Dynorphin A

Cat. No.: HY-P1333

CAS No.: 80448-90-4

Molecular Formula: $C_{99}H_{155}N_{31}O_{23}$

Molecular Weight: 2147.48

Sequence: Tyr-Gly-Gly-Phe-Leu-Arg-Arg-Ile-Arg-Pro-Lys-Leu-Lys-Trp-Asp-Asn-Gln

Sequence Shortening: YGGFLRRIRPKLKWDNQ

Target: Opioid Receptor; Endogenous Metabolite; Apoptosis; Caspase

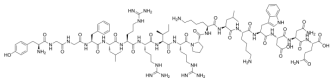
Pathway: GPCR/G Protein; Neuronal Signaling; Metabolic Enzyme/Protease; Apoptosis

Storage: Sealed storage, away from moisture and light

Powder -80°C 2 years

-20°C 1 year

* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 120 mg/mL (55.88 mM; Need ultrasonic)

Preparing Stock Solutions	Concentration / Solvent / Mass	1 mg	5 mg	10 mg
	1 mM	0.4657 mL	2.3283 mL	4.6566 mL
	5 mM	0.0931 mL	0.4657 mL	0.9313 mL
	10 mM	0.0466 mL	0.2328 mL	0.4657 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 3 mg/mL (1.40 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 3 mg/mL (1.40 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 3 mg/mL (1.40 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Dynorphin A is an endogenous opioid peptide involved in inhibitory neurotransmission in the central nervous system (CNS). Dynorphin A is a highy potent kappa opioid receptor (KOR) agonist, and is also an agonist for other opioid receptors, such as mu (MOR) and delta (DOR). Dynorphin A can induce neuronal death, and can be used in the research of neurological disease [1][2].

IC_{50} & Target	Human Endogenous Metabolite	Caspase 3	κ Opioid Receptor/KOR

In Vitro

Dynorphin A (10 μM, 4 h/72 h) increases caspase-3 activity and the level of cytochrome c released from mitochondria in mouse striatal neurons, and induces neuronal death[3].
dynorphin A (33 μM, 4 h) elevates $[Ca^{2+}]_i$ and causes a significant loss of neurons[4].
dynorphin A (1 μM) inhibits the release of vasopressin (VP) from the isolated neural lobe[5].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[3]

Cell Line:	Mouse striatal neurons
Concentration:	10 μM
Incubation Time:	0, 24, 48, 72 h
Result:	Induced neuronal death (identified by the fragmentation and destruction of the cell body and neurites).

In Vivo

Dynorphin A (intracerebroventricular injection, 1 μg of 2 μL, a single dose) inhibits vasopressin (VP) release in 24 h water-deprived male rats[5].
Dynorphin A (intracerebroventricular injection, 500 pmol/5 μL per day for 4 d) alleviates stress-induced behavioral impairments in ddY mice accompanied by regulation of the 5-HTergic system in the brain[6].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	24 h water-deprived male rats[5]
Dosage:	1 μg of 2 μL
Administration:	Intracerebroventricular injection
Result:	Inhibited vasopressin (VP) release 30 min upon injection.

Animal Model:	Male ddY mice[6]
Dosage:	15, 150, 1500 pmol/5 μL per day for 4 days
Administration:	Intracerebroventricular injection
Result:	Attenuated the repeated stress-induced escape failures from the shock.

REFERENCES

[1]. Aruna Sharma, et al. Monoclonal antibodies as novel neurotherapeutic agents in CNS injury and repair. Int Rev Neurobiol. 2012;102:23-45.

[2]. I. N. SINGH, et al. Dynorphin A (1–17) induces apoptosis in striatal neurons in vitro through AMPA/kainate receptor-mediated cytochrome c release and caspase-3 activation. Neuroscience. 2003;122(4):1013-23.

[3]. K F Hauser, et al. Dynorphin A (1-13) neurotoxicity in vitro: opioid and non-opioid mechanisms in mouse spinal cord neurons. Exp Neurol. 1999 Dec;160(2):361-75.

[4]. B J Van de Heijning, et al. Dynorphin-A and vasopressin release in the rat: a structure-activity study. Neuropeptides. 1994 Jun;26(6):371-8.

[5]. Takayoshi Mamiya, et al. Dynorphin a (1-13) alleviated stress-induced behavioral impairments in mice. Biol Pharm Bull. 2014;37(8):1269-73.

[6]. Zhang, et al.Dynorphin A as a Potential Endogenous Ligand for Four Members of the Opioid Receptor Gene Family. J Pharmacol Exp Ther. 1998 Jul;286(1):136-41.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA