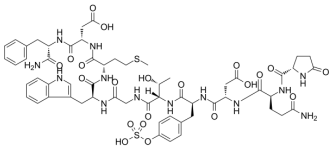
Ceruletide

Cat. No.:	HY-A0190
CAS No.:	17650-98-5
Molecular Formula:	$C_{58}H_{73}N_{13}O_{21}S_2$
Molecular Weight:	1352.41
Sequence:	{pGlu}-Gln-Asp-Tyr(SO3H)-Thr-Gly-Trp-Met-Asp-Phe-NH2
Sequence Shortening:	{pGlu}-QD-Y(SO3H)-TGWMDF-NH2
Target:	Cholecystokinin Receptor
Pathway:	GPCR/G Protein; Neuronal Signaling
Storage:	Powder -80°C 2 years -20°C 1 year In solvent -80°C 6 months -20°C 1 month



SOLVENT & SOLUBILITY

In Vitro

H_2O : ≥ 100 mg/mL (73.94 mM)
DMSO : 100 mg/mL (73.94 mM; Need ultrasonic)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	0.7394 mL	3.6971 mL	7.3942 mL
	5 mM	0.1479 mL	0.7394 mL	1.4788 mL
	10 mM	0.0739 mL	0.3697 mL	0.7394 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: Saline
   Solubility: 12.5 mg/mL (9.24 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (1.54 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (1.54 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: 2.08 mg/mL (1.54 mM); Clear solution; Need warming

BIOLOGICAL ACTIVITY

Description

Ceruletide is a decapeptide and a potent cholecystokinin receptor agonist. Ceruletide is a safe and effective

	cholecystokinetic agent with a direct spasmogenic effect on the gallbladder muscle and bile ducts[1].
IC_{50} & Target	Cholecystokinin receptor[4]
In Vitro	Ceruletide is similar chemically and biologically to the human gastrointestinal hormones cholecystokinin-pancreozymin (CCK) and gastrin II. Ceruletide stimulates gallbladder contraction, pancreatic exocrine secretion, gastric secretion, and motility in the distal duodenum, jejunum, ileum and colon, while delaying gastric emptying and inhibiting motility in the proximal duodenum[1]. Ceruletide in supramaximal but not in physiological doses activates NF-kappaB/Rel in vitro. This activation may induce a self-defending genetic program before the onset of cellular injury, which may prevent higher degrees of damage of pancreatic acinar cells after secretagogue hyperstimulation[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Ceruletide (0.4-0.5 mcg/kg, i.v.; 3-4 mcg/kg, s.c.) results in emesis and evacuation of the bowel in the intact conscious dog, and recovery is complete 15-30 min after i. v. administration and 2-4 hr after s.c. administration. Ceruletide (5-15 ng/kg, i.v.) shows a marked spasmogenic effect on the pylorus of rats. Ceruletide also reduces blood pressure in anesthetized dogs[1]. Ceruletide serum bile acid (SBA) stimulation circumvents exogenous and endogenous influences associated with postprandial (PP) SBA stimulation. Ceruletide SBA stimulation may perform as well as PP SBA stimulation in dogs with portosystemic shunt (PSS) and be more sensitive for the detection of hepatic dysfunction in dogs with upper respiratory disease (URD)[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [3]	Dogs[3] All dogs undergo serum bile acid (SBA) stimulation with food (<5 kg/body weight [BW] 2 teaspoons, >5 kg BW 2 tablespoons) or 0.3 μg/kg BW Ceruletide IM, respectively, on consecutive days. A diet of moderate protein content and with an increased concentration of fiber is chosen to minimize metabolic complications such as hepatic encephalopathy. Before each test, the dogs are fasted for 12 hours. Blood samples are drawn at baseline, 60 and 120 minutes after feeding, and 20, 30, and 40 minutes postinjection, respectively. The blood samples are collected in plain tubes and left to clot; they are then centrifuged at 6,500 ×g for 1 minute, and the serum is used to measure SBA by a colorimetric test with endpoint determination[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Sci Adv. 2020 Aug 5;6(32):eaba8415.
- Chem Eng J. 15 October 2022, 136792.
- J Exp Clin Cancer Res. 2021 Jan 9;40(1):25.
- Anal Chem. 2020 Mar 17;92(6):4419-4426.
- mSystems. 2022 May 2;e0150721.

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REFERENCES

[1]. Vincent ME, et al. Pharmacology, clinical uses, and adverse effects of ceruletide, a cholecystokinetic agent. Pharmacotherapy. 1982 Jul-Aug;2(4):223-34.

[2]. Steinle AU, et al. NF-kappaB/Rel activation in cerulein pancreatitis. Gastroenterology. 1999 Feb;116(2):420-30.

[3]. Bridger N, et al. Comparison of postprandial and ceruletide serum bile acid stimulation in dogs. J Vet Intern Med. 2008 Jul-Aug;22(4):873-8.

[4]. Zarrindast MR, et al. Effects of cholecystokinin receptor agonist and antagonists on morphin dependence in mice. Pharmacol Toxicol. 1995 Dec;77(6):360-4.

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