TP508 TFA

Cat. No.: HY-P0316A

Molecular Formula: $C_{99}H_{147}N_{28}F_3O_{38}S$

Molecular Weight: 2426.46

Sequence: Ala-Gly-Tyr-Lys-Pro-Asp-Glu-Gly-Lys-Arg-Gly-Asp-Ala-Cys-Glu-Gly-Asp-Ser-Gly-Gly-Pro-Phe-Val AGYKPDEGKRGDACEGDSGGPFV (TFA salt)

Sequence Shortening: AGYKPDEGKRGDACEGDSGGPFV

Target: Thrombin; NO Synthase

Pathway: Metabolic Enzyme/Protease; Immunology/Inflammation

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

H_2O : 50 mg/mL (20.61 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	0.4121 mL	2.0606 mL	4.1212 mL
5 mM	0.0824 mL	0.4121 mL	0.8242 mL
10 mM	0.0412 mL	0.2061 mL	0.4121 mL

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

In Vivo

1. Add each solvent one by one: PBS
Solubility: 100 mg/mL (41.21 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

TP508 TFA is a 23-amino acid nonproteolytic thrombin peptide that represents a portion of the receptor-binding domain of thrombin molecule. TP508 TFA activates endothelial NO synthase (eNOS) and stimulates production of NO in human endothelial cells. TP508 TFA activates endothelial cells and stem cells to revascularize and regenerate tissues[1][2].

In Vitro

TP508 (50 μg/mL; 24 hours; HCAEC) treatment reverses radiation-induced endothelial dysfunction (ED) and loss of NO signaling by attenuating the downregulation of eNOS expression. TP508 treatment is able to stimulate NO production in the irradiated cells[1].
TP508 mitigates effects of nuclear radiation on human endothelial cells in culture restoring endothelial NO production, tube formation and accelerating repair of radiation-induced DNA double-strand breaks (DSB)[1].
TP508 acts as an antagonist for the effects of thrombin. TP508 peptide inhibits these thrombin-induced effects through a

RGD and αvβ3-related mechanism[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[1]

Cell Line:	Primary human coronary artery endothelial cells (HCAEC)
Concentration:	50 μg/mL
Incubation Time:	24 hours
Result:	Prevented the radiation-induced downregulation of eNOS.

In Vivo

TP508 (10 mg/kg; intravenous injection; male CD-1 mice) treatment mitigates radiation-induced endothelial cell damage, also significantly increases survival of CD-1 mice when injected 24 h after 8.5 Gy exposure[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male CD-1 mice (12-15-week old) with γ irradiation[1]
Dosage:	10 mg/kg
Administration:	Intravenous injection
Result:	Mitigated radiation-induced endothelial cell damage, also significantly increased survival of CD-1 mice.

REFERENCES

[1]. Olszewska-Pazdrak B, et al. Nuclear Countermeasure Activity of TP508 Linked to Restoration of Endothelial Function and Acceleration of DNA Repair. Radiat Res. 2016 Aug;186(2):162-74.

[2]. Olszewska-Pazdrak B, et al. Systemic administration of thrombin peptide TP508 enhances VEGF-stimulated angiogenesis and attenuates effects of chronic hypoxia. J Vasc Res. 2013;50(3):186-9

[3]. Tsopanoglou NE, et al. On the mode of action of thrombin-induced angiogenesis: thrombin peptide, TP508, mediates effects in endothelial cells via alphavbeta3 integrin. Thromb Haemost. 2004 Oct;92(4):846-57.

Caution: Product has not been fully validated for medical applications. For research use only.

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