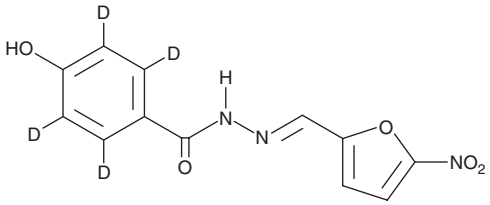
# PRODUCT INFORMATION

## Nifuroxazide-$d_4$

*Item No. 33382*

**CAS Registry No.:** 1188487-83-3
**Formal Name:** 4-hydroxy-benzoic acid, 2-[(5-nitro-2-furanyl)methylene-$d_4$]hydrazide
**MF:** $C_{12}H_5D_4N_3O_5$
**FW:** 279.2
**Chemical Purity:** ≥95% (Nifuroxazide)
**Deuterium Incorporation:** ≥99% deuterated forms ($d_1$-$d_4$); ≤1% $d_0$
**Supplied as:** A 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-$d_4$ is intended for use as an internal standard for the quantification of nifuroxazide (Item No. 18163) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

Nifuroxazide-$d_4$ is supplied as a solid. A stock solution may be made by dissolving the nifuroxazide-$d_4$ in the solvent of choice, which should be purged with an inert gas. Nifuroxazide-$d_4$ is soluble in DMSO and dimethyl formamide.

### 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).





**CAYMAN CHEMICAL**
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
**PHONE:** [800] 364-9897
[734] 971-3335
**FAX:** [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM