

Product Data Sheet

Product Name: Tamoxifen

Cat. No.: GC17901

Chemical Properties

Cas. No. 10540-29-1

Chemical Name 2-[4-[(1Z)-1,2-diphenyl-1-buten-1-yl]phenoxy]-N,N-dimethyl-ethanamine

SMILES CC/C(C1=CC=CC=C1)=C(C2=CC=C(OCCN(C)C)C=C2)\C3=CC=CC=C3

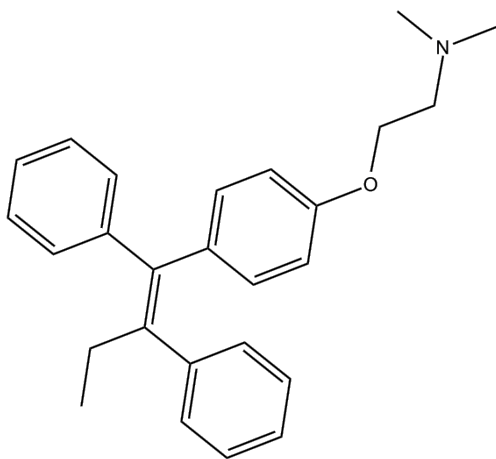
Formula $C_{26}H_{29}NO$ M.Wt 371.51

Solubility $\geq 18.6\text{mg/mL}$ in DMSO; $\geq 40\text{mg/mL}$ in Ethanol Storage 4°C , protect from light

General tips For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

Cell lines GH3 and AtT-20 cells

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

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Preparation Method GH3 and AtT-20 cells were cultured with different concentrations of Tamoxifen for 24 h.

Reaction Conditions 1-10 μ M; 24 h

Applications Tamoxifen treatment significantly reduced the levels of growth hormone (GH) and adrenocorticotrophic hormone (ACTH) secreted by the GH3 and AtT-20 cells respectively.

Animal experiment [2]:

Animal models Seven to eight-week-old female BALB/c-nu nude mice (bearing GH3 cells)

Preparation Method The mice were treated with 20, 50 and 100 mg/kg Tamoxifen every day for 21 days.

Dosage form 20, 50 and 100 mg/kg; 21 days

Applications Tamoxifen treatment not only led to a significant reduction in tumor volume and weight, but also decreased the plasma levels of GH in the tumor-bearing mice.

References:

[1]. Lv T, Zhang Z, et al. Tamoxifen Exerts Anticancer Effects on Pituitary Adenoma Progression via Inducing Cell Apoptosis and Inhibiting Cell Migration. *Int J Mol Sci.* 2022 Feb 28;23(5):2664. doi: 10.3390/ijms23052664. PMID: 35269804; PMCID: PMC8910631.

Background

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Tamoxifen(TAM) serves as a selective estrogen receptor regulator (SERM), inhibiting estrogen's effects in breast cells while potentially stimulating estrogen activity in cells found in different tissues. Moreover, Tamoxifen can function as an enhancer of Hsp90 chaperone ATPase activity. Furthermore, it has been shown to induce gene knockout in CreER(T2) mice[1-4].

Tamoxifen(1-10 μ M;24 h) treatment significantly reduced the levels of growth hormone (GH) and adrenocorticotrophic hormone (ACTH) secreted by the GH3 and AtT-20 cells respectively[5]. Tamoxifen(0.1-100 μ M;48h) decreased the mRNA expression of vascular endothelial growth factor-A (VEGF-A) and increased the mRNA expression of VEGF receptor-1 and placental growth factor (PLGF) in HEECs[6]. Tamoxifen Treatment(1 μ M; 24/48/96 h) can significantly inhibit the proliferation of MCF7 cells[7]. 5 μ M Tamoxifen induces persistent ERK1/2 activation in ER+ breast cancer cells(MCF-7)[8].

Tamoxifen (20, 50 and 100 mg/kg;21 days) treatment not only led to a significant reduction in tumor volume and weight, but also decreased the plasma levels of GH in the tumor-bearing mice[5]. Mice were injected with Tamoxifen (75 mg/kg dissolved in corn oil for 5 days at 6 weeks of age ; i.p.) causes floxed exon excision, resulting in gene knockout[9]. Tamoxifen(9 mg/kg ; i.g.) exerts an inhibitory effect on the heterotopic bone progression at inflammation and chondrogenesis stages, with the TGF- β signaling pathway suppressed following the increase in estrogen receptor alpha activity[10].

References:

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- [2]. Hawariah A, Stanslas J. In vitro response of human breast cancer cell lines to the growth-inhibitory effects of styrylpyrone derivative (SPD) and assessment of its antiestrogenicity. Anticancer Res. 1998 Nov-Dec;18(6A):4383-6. PMID: 9891496.
- [3].Zhao R, Leung E, et,al. Tamoxifen enhances the Hsp90 molecular chaperone ATPase activity. PLoS One. 2010 Apr 1;5(4):e9934. doi: 10.1371/journal.pone.0009934. PMID: 20376192; PMCID: PMC2848575.
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- [6]. Helmestam M, Andersson H, et,al. Tamoxifen modulates cell migration and expression of angiogenesis-related genes in human endometrial endothelial cells. Am J Pathol. 2012 Jun;180(6):2527-35. doi: 10.1016/j.ajpath.2012.02.026. Epub 2012 Apr 21. PMID: 22531128.
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- [8]. Zheng A, Kallio A, et,al. Tamoxifen-induced rapid death of MCF-7 breast cancer cells is mediated via extracellularly signal-regulated kinase signaling and can be abrogated by estrogen. Endocrinology. 2007 Jun;148(6):2764-77. doi: 10.1210/en.2006-1269. Epub 2007 Mar 15. Erratum in: Endocrinology. 2007 Aug;148(8):3931. PMID: 17363451.
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