Dynorphin A (1-10) (TFA)

Cat. No.: HY-P1594A

Molecular Formula: $C_{59}H_{92}F_3N_{19}O_{14}$

Molecular Weight: 1348.48

Sequence: Tyr-Gly-Gly-Phe-Leu-Arg-Arg-Ile-Arg-Pro

Sequence Shortening: YGGFLRRIRP

YGGFLRRIRP (TFA salt)

Target: Opioid Receptor; iGluR

Pathway: GPCR/G Protein; Neuronal Signaling; Membrane Transporter/Ion Channel

Storage: Sealed storage, away from moisture

Powder -80°C 2 years

-20°C 1 year

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

SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (74.16 mM; Need ultrasonic)

H_2O : 50 mg/mL (37.08 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	0.7416 mL	3.7079 mL	7.4158 mL
	5 mM	0.1483 mL	0.7416 mL	1.4832 mL
	10 mM	0.0742 mL	0.3708 mL	0.7416 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: ≥ 2.5 mg/mL (1.85 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (1.85 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (1.85 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Dynorphin A (1-10) (TFA), an endogenous opioid neuropeptide, binds to extracellular loop 2 of the κ-opioid receptor. Dynorphin A (1-10) (TFA) also blocks NMDA-activated current with an IC_{50} of 42.0 μM.

IC_{50} & Target	NMDA Receptor	κ Opioid Receptor/KOR

In Vitro	Dynorphin A (1-10) (TFA), an endogenous opioid neuropeptide, binds in the transmembrane domain of the κ-receptor[1]. The non-opioid actions of various forms of Dynorphin A (DynA) are examined on N-methyl-D-aspartate (NMDA) receptor channels in isolated rat trigeminal neurons using the whole-cell patch recording technique. All the dynorphins tested blocked NMDA-activated currents. The blocking actions are voltage-independent. The IC_{50} is 42.0 μM for DynA(1-10). To determine if shorter dynorphins have the similar blocking property, we examined the action of DynA(1-10) at different membrane potentials. DynA(1-10) blocks I_{NMDA} to a similar extent as the membrane potentials changed from -80 to +60 mV. Thus, despite a 160-fold difference in the apparent affinities, DynA(1-32) and DynA(1-10) both exert voltage-independent actions on NMDA receptors[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Paterlini G, et al. Molecular simulation of dynorphin A-(1-10) binding to extracellular loop 2 of the kappa-opioidreceptor. A model for receptor activation. J Med Chem. 1997 Sep 26;40(20):3254-62.

[2]. Chen L, et al. Dynorphin block of N-methyl-D-aspartate channels increases with the peptide length. J Pharmacol Exp Ther. 1998 Mar;284(3):826-31.

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