Product Data Sheet

Product Name: FSL-1
Cat. No.: GC18761

Chemical Properties

Cas. No.	322455-70-9		
Chemical Name	S-[2,3-bis[(1-oxohexadecyl)oxy]propyl]-L-cysteinylglycyl-L-α-aspartyl-L-prolyl-L-lysyl-L-histidyl-L-prolyl-L-lysyl-L-seryl-L-phenylalanine		
SMILES	N/A		
Formula	$C_{84}H_{140}N_{14}O_{18}S$	M.Wt	1666.2
Solubility	Soluble in DMSO	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	FSL-1		

Protocol

Cell experiment [1]:

Cell lines	THP-1 cells
Preparation Method	THP-1 cells were seeded in 12-well plates at 1 × 10^6 cells per well. Cells were stimulated with FSL-1 (50ng/mL) or TNF-α (25ng/mL) at 37℃ for 24 hours. Cells were harvested for RNA isolation, and conditioned medium was collected for determination of MMP-9 secretion and SEAP activity. Conditioned medium was collected and stored at −80℃.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Reaction Conditions	50ng/mL; 24h
Applications	In THP-1 cells, FSL-1 induces MMP-9 gene expression.

Animal experiment [2]:

Animal models	Radiation mice model
Preparation Method	To investigate the radioprotective efficacy of FSL-1, all mice in the study were weighed before the start of the study; animals weighing ± 10% of the mean body weight were excluded. Mice were then randomly divided into two groups (vehicle control and FSL-1 groups), with five animals per cage. Twenty-four hours before radiation exposure, mice received a single dose of 0.25mg/kg of FSL-1 or vehicle (sterile PBS) subcutaneously injected into the scruff of the neck using a 23-G needle. Each drug- and vehicle-treated (PBS) group contained 25 animals. Males received a radiation dose of 8.1Gy. Because females are more radioresistant than males, females received a higher dose of 8.7Gy. Survival was monitored up to four times daily for 30 days, and surviving animals were euthanized upon completion of the study.
Dosage form	0.25mg/kg; sc; 40d
Applications	Prophylactic administration of FSL-1 significantly improves the survival rate of male and female C57BL/6 mice.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

References:
[1]. Ahmad R, Shihab P K, Jasem S, et al. FSL-1 induces MMP-9 production through TLR-2 and NF-κB/AP-1 signaling pathways in monocytic THP-1 cells[J]. Cellular Physiology and Biochemistry, 2014, 34(3): 929-942.
[2]. Holmes-Hampton G P, Kumar V P, Valenzia K, et al. FSL-1: A Synthetic Peptide Increases Survival in a Murine Model of Hematopoietic Acute Radiation Syndrome[J]. Radiation Research, 2024, 201(5): 449-459.

Background

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

FSL-1 is a synthetic diacyl lipopeptide TLR2/6 agonist [1]. FSL-1 binds to and activates TLR2/6 heterodimers, triggering downstream MyD88-dependent signaling pathways, leading to activation of NF-κB, MAPK, and other pathways, and inducing the release of multiple inflammatory factors (TNF-α, IL-1β, IL-6, IL-8) and chemokines [2-3]. FSL-1 is primarily used in immunology and inflammation research [4].

In THP-1 cells, FSL-1 (50ng/mL; 24h) induces MMP-9 gene expression [5]. In HaCaT cells, FSL-1 (100ng/mL; 0.5-2h) stimulation downregulates TGB6 expression [6].

In radiation mice model, prophylactic administration of FSL-1 (0.25mg/kg; sc; 40d) significantly improves the survival rate of male and female C57BL/6 mice [7]. In radiation mice model, FSL-1 (0.09mg/kg; sc; 8d) stimulates the recruitment of hematopoietic progenitor cells [8].

References:
[1]. Rose W A, McGowin C L, Pyles R B. FSL-1, a bacterial-derived toll-like receptor 2/6 agonist, enhances resistance to experimental HSV-2 infection[J]. Virology journal, 2009, 6(1): 195.
[2]. Kurkjian C J, Guo H, Montgomery N D, et al. The toll–like Receptor 2/6 agonist, FSL–1 lipopeptide, therapeutically mitigates acute radiation syndrome[J]. Scientific Reports, 2017, 7(1): 17355.
[3]. Nakamura J, Shibata K, Hasebe A, et al. Signaling pathways induced by lipoproteins derived from Mycoplasma salivarium and a synthetic lipopeptide (FSL-1) in normal human gingival fibroblasts[J]. Microbiology and immunology, 2002, 46(3): 151-158.
[4]. Lim R, Barker G, Lappas M. The TLR 2 Ligand FSL-1 and the TLR 5 Ligand Flagellin Mediate Pro-Inflammatory and Pro-Labour Response via MyD88/TRAF 6/NF-κB-Dependent Signalling[J]. American Journal of Reproductive Immunology, 2014, 71(5): 401-417.
[5]. Ahmad R, Shihab P K, Jasem S, et al. FSL-1 induces MMP-9 production through TLR-2 and NF-κB/AP-1 signaling pathways in monocytic THP-1 cells[J]. Cellular Physiology and Biochemistry, 2014, 34(3): 929-942.
[6]. Xu M, Huang J, Zhu F, et al. FOXO1 inhibits FSL-1 regulation of integrin β6 by blocking STAT3 binding to the integrin β6 gene promoter[J]. Frontiers in Cellular and Infection Microbiology, 2022, 12: 998693.
[7]. Holmes-Hampton G P, Kumar V P, Valenzia K, et al. FSL-1: A Synthetic Peptide Increases Survival in a Murine Model of Hematopoietic Acute Radiation Syndrome[J].

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

Radiation Research, 2024, 201(5): 449-459.
[8]. Brickey W J, Caudell D L, Macintyre A N, et al. The TLR2/TLR6 ligand FSL-1 mitigates radiation-induced hematopoietic injury in mice and nonhuman primates[J]. Proceedings of the National Academy of Sciences, 2023, 120(50): e2122178120.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA