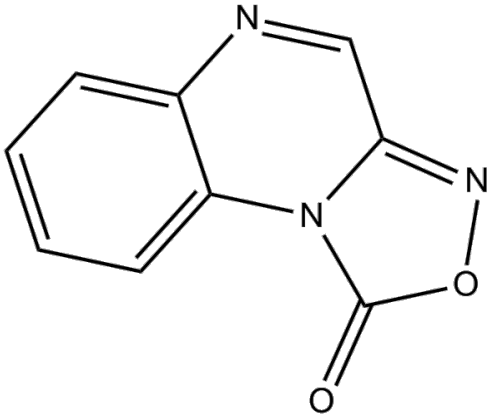
Product Data Sheet

Product Name: ODQ
Cat. No.: GC10279

Chemical Properties

Cas. No.	41443-28-1		
Chemical Name	1H-[1,2,4]oxadiazolo[4,3-a]quinoxalin-1-one		
SMILES	O=C1ON=C2N1C3=CC=CC=C3N=C2		
Formula	$C_9H_5N_3O_2$	M.Wt	187.16
Solubility	DMF: 30 mg/ml,DMF:PBS (pH 7.2) (1:1): .1 mg/ml,DMSO: 15 mg/ml,Ethanol: .5 mg/ml	Storage	Store at -20°C
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]:

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Cell lines	NBL-6 cells
Preparation Method	Cells were infected with EqHV-8 at an MOI of 0.1 for 1 h, followed by the treatment of cells with or without CoPP (100μM) in the presence or absence of ODQ (10μM).
Reaction Conditions	10μM
Applications	ODQ partially reversed the anti-viral effect of cobalt-protoporphyrin (CoPP) by EqHV-8 progeny virus generation.

Animal experiment [2]:

Animal models	C57BL/6J mice(LLC tumor model)
Preparation Method	Mice received oral administration of 2.5mg/kg Fruquintinib and intraperitoneal injection of 6mg/kg ODQ, both starting from day 6 post-tumor injection, and tumor analysis at day 14 post-tumor injection.
Dosage form	i.p; 6mg/kg; 8 days
Applications	ODQ treatment alone reduced tumor growth, the combination of ODQ and Fruquintinib further decreased tumor size.

Caution: Product has not been fully validated for medical applications. For research use only.
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References:
[1]. Wang T, Li S, et,al. Heme oxygenase-1 is an equid alphaherpesvirus 8 replication restriction host protein and suppresses viral replication via the PKC?/ERK1/ERK2 and NO/cGMP/PKG pathway. Microbiol Spectr. 2024 Apr 2;12(4):e0322023. doi: 10.1128/spectrum.03220-23. Epub 2024 Mar 5. PMID: 38441979; PMCID: PMC10986571.
[2].Zhu J, Yang W, et,al. Pericyte signaling via soluble guanylate cyclase shapes the vascular niche and microenvironment of tumors. EMBO J. 2024 Apr;43(8):1519-1544. doi: 10.1038/s44318-024-00078-5. Epub 2024 Mar 25. PMID: 38528180; PMCID: PMC11021551.

Background

ODQ is a soluble guanylyl cyclase (sGC) inhibitor that binds sGC in a competitive but irreversible manner [1-2].

ODQ(10μM) partially reversed the antiviral effect of CoPP by inhibiting Soluble guanylyl cyclase (sGC) [3]. ODQ(20μM) reduces the ability of Naringenin (NAR) to promote the osteogenic differentiation of human periodontal ligament stem cells (hPDLSCs) [4]. ODQ(30μM) significantly induced apoptosis of NCI-H2452 cells [5].

ODQ(i.p; 6mg/kg; 8 days) treatment alone can slow the growth rate of tumors, the combination of ODQ and Fruquintinib further decreased tumor size[6]. ODQ(25-100μg/mL) can eliminate the protective effect of Zhenwu Decoction (ZWD) on myocardial hypertrophy by inhibiting sGC-cGMP-PKG signaling pathway in zebrafish [7].

References:
[1]. Feelisch M, Kotsonis P, et,al. The soluble guanylyl cyclase inhibitor 1H-[1,2,4]oxadiazolo[4,3,-a] quinoxalin-1-one is a nonselective heme protein inhibitor of nitric oxide synthase and other cytochrome P-450 enzymes involved in nitric oxide donor bioactivation. Mol Pharmacol. 1999 Aug;56(2):243-53. doi: 10.1124/mol.56.2.243. PMID: 10419542.
[2]. Schrammel A, Behrends S, et,al. Characterization of 1H-[1,2,4]oxadiazolo[4,3-a]quinoxalin-1-one as a heme-site inhibitor of nitric oxide-sensitive guanylyl cyclase. Mol Pharmacol. 1996 Jul;50(1):1-5. PMID: 8700100.

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[3]. Wang T, Li S, et,al. Heme oxygenase-1 is an equid alphaherpesvirus 8 replication restriction host protein and suppresses viral replication via the PKCβ/ERK1/ERK2 and NO/cGMP/PKG pathway. Microbiol Spectr. 2024 Apr 2;12(4):e0322023. doi: 10.1128/spectrum.03220-23. Epub 2024 Mar 5. PMID: 38441979; PMCID: PMC10986571.
[4]. Li S, Xiong Z, et,al. Naringenin modulates the NO-cGMP-PKG signaling pathway by binding to AKT to enhance osteogenic differentiation in hPDLSCs. Int J Mol Med. 2024 Aug;54(2):67. doi: 10.3892/ijmm.2024.5391. Epub 2024 Jun 28. PMID: 38940332; PMCID: PMC11232664.
[5]. Ronald Fiscus, et al. ODQ, an inhibitor of soluble guanylyl cyclase (nitric oxide-activated enzyme), enhances the pro-apoptotic effects of cisplatin in human mesothelioma cells. Cancer Res May 1 2007 (67) (9 Supplement) LB-43.
[6]. Zhu J, Yang W, et,al. Pericyte signaling via soluble guanylate cyclase shapes the vascular niche and microenvironment of tumors. EMBO J. 2024 Apr;43(8):1519-1544. doi: 10.1038/s44318-024-00078-5. Epub 2024 Mar 25. PMID: 38528180; PMCID: PMC11021551.
[7].Chen L, Zhou X, et,al. Zhenwu decoction ameliorates cardiac hypertrophy through activating sGC (soluble guanylate cyclase) - cGMP (cyclic guanosine monophosphate) - PKG (protein kinase G) pathway. J Ethnopharmacol. 2023 Jan 10;300:115705. doi: 10.1016/j.jep.2022.115705. Epub 2022 Sep 12. PMID: 36099983.

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