产品名称：艾塞那肽
产品别名：**Exendin-4**

生物活性：

Description	Exendin-4 (Exenatide), a 39 amino acid peptide, is a long-acting **glucagon-like** peptide-1 receptor agonist with an **IC_{50}** of 3.22 nM.
IC_{50} & Target	IC50: 3.22 nM (glucagon-like peptide-1 receptor)[1]
In Vitro	In human umbilical vein endothelial cells, exendin-4 significantly increases NO production, endothelial NO synthase (eNOS) phosphorylation, and GTP cyclohydrolase 1 (GTPCH1) level in a dose-dependent manner[2]. Exendin-4 shows cytotoxic effects to MCF-7 breast cancer cells with IC50 of 5 μM at 48 hour[3].
In Vivo	Both low- and high-dose exendin-4 treatment in ob/ob mice improve serum ALT and reduce serum glucose, and calculated HOMA scores compared with control. Exendin-4-treated ob/ob mice sustain a marked reduction in the net weight gain in the final 4 weeks of the study period[4]. Animals treated with exendin-4 have more pancreatic acinar inflammation, more pyknotic nuclei and weigh significantly less than control rats. Exendin-4 treatment is associated with lower leptin levels as well as lower HOMA values in rats[5]. Exenatide causes dose-dependent relaxation of rat thoracic aorta, which is evoked via the GLP-1 receptor and is mediated mainly by H2S but also by NO and CO[6].
Solvent&Solubility	***In Vitro:*** **DMSO : ≥ 32 mg/mL (7.64 mM)** **H_2O : 1.23 mg/mL (0.29 mM;** Need ultrasonic and warming) * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	0.2389 mL	1.1943 mL	2.3886 mL
5 mM	0.0478 mL	0.2389 mL	0.4777 mL
10 mM	---	---	---

*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→40% PEG300 →5% Tween-80 → 45% saline

Solubility: ≥ 2.5 mg/mL (0.60 mM); Clear solution

此方案可获得 ≥ 2.5 mg/mL (0.60 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 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。

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

	Solubility: ≥ 2.5 mg/mL (0.60 mM); Clear solution 此方案可获得 ≥ 2.5 mg/mL (0.60 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。 3.请依序添加每种溶剂： 10% DMSO →90% corn oil Solubility: ≥ 2.5 mg/mL (0.60 mM); Clear solution 此方案可获得 ≥ 2.5 mg/mL (0.60 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 DMSO 储备液加到 900 μL 玉米油中，混合均匀。
References	[1]. Doyle ME, et al. The importance of the nine-amino acid C-terminal sequence of exendin-4 for binding to the GLP-1 receptor and for biological activity. Regul Pept. 2003 Jul 15;114(2-3):153-8. [2]. Wei R, et al. Exenatide exerts direct protective effects on endothelial cells through the AMPK/Akt/eNOS pathway in a GLP-1 receptor-dependent manner. Am J Physiol Endocrinol Metab. 2016 Jun 1;310(11):E947-57. [3]. Fidan-Yaylali G, et al. Antidiabetic exendin-4 activates apoptotic pathway and inhibits growth of breast cancer cells. Tumour Biol. 2016 Feb;37(2):2647-53. [4]. Ding X, et al. Exendin-4, a glucagon-like protein-1 (GLP-1) receptor agonist, reverses hepatic steatosis in ob/obmice. Hepatology. 2006 Jan;43(1):173-81. [5]. Nachnani JS, et al. Biochemical and histological effects of exendin-4 (exenatide) on the rat pancreas. Diabetologia. 2010 Jan;53(1):153-9. [6]. Selley E, et al. Exenatide induces aortic vasodilation increasing hydrogen sulphide, carbon monoxide and nitric oxide production. Cardiovasc Diabetol. 2014 Apr 2;13:69.

实验参考：

Animal Administration	Rats: 20 Sprague-Dawley male rats, ten of which are treated with exendin-4 (10 μg/kg) and ten of which are used as controls. The study period is 75 days. Serum and pancreatic tissue are removed for biochemical and histological study. Blood glucose, amylase, lipase and adipocytokines are compared between the two groups[5]. Mice: The exendin-4 treatment groups are treated with 10 μg/kg every 24 hours for the first 14 days. This treatment is the induction phase. Respective control mice (lean and ob/ob) receive saline every 24 hours. After 14 days Exendin-4-treated mice are randomly divided into two groups: one group receives high dose exendin-4 (20 μg/kg) every 12 hours, while the second group continues with low dose exendin-4 (10 μg/kg) every 12 hours. The control mice continue to receive saline every 12 hours. The mice are weighed daily for the 60-day treatment period[4].
References	[1]. Doyle ME, et al. The importance of the nine-amino acid C-terminal sequence of exendin-4 for binding to the GLP-1 receptor and for biological activity. Regul Pept. 2003 Jul 15;114(2-3):153-8. [2]. Wei R, et al. Exenatide exerts direct protective effects on endothelial cells through the AMPK/Akt/eNOS pathway in a GLP-1 receptor-dependent manner. Am J Physiol Endocrinol Metab. 2016 Jun 1;310(11):E947-57. [3]. Fidan-Yaylali G, et al. Antidiabetic exendin-4 activates apoptotic pathway and inhibits growth of breast cancer cells. Tumour Biol. 2016 Feb;37(2):2647-53. [4]. Ding X, et al. Exendin-4, a glucagon-like protein-1 (GLP-1) receptor agonist, reverses hepatic

	steatosis in ob/obmice. Hepatology. 2006 Jan;43(1):173-81. [5]. Nachnani JS, et al. Biochemical and histological effects of exendin-4 (exenatide) on the rat pancreas. Diabetologia. 2010 Jan;53(1):153-9. [6]. Selley E, et al. Exenatide induces aortic vasodilation increasing hydrogen sulphide, carbon monoxide and nitric oxide production. Cardiovasc Diabetol. 2014 Apr 2;13:69.