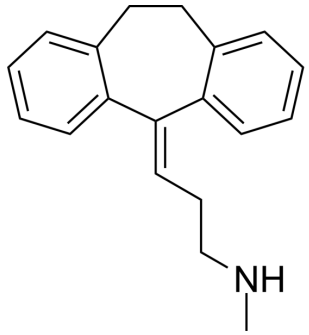
Nortriptyline



Cat. No.:	HY-118620
CAS No.:	72-69-5
Molecular Formula:	$C_{19}H_{21}N$
Molecular Weight:	263.38
Target:	Autophagy; Drug Metabolite; Apoptosis
Pathway:	Autophagy; Metabolic Enzyme/Protease; Apoptosis
Storage:	4°C, protect from light * In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)

BIOLOGICAL ACTIVITY

Description

Nortriptyline (Desmethylamitriptyline), the main active metabolite of Amitriptyline, is a tricyclic antidepressant. Nortriptyline is a potent autophagy inhibitor and has anticancer effects[1][2][3].N

In Vitro

Amitriptyline is metabolized by CYP2C19 to the active metabolite, Nortriptyline. Nortriptyline blocks the reuptake of Norepinephrine more potently than Serotonin[1].
Nortriptyline (6.25-100 μM; 24-72 h) markedly reduces the viability of TCCSUP and mouse MBT-2 bladder cancer cells in a concentration- and time-dependent manner[3].
Nortriptyline (12.55-100 μM; 24 h) induces cell cycle arrest and apoptosis in TCCSUP and MBT-2 cells[3].
Nortriptyline (12.55-100 μM; 24 h) induces both intrinsic and extrinsic apoptosis in these bladder cancer cells[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[3]

Cell Line:	Human TCCSUP and mouse MBT-2 bladder cancer cells
Concentration:	6.25 μM, 12.5 μM, 25 μM, 50 μM and 100 μM
Incubation Time:	24, 48, or 72 h
Result:	Exhibited cytotoxic effects on TCCSUP and MBT-2 cells.

Cell Cycle Analysis[3]

Cell Line:	Human TCCSUP and mouse MBT-2 bladder cancer cells
Concentration:	25 μM, 50 μM, or 100 μM (TCCSUP); 12.5 μM, 25 μM, or 50 μM (MBT-2 cells)
Incubation Time:	24 h
Result:	Caused cell cycle arrest in these bladder cancer cells.

Apoptosis Analysis[3]

Cell Line:	Human TCCSUP and mouse MBT-2 bladder cancer cells
Concentration:	25 μM, 50 μM, or 100 μM (TCCSUP); 12.5 μM, 25 μM, or 50 μM (MBT-2 cells)

Incubation Time:	24 h
Result:	Induced apoptosis in both TCCSUP and MBT-2 cells.

Western Blot Analysis[3]

Cell Line:	Human TCCSUP and mouse MBT-2 bladder cancer cells
Concentration:	25 μM, 50 μM, or 100 μM (TCCSUP); 12.5 μM, 25 μM, or 50 μM (MBT-2 cells)
Incubation Time:	24 h
Result:	Increased the expression of Fas, FasL, FADD, Bax, Bak, and cleaved forms of caspase-3, caspase-8, caspase-9, and poly(ADP-ribose) polymerase. Decreased the expression of Bcl-2, Bcl-xL, BH3 interacting domain death agonist, X-linked inhibitor of apoptosis protein, and survivin.

In Vivo

Nortriptyline (10-20 mg/kg; ip; every day; for three weeks) inhibits the growth of bladder tumors in mice inoculated with MBT-2 cells[3].

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Animal Model:	Adult male C3H/HeN mice (25-30 g; 2-3 months of age) injected with MBT-2 cells[3]
Dosage:	10 or 20 mg/kg
Administration:	Intraperitoneal injection; every day; for three weeks.
Result:	Suppressed tumor growth in mice inoculated with MBT-2 cells.

CUSTOMER VALIDATION

- J Exp Med. 2023 Mar 6;220(3):e20221316.
- Cell Commun Signal. 2023 May 25;21(1):123.

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REFERENCES

[1]. Sheau-Yun Yuan, et al. Nortriptyline induces mitochondria and death receptor-mediated apoptosis in bladder cancer cells and inhibits bladder tumor growth in vivo. Eur J Pharmacol. 2015 Aug 15:761:309-20.

[2]. Dean L. Amitriptyline Therapy and CYP2D6 and CYP2C19 Genotype. In: Pratt VM, Scott SA, Pirmohamed M, et al., eds. Medical Genetics Summaries. Bethesda (MD): National Center for Biotechnology Information (US); March 23, 2017.

[3]. Petrosyan E, et al. Repurposing Autophagy Regulators in Brain Tumors [published online ahead of print, 2022 Feb 18]. Int J Cancer. 2022;10.1002/ijc.33965.

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

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