Proteasome-activating peptide 1 TFA

Cat. No.: HY-P3414A

Molecular Formula: $C_{65}H_{117}F_3N_{22}O_{15}S_4$

Molecular Weight: 1632.02

Sequence Shortening: IPRCRKMPGVKMC-NH2

Target: Proteasome

Pathway: Metabolic Enzyme/Protease

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)

IPRCRKMPGVKMC-NH_2 (TFA)

SOLVENT & SOLUBILITY

In Vitro

H_2O : ≥ 50 mg/mL (30.64 mM)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	0.6127 mL	3.0637 mL	6.1274 mL
5 mM	0.1225 mL	0.6127 mL	1.2255 mL
10 mM	0.0613 mL	0.3064 mL	0.6127 mL

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

BIOLOGICAL ACTIVITY

Description

Proteasome-activating peptide 1 TFA is a peptide and a potent proteasome activator. Proteasome-activating peptide 1 TFA increases the chymotrypsin-like proteasomal catalytic activity and, consequently, proteolytic rates both in vitro and in culture. Proteasome-activating peptide 1 TFA prevents protein aggregation in a cellular model of amyotrophic lateral sclerosis[1].

In Vitro

Proteasome-activating peptide 1 (TFA) (0-100 μM, 2 h) increases ChT-L catalytic activity of the 20S proteasome in a dose-dependent manner[1].
Proteasome-activating peptide 1 (TFA) (50 μM, 24 h) induces the degradation of SOD1, promotes a decrease of oxidized proteins[1].
Proteasome-activating peptide 1 (TFA) (0-100 μM) protects fibroblast and SH-SY5Y cells from oxidative stress[1].
Proteasome-activating peptide 1 (TFA) only affects the free 20S proteasomal pool[1].
Proteasome-activating peptide 1 (TFA) promotes proteasomal gate opening[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay

Cell Line:	Human neuroblastoma (SH-SY5Y) and fibroblast cells[1]
Concentration:	0, 50, 100 μM (in DMEM without fetal bovine serum followed by the addition of H2O2 (500 or 750 μM) or water (0.4%))
Incubation Time:	30 min or 2 h
Result:	Promoted long-term proteasomal activation through interaction with the 20S core particle, increased ChT-L activity of the 20S proteasome in a dose-dependent manner, and did not reduce cell fibroblast viability.
Western Blot Analysis	
Cell Line:	SH-SY5Y^{G93A} cells[1]
Concentration:	50 μM
Incubation Time:	24 h
Result:	Increased the degradation of soluble SOD1, prevented the formation of SOD1-insoluble aggregates, and decreased the oxidized proteins in the total intracellular content.

REFERENCES

[1]. Dal Vechio FH, Cerqueira F, Augusto O, Lopes R, Demasi M. Peptides that activate the 20S proteasome by gate opening increased oxidized protein removal and reduced protein aggregation. Free Radic Biol Med. 2014 Feb;67:304-13.

[2]. Dal Vechio FH, et al. Peptides that activate the 20S proteasome by gate opening increased oxidized protein removal and reduced protein aggregation. Free Radic Biol Med. 2014;67:304-313.

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