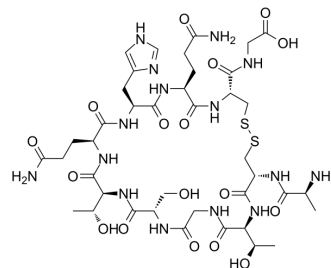


## SPACE peptide

<b>Cat. No.:</b>	HY-P0123
<b>CAS No.:</b>	1621717-95-0
<b>Molecular Formula:</b>	C <sub>40</sub> H <sub>63</sub> N <sub>15</sub> O <sub>17</sub> S <sub>2</sub>
<b>Molecular Weight:</b>	1090.15
<b>Sequence:</b>	Ala-Cys-Thr-Gly-Ser-Thr-Gln-His-Gln-Cys-Gly (Disulfide bridge: Cys2-Cys10)
<b>Sequence Shortening:</b>	ACTGSTQHQCG (Disulfide bridge: Cys2-Cys10)
<b>Target:</b>	Others
<b>Pathway:</b>	Others
<b>Storage:</b>	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 (91.73 mM; Need ultrasonic)  
 H<sub>2</sub>O : 50 mg/mL (45.87 mM; Need ultrasonic)

Concentration	Solvent	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	0.9173 mL	4.5865 mL	9.1730 mL
	5 mM	0.1835 mL	0.9173 mL	1.8346 mL
	10 mM	0.0917 mL	0.4587 mL	0.9173 mL

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

#### In Vivo

- Add each solvent one by one: PBS  
Solubility: 100 mg/mL (91.73 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
Solubility: ≥ 2.5 mg/mL (2.29 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
Solubility: ≥ 2.5 mg/mL (2.29 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility: ≥ 2.5 mg/mL (2.29 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

SPACE peptide is a skin penetrating peptide (SPPs). SPACE peptide can enhance topical delivery of a macromolecule, hyaluronic acid<sup>[1][2][3]</sup>.

<b>In Vitro</b>	<p>SPACE peptide, when conjugates to cargoes such as small molecules and proteins, is able to facilitate their penetration across the stratum corneum into epidermis and dermis<sup>[2]</sup>.</p> <p>SPACE peptide also exhibits increased penetration into various cells including keratinocytes, fibroblasts, and endothelial cells, likely through a macropinocytosis pathway<sup>[2]</sup>.</p> <p>SPACE peptide enhances Cyclosporine A skin penetration, via a transcellular pathway, enhancing its partitioning into keratin-rich corneocytes through concurrent binding of SPACE with keratin and Cyclosporine A<sup>[3]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
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## PROTOCOL

<b>Cell Assay</b> <sup>[2]</sup>	<p>The cytotoxicity of SPACE peptide is assessed using the MTT Cell Proliferation Assay. HEKa cells are seeded in 96-well microplates at a density of 5000 cells/well. Cultures are allowed to grow until they reaches ~80% confluency. Cells are then incubated with 150 µL of 10, 5, 2.5, or 1.25 mg/mL SPACE peptide in media. Media only is used as a negative control, and media without cells is used to subtract background. Cytotoxicity is assessed for 1, 4, and 12 h incubation periods<sup>[2]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
<b>Animal Administration</b> <sup>[3]</sup>	<p>Mice: Female BALB/c mice (knockdown of GAPDH protein) are anesthetized using isoflurane inhalation (2-3%), the back skin of animals is shaved, and a cylinder with an exposed skin area of 1.8 cm<sup>2</sup> is attached to the back of mice. 200 µL of the SPACE peptide is topically applied in the attached cylinder, and is manually spread over the entire exposure area. Applied test solutions are allowed to incubate with the exposed skin for 6 hours while keeping animals under minimal anesthesia. After 6 hours, the cylinder is carefully removed, and the entire exposure area is covered with sterile gauze and a breathable bandage. After 72 hrs, animals are sacrificed and skin biopsies (5 mm diameter) are collected from treated area of the animal's skin. Total protein concentration in the skin biopsy tissue is determined<sup>[3]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

## CUSTOMER VALIDATION

- J Nat Med. 2021 Feb 24.
- Jurnal Farmasi Dan Ilmu Kefarmasian Indonesia. 2020 Dec 2.
- Jurnal Farmasi Dan Ilmu Kefarmasian Indonesia. 2020 Jun.

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## REFERENCES

- [1]. Hsu T, et al. Delivery of siRNA and other macromolecules into skin and cells using a peptide enhancer. Proc Natl Acad Sci U S A. 2011 Sep 20;108(38):15816-21.
- [2]. Kumar S, et al. Peptides as skin penetration enhancers: mechanisms of action. J Control Release. 2015 Feb 10;199:168-78.
- [3]. Chen M, et al. Topical delivery of hyaluronic acid into skin using SPACE-peptide carriers. J Control Release. 2014 Jan 10;173:67-74.

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

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