

Product Data Sheet

Product Name: YC 1
Cat. No.: GC16406

Chemical Properties

Cas. No. 170632-47-0

Chemical Name (5-(1-benzyl-1H-indazol-3-yl)furan-2-yl)methanol

SMILES OCC1=CC=C(C2=NN(CC3=CC=CC=C3)C4=CC=CC=C42)O1

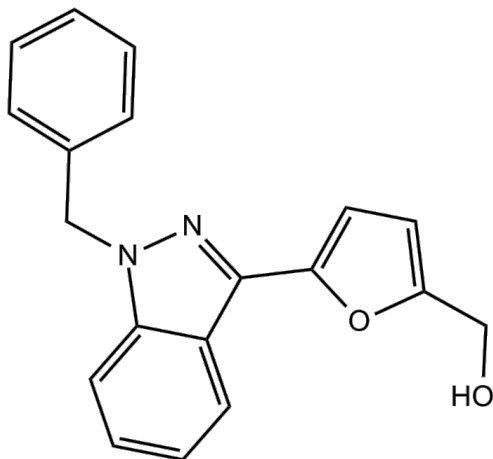
Formula $C_{19}H_{16}N_2O_2$ M.Wt 304.34

Solubility $\geq 30.4\text{mg/mL}$ in DMSO Storage Store at RT

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

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

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Cell experiment [1]:

Cell lines Hep3B cells

Preparation Method Cells were placed on a plate and then treated with YC-1 or DMSO for 5 minutes to determine VEGF levels in Normoxia or hypoxia.

Reaction Conditions 0.01-10 μ M YC-1 ; 24h

Applications The level of VEGF protein in YC-1 cell culture medium decreased in a dose-dependent manner compared with untreated cells grown under hypoxic conditions.

Animal experiment [2]:

Animal models Male nude (BALB/cAnNCrj-nu/nu) mice

Preparation Method Mice(bearing carcinoma) received daily intraperitoneal injections of vehicle or YC-1 (30 microg/g) for 2 weeks.

Dosage form 30 μ g/g YC-1; i.p;2 weeks

Applications YC-1-treated mice tumors expressed lower levels of HIF-1 α , less vascularization, and lower levels of HIF-1-inducing genes than control.

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References:

[1]. Yeo EJ, Chun YS, et.al. YC-1: a potential anticancer drug targeting hypoxia-inducible factor 1. J Natl Cancer Inst. 2003 Apr 2;95(7):516-25. doi: 10.1093/jnci/95.7.516. PMID: 12671019.

Background

Lifiguat (YC-1) is a no-dependent soluble guanylyl cyclase(sGC) activator and a Hypoxia-inducible factor-1alpha (HIF-1alpha) inhibitor[1-3].

YC-1(0.01-100 μ M;24/48 h) inhibits Wnt signaling and suppresses cell proliferation in hepatocellular carcinoma (HCC) [4]. Combination of sorafenib and YC-1(10 μ mol/L; 48 h) synergistically inhibited proliferation and colony formation of HepG2, BEL-7402 and HCCLM3 cells[5]. The level of VEGF protein in YC-1 cell culture medium decreased in a dose-dependent manner compared with the VEGF protein level in medium from untreated cells grown under hypoxic conditions[6].

YC-1-treated(30 μ g/g;i.p;2 weeks) mice tumors expressed lower levels of HIF-1 α , less vascularization, and lower levels of HIF-1-inducing genes than control[6]. 10 mg/kg YC-1(i.p; every three days from day 7 after transplantation) significantly suppressed the growth of both 4T1 and MDA-MB-231 tumors[7]. Sevoflurane postconditioning can provide neuroprotection after hypoxic-ischemic injury. Injection of 1.52 μ g of the hypoxia-inducible factor-1 α inhibitor YC-1 into the left lateral ventricle 30 minutes before hypoxic-ischemic injury reversed the neuroprotection induced by sevoflurane in mice[8].

References:

[1]. Martin E, Lee YC, et.al. YC-1 activation of human soluble guanylyl cyclase has both heme-dependent and heme-independent components. Proc Natl Acad Sci U S A. 2001 Nov 6;98(23):12938-42. doi: 10.1073/pnas.231486198. Epub 2001 Oct 30. PMID: 11687640; PMCID: PMC60803.

[2]. Purohit R, Fritz BG, et.al. YC-1 binding to the β subunit of soluble guanylyl cyclase overcomes allosteric inhibition by the α subunit. Biochemistry. 2014 Jan 14;53(1):101-14. doi: 10.1021/bi4015133. Epub 2013 Dec 30. PMID: 24328155; PMCID: PMC3914721.

[3]. Nayak BK, Shanmugasundaram K, et.al. HIF-1 Mediates Renal Fibrosis in OVE26 Type 1 Diabetic Mice. Diabetes. 2016 May;65(5):1387-97. doi: 10.2337/db15-0519. Epub 2016 Feb 23. PMID: 26908870; PMCID: PMC4839204.

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- [4]. Wu JY, Shih YL, et.al. YC-1 Antagonizes Wnt/ β -Catenin Signaling Through the EBP1 p42 Isoform in Hepatocellular Carcinoma. *Cancers (Basel)*. 2019 May 13;11(5):661. doi: 10.3390/cancers11050661. PMID: 31086087; PMCID: PMC6562864.
- [5]. Kong J, Kong F, et.al. YC-1 enhances the anti-tumor activity of sorafenib through inhibition of signal transducer and activator of transcription 3 (STAT3) in hepatocellular carcinoma. *Mol Cancer*. 2014 Jan 13;13:7. doi: 10.1186/1476-4598-13-7. PMID: 24418169; PMCID: PMC3895679.
- [6]. Yeo EJ, Chun YS, et.al. YC-1: a potential anticancer drug targeting hypoxia-inducible factor 1. *J Natl Cancer Inst*. 2003 Apr 2;95(7):516-25. doi: 10.1093/jnci/95.7.516. PMID: 12671019.
- [7]. Li Y, Zhang MZ, et.al. HIF-1 α inhibitor YC-1 suppresses triple-negative breast cancer growth and angiogenesis by targeting PIGF/VEGFR1-induced macrophage polarization. *Biomed Pharmacother*. 2023 May;161:114423. doi: 10.1016/j.biopha.2023.114423. Epub 2023 Feb 21. PMID: 36822023.
- [8]. Gao QS, Zhang YH, et.al. Brief inhalation of sevoflurane can reduce glial scar formation after hypoxic-ischemic brain injury in neonatal rats. *Neural Regen Res*. 2021 Jun;16(6):1052-1061. doi: 10.4103/1673-5374.300456. PMID: 33269750; PMCID: PMC8224129.

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