产品名称：**PX-12**
产品别名：**PX-12**

生物活性：

Description	PX-12(IV-2) is an irreversible inhibitor of Thioredoxin-1 (**Trx-1**); inhibits the growth of MCF-7 and HT-29 cells with **IC_{50}** values of 1.9 and 2.9 μM, respectively.
IC_{50} & Target	IC50: 1.9 (MCF-7), 2.9 μM (HT-29 cells)[1]
In Vitro	PX-12 inhibits the growth of MCF-7 and HT-29 cells with IC50 values of 1.9 and 2.9 μM, respectively[1]. PX-12 particularly reduces the activity of Trx-1 by means of thio-alkylating critical cysteine residue (Cys73) which is located in the outside the conserved redox catalytic site of Trx-1. PX-12 affects the oxidation state of thiols in a number of cell surface proteins. Key surface receptors for platelet adhesion and activation are affected, including the collagen receptor GPVI and the von Willebrand factor receptor, GPIb. PX-12 inhibits thrombus formation over Type I collagen in whole blood under flow conditions[2]. Thioredoxin-1 (Trx-1) is a cellular redox protein that promotes tumor growth, inhibits apoptosis, and up-regulates hypoxia-inducible factor-1α and vascular endothelial growth factor[3]. PX-12 inhibits the growth of colorectal cancer DLD-1 and SW620 cells in a dose- and time-dependent manner. PX-12 reduces cell colony formation and induced a G2/M phase arrest of the cell cycle. PX-12 treatment induces apoptosis. PX-12 inhibits colorectal cancer cell migration and invasion. Treatment of cancer cells with PX-12 reduces NOX1, CDH17 and S100A4 mRNA expression, and increases KLF17 mRNA expression. PX-12 decreases S100A4 protein expression in the colorectal cancer cells[4].
In Vivo	PX-12 has been shown to have in vivo antitumor activity against human tumor xenografts including HT-29 colon cancer in SCID mice and has been tested in a phase I clinical trial in patients[3].
Solvent&Solubility	***In Vitro:*** 、 **Ethanol : 50 mg/mL (265.52 mM; Need ultrasonic)** **DMSO : ≥ 44.7 mg/mL (237.37 mM)** * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	5.3104 mL	26.5520 mL	53.1039 mL
5 mM	1.0621 mL	5.3104 mL	10.6208 mL
10 mM	0.5310 mL	2.6552 mL	5.3104 mL

*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液；一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。

储备液的保存方式和期限：-80°C, 6 months; -20°C, 1 month。-80°C 储存时，请在 6 个月内使用，-20°C 储存时，请在 1 个月内使用。

In Vivo:

请根据您的实验动物和给药方式选择适当的溶解方案。以下溶解方案都请先按照 **In Vitro** 方式配制澄清的储备液，再依次添加助溶剂：

——为保证实验结果的可靠性，澄清的储备液可以根据储存条件，适当保存；体内实验的工作液，建议您现用现配，当天使用； 以下溶剂前显示的百分比是指该溶剂在您配制终溶液中的体积占比；如在配制过程中出现沉淀、析出现象，可以通过加热和/或超声的方式助溶

1.请依序添加每种溶剂： 10% DMSO→90% (20% SBE-β-CD in saline)

	Solubility: ≥ 2.5 mg/mL (13.28 mM); Clear solution 此方案可获得 ≥ 2.5 mg/mL (13.28 mM，饱和度未知) 的澄清溶液。 以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 900 μL 20% 的 SBE-β-CD 生理盐水水溶液中，混合均匀。 2.请依序添加每种溶剂： 10% EtOH →40% PEG300 →5% Tween-80 →45% saline Solubility: ≥ 2.5 mg/mL (13.28 mM); Clear solution 此方案可获得 ≥ 2.5 mg/mL (13.28 mM，饱和度未知) 的澄清溶液。 以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 EtOH 储备液加到 400 μL PEG300 中，混合均匀；向上述体系中加入 50 μL Tween-80，混合均匀；然后继续加入 450 μL 生理盐水定容至 1 mL。 3.请依序添加每种溶剂： 10% EtOH →90% (20% SBE-β-CD in saline) Solubility: ≥ 2.5 mg/mL (13.28 mM); Clear solution 此方案可获得 ≥ 2.5 mg/mL (13.28 mM，饱和度未知) 的澄清溶液。 以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 EtOH 储备液加到 900 μL 20% 的 SBE-β-CD 生理盐水水溶液中，混合均匀。 4.请依序添加每种溶剂： 10% EtOH →90% corn oil Solubility: ≥ 2.5 mg/mL (13.28 mM); Clear solution 此方案可获得 ≥ 2.5 mg/mL (13.28 mM，饱和度未知) 的澄清溶液，此方案不适用于实验周期在半个月以上的实验。 以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 EtOH 储备液加到 900 μL 玉米油中，混合均匀。
References	[1]. Welsh SJ, et al. The thioredoxin redox inhibitors 1-methylpropyl 2-imidazolyl disulfide and pleurotin inhibit hypoxia-induced factor 1alpha and vascular endothelial growth factor formation. Mol Cancer Ther. 2003 Mar;2(3):235-43. [2]. Lou M, et al. Physical interaction between human ribonucleotide reductase large subunit and thioredoxin increases colorectal cancer malignancy. J Biol Chem. 2017 Jun 2;292(22):9136-9149. [3]. Metcalfe C, et al. Thioredoxin Inhibitors Attenuate Platelet Function and Thrombus Formation. PLoS One. 2016 Oct 7;11(10):e0163006 [4]. Ramanathan RK, et al. A Phase I pharmacokinetic and pharmacodynamic study of PX-12, a novel inhibitor of thioredoxin-1, in patients with advanced solid tumors. Clin Cancer Res. 2007 Apr 1;13(7):2109-14. [5]. Wang F, et al. Thioredoxin-1 inhibitor, 1-methylpropyl 2-imidazolyl disulfide, inhibits the growth, migration and invasion of colorectal cancer cell lines. Oncol Rep. 2015 Feb;33(2):967-73.