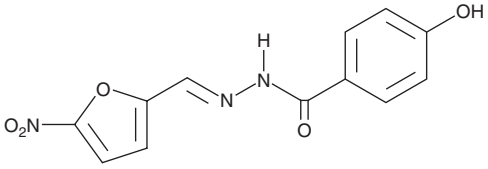
PRODUCT INFORMATION

Nifuroxazide

Item No. 18163

CAS Registry No.: 965-52-6
Formal Name: 4-hydroxy-benzoic acid, 2-[(5-nitro-2-furanyl)methylene]hydrazide
MF: $C_{12}H_9N_3O_5$
FW: 275.2
Purity: ≥98%
UV/Vis.: λ_{max}: 285, 365 nm
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Nifuroxazide is supplied as a crystalline solid. A stock solution may be made by dissolving the nifuroxazide in the solvent of choice, which should be purged with an inert gas. Nifuroxazide is soluble in organic solvents such as DMSO and dimethyl formamide. The solubility of nifuroxazide in these solvents is approximately 30 mg/ml.

Nifuroxazide is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, nifuroxazide should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. Nifuroxazide has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Nifuroxazide is a nitrofuran antibiotic.[1] It is active against strains of the enteropathogenic bacteria *C. jejuni*, *Salmonella*, *Y. enterocolitica*, *Shigella*, and *E. coli*.[1] It inhibits quorum sensing and virulence factor production in *P. aeruginosa*.[2] Nifuroxazide inhibits STAT3 activity in a reporter assay (IC_{50} = ~3 µM) and decreases viability of U266 and INA-6 myeloma cells, which have constitutive STAT3 phosphorylation, with EC_{50} values of approximately 4.5 µM for both.[3] It also decreases viability, migration, and invasion of, and induces apoptosis in, MCF-7, 4T1, and MDA-MB-231 breast cancer cells.[4] Nifuroxazide (50 mg/kg per day) reduces tumor growth and prevents pulmonary metastasis in a 4T1 murine mammary carcinoma model. It also reduces diarrhea, weight loss, and colon inflammation in a rat model of acetic acid-induced ulcerative colitis.[5]

References

1. Vanhoof, R., Coignau, H., Stas, G., *et al.* Evaluation of the in vitro activity of nifuroxazide on enteropathogenic microorganisms: Determination of bacteriostatic and bactericidal concentrations and disk susceptibility. *Acta Clin. Belg.* **36(3)**, 126-129 (1981).
2. Yang, L., Rybtke, M.T., Jakobsen, T.H., *et al.* Computer-aided identification of recognized drugs as *Pseudomonas aeruginosa* quorum-sensing inhibitors. *Antimicrob. Agents Chemother.* **53(6)**, 2432-2443 (2009).
3. Nelson, E.A., Walker, S.R., Kepich, A., *et al.* Nifuroxazide inhibits survival of multiple myeloma cells by directly inhibiting STAT3. *Blood* **112(13)**, 5095-5102 (2008).
4. Yang, F., Hu, M., Lei, Q., *et al.* Nifuroxazide induces apoptosis and impairs pulmonary metastasis in breast cancer model. *Cell Death Dis.* **6(3)**, e1701 (2015).
5. El-Far, Y.M., Elsherbiny, N.M., El-Shafey, M., *et al.* The interplay of the inhibitory effect of nifuroxazide on NF-κB/STAT3 signaling attenuates acetic acid-induced ulcerative colitis in rats. *Environ. Toxicol. Pharmacol.* **79**, 103433 (2020).

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