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]. ***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].

## PROTOCOL (Extracted from published papers and Only for reference)

**Animal Administration:** [2]Mice[2]

**Mice** engrafted subcutaneously with $1\times10^7$ 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 $2\times10^5$ 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].

## 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.

## CAIndexNames:

Benzoic acid, 4-hydroxy-, 2-[(5-nitro-2-furanyl)methylene]hydrazide

**SMILES:**

O=C(N/N=C/C1=CC=C([N+]([O-])=O)O1)C2=CC=C(O)C=C2

**Caution: Product has not been fully validated for medical applications. For research use only.**

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