

Store at
-20C
#37959

Nitazoxanide

25 mg

**Orders:** 877-616-CELL (2355)
orders@cellsignal.com**Support:** 877-678-TECH (8324)**Web:** info@cellsignal.com
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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Background

Nitazoxanide, also known as NTZ, is a broad-spectrum thiazolide antiparasitic agent that is a noncompetitive inhibitor of pyruvate:ferredoxin/ferredoxin oxidoreductases (PFORs) (1-3). This small molecule is an effective antiviral agent by activating protein kinase activated by double-stranded RNA (PKR), resulting in the phosphorylation of eukaryotic initiation factor 2 alpha (eIF2α). This method of influencing the host's antiviral pathways increases the barrier to develop antiviral resistance (4). Nitazoxanide has shown anticancer activity *in vivo* by inhibiting oxidative phosphorylation and mitochondrial respiration. Treatment with Nitazoxanide leads to AMPK activation, inhibition of mTOR, and downregulation of c-Myc and Wnt signaling (5). Nitazoxanide has been found to be a particularly potent c-Myc inhibitor with IC₅₀ values ranging between 10 nM to 500 nM in different cancer cell lines (1). Studies have shown that Nitazoxanide may be an effective treatment against Middle East respiratory syndrome coronavirus (MERS-CoV) and other coronaviruses (6).

Molecular Formula

C₁₂H₉N₃O₅S

Molecular Weight

307.3 g/mol

Purity

98%

CAS

55981-09-4

Solubility

Soluble in DMSO at 50 mg/ml.

Storage

Store lyophilized at -20°C, desiccated. In lyophilized form, the chemical is stable for 24 months. Once in solution, store at -20°C and use within 3 months to prevent loss of potency. *Aliquot to avoid multiple freeze/thaw cycles.*

Directions for Use

Nitazoxanide is supplied as a lyophilized powder. For a 15 mM stock, reconstitute 5 mg of powder in 1.08 ml of DMSO. Working concentrations and length of treatment can vary depending on the desired effect.

Background References

1. Fan-Minogue, H. et al. (2013) *Mol Cancer Ther* 12, 1896-905.
2. White, C.A. (2004) *Expert Rev Anti Infect Ther* 2, 43-9.
3. Hoffman, P.S. et al. (2007) *Antimicrob Agents Chemother* 51, 868-76.
4. Keeffe, E.B. and Rossignol, J.F. (2009) *World J Gastroenterol* 15, 1805-8.
5. Senkowski, W. et al. (2015) *Mol Cancer Ther* 14, 1504-16.
6. Rossignol, J.F. (2016) *J Infect Public Health* 9, 227-30.

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