Product Data Sheet

Product Name: TP508
Cat. No.: GC34255

Chemical Properties

Cas. No.	121341-81-9		
SMILES	Ala-Gly-Tyr-Lys-Pro-Asp-Glu-Gly-Lys-Arg-Gly-Asp-Ala-Cys-Glu-Gly-Asp-Ser-Gly-Gly-Pro-Phe-Val		
Formula	$C_{97}H_{146}N_{28}O_{36}S$	M.Wt	2312.44
Solubility	Soluble in Water	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure	TP508		

Protocol

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Animal experiment:

Mice: One hour after irradiation, mice are placed in a restrainer and intravenously (i.v.) injected through the tail vein with a single dose of TP508 in 100 μL sterile saline or 100 μL sterile saline alone. After 24 h, the mice are euthanized by CO2 inhalation and thoracic aortas are isolated from TP508- or saline-alone treated mice and transferred to culture dishes containing cold sterile EBM. The periaortic fibro-adipose tissue is removed under a dissecting microscope and aortas are rinsed with cold EBM and cut transversely to create 1 mm aortic rings (appr 10 per aorta). Aortic rings are cut, opened, and the inner endothelial surface is placed directly on Matrigel matrix-coated 24-well plates. Aortic explants are cultured in a 5% CO2 atmosphere at 37°C in EGM containing 5% FBS and SingleQuots endothelial growth factors. Endothelial cell sprouting is monitored daily by inverted phase contrast microscopy and images are captured using SPOT RT camera and advanced imaging software at 40× and 100× magnification.

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]. Chu LM, et al. Effect of thrombin fragment (TP508) on myocardial ischemia reperfusion injury in a model of type 1 diabetes mellitus. Circulation. 2010 Sep 14;122(11 Suppl):S162-9.

[4]. 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.

Background

TP508 is a 23 amino acid synthetic peptide representing residues 508-530 of human prothrombin which is identified as a potential receptor-binding domain based on competition for high-affinity thrombin binding to fibroblasts.

TP508 treatment reverses radiation effects on NO signaling, restores tube formation and accelerates the repair of radiation-induced DSB in irradiated human endothelial cells[1]. TP508 injection increases responsiveness of endothelial cells from aortic explants to VEGF-stimulated angiogenesis in vitro. TP508 stimulation does not significantly affect the VEGF mRNA levels in normoxic or hypoxic cells[2]. TP508 acts as an antagonist for the effects of thrombin. TP508 peptide inhibits these thrombin-induced effects through a RGD and αvβ3-related mechanism[4].

TP508 (500 μg) in sham-irradiated animals significantly increases the amount of endothelial cell sprouting from aortic explants. TP508 significantly increases the sprouting in sham-irradiated and irradiated animals, more than doubling the amount of sprouting in explants from animals at all exposure doses. TP508 (10 mg/kg) given 24 h after 8.5 Gy gamma irradiation significantly increases 30-day survival in mice, from 26.7 to 73.3%[1]. TP508 injection increases endothelial sprouting and potentiates VEGF-stimulated angiogenesis[2]. In type I diabetic swine, TP508 (1 mg/kg, infusion) reduces infarct size after IR[3].

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