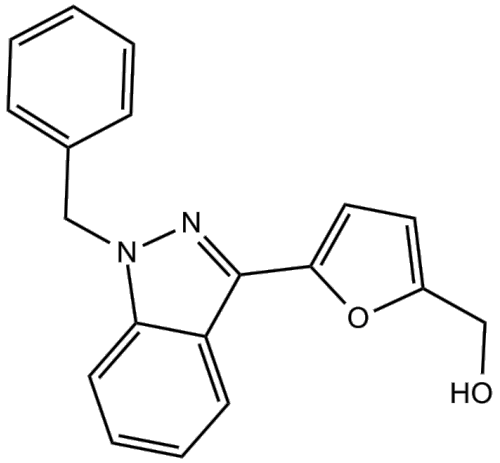
Product Data Sheet

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	≥ 30.4mg/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

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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	0.01-10μM 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 μg/g YC-1; i.p;2 weeks
Applications	YC-1-treated mice tumors expressed lower levels of HIF-1α, 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

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

YC-1(0.01-100 μM;24/48 h) inhibits Wnt signaling and suppresses cell proliferation in hepatocellular carcinoma (HCC) [4]. Combination of sorafenib and YC-1(10 μmol/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 μg/g;i.p;2 weeks) mice tumors expressed lower levels of HIF-1α, 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 umors[7]. Sevoflurane postconditioning can provide neuroprotection after hypoxic-ischemic injury. Injection of 1.52 μg of the hypoxia-inducible factor-1α 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.

Caution: Product has not been fully validated for medical applications. For research use only.
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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-1α inhibitor YC-1 suppresses triple-negative breast cancer growth and angiogenesis by targeting PlGF/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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