

VSPPLTLGQLLS TFA

Cat. No.:	HY-P3695A
Molecular Formula:	C ₅₈ H ₉₈ F ₃ N ₁₃ O ₁₉
Molecular Weight:	1338.47
Sequence Shortening:	VSPPLTLGQLLS
Target:	FGFR
Pathway:	Protein Tyrosine Kinase/RTK
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.

BIOLOGICAL ACTIVITY

Description	VSPPLTLGQLLS TFA is a small peptide FGFR3 inhibitor, peptide P3, inhibits FGFR3 phosphorylation. VSPPLTLGQLLS TFA inhibits 9-cisRA-induced tracheal lymphangiogenesis and blocks lymphatic endothelial cell (LEC) proliferation, migration, and tubule formation ^{[1][2]} .												
IC₅₀ & Target	FGFR3	K650M-FGFR3	K644E FGFR3										
In Vitro	<p>VSPPLTLGQLLS TFA (5 μM and 10 μM; 24 h and 48 h) inhibits human primary lymphatic endothelial cell (LEC)s proliferation, migration, and tubule formation^[1].</p> <p>VSPPLTLGQLLS TFA shows effective inhibition in FGFR3 phosphorylation in LECs and also demonstrated to be effective in ATDC5 chondrogenic cells, 293T cells, explanted metatarsal bone cultures, and an in vivo mouse model of thanatophoric dysplasia II^{[1][2]}.</p> <p>VSPPLTLGQLLS TFA (10 μM; 6 h) inhibits tyrosine kinase activity of FGFR3 and its typical downstream molecules, extracellular signal-regulated kinase/mitogen-activated protein kinase^[2].</p> <p>VSPPLTLGQLLS TFA (0, 1, 10, and 50 μM; 24 h and 3 or 7 days, respectively) also promotes proliferation and chondrogenic differentiation of cultured ATDC5 chondrogenic cells^[2].</p> <p>VSPPLTLGQLLS TFA (10 μM; 0-60 min) inhibits the ERK/MAPK pathway in FGFR3-expressing chondrocytic cell line ATDC5^[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Western Blot Analysis^{[1][2]}</p> <table border="1"> <tr> <td>Cell Line:</td> <td>Human primary lymphatic endothelial cell (LEC)s; ATDC5 chondrogenic cells</td> </tr> <tr> <td>Concentration:</td> <td>10 μM</td> </tr> <tr> <td>Incubation Time:</td> <td>0, 5, 10, 30, 45, 60 min</td> </tr> <tr> <td>Result:</td> <td>Inhibited FGFR3 phosphorylation at Tyr 724 in human primary lymphatic endothelial cell (LEC)s. Inhibited the FGF2-mediated ERK/MAPK phosphorylation in FGFR3-expressing chondrocytic cell line ATDC5.</td> </tr> </table> <p>Cell Proliferation Assay^[1]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>Human primary lymphatic endothelial cell (LEC)s</td> </tr> </table>			Cell Line:	Human primary lymphatic endothelial cell (LEC)s; ATDC5 chondrogenic cells	Concentration:	10 μM	Incubation Time:	0, 5, 10, 30, 45, 60 min	Result:	Inhibited FGFR3 phosphorylation at Tyr 724 in human primary lymphatic endothelial cell (LEC)s. Inhibited the FGF2-mediated ERK/MAPK phosphorylation in FGFR3-expressing chondrocytic cell line ATDC5.	Cell Line:	Human primary lymphatic endothelial cell (LEC)s
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Concentration:	2.5 μ M, 5 μ M, and 10 μ M
Incubation Time:	15 min for pre-incubation and co-incubation with 1 μ M 9-cisRA for 48 hr
Result:	Inhibited LEC proliferation.
Cell Migration Assay ^[1]	
Cell Line:	Human primary lymphatic endothelial cell (LEC)s
Concentration:	5 μ M
Incubation Time:	15 min for pre-incubation and co-incubation with 1 μ M 9-cisRA for 24 hr; observed at 0, 24, 48 hr
Result:	Inhibited LEC migration tubule formation.

In Vivo

VSPPLTLGQLLS TFA (1 mM; intranasal dropping; onced daily for 7 d) blocks 9-cisRA-induced lymphangiogenesis in vivo, while 9-cisRA is an isoform of vitamin A involving in AIDS-related Kaposi Sarcoma^[1].
 VSPPLTLGQLLS TFA alleviates the bone growth retardation in bone rudiments from mice mimicking human thanatophoric dysplasia type II (TDII), reversed the neonatal lethality of TDII mice^[2].
 MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Lymphatic reporter mice, Prox1-GFP model ^[1]
Dosage:	Caution: Product has not been fully validated for medical applications. For research use only. 1 mM
Administration:	Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com Intranasal dropping; once daily for 7 days; accompanied with 1 mM 9-cisRA or not Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA
Result:	Significantly inhibited total lymphatic vessel length and number of sprouts compared increase induced by 9-cisRA.
Animal Model:	Fgfr3 ^{Neo-K644E/+} Ella-Cre mice (TDII mice) from Fgfr3 ^{Neo-K644E/+} mice crossed with heterozygous Ella-Cre mice ^[2]
Dosage:	10 μ M
Administration:	Treated for 7 days
Result:	Suppressed FGFR3-mediated growth inhibition in cultured murine metatarsal bones. Rescued the lethal phenotype in thanatophoric dysplasia type II (TDII) mice. Rescued the abnormal growth plate and the lung phenotypes in the TDII mice.

REFERENCES

- [1]. Perrault DP, et al. Small Peptide Modulation of Fibroblast Growth Factor Receptor 3-Dependent Postnatal Lymphangiogenesis. *Lymphat Res Biol*. 2019 Feb;17(1):19-29.
- [2]. Jin M, et al. A novel FGFR3-binding peptide inhibits FGFR3 signaling and reverses the lethal phenotype of mice mimicking human thanatophoric dysplasia. *Hum Mol Genet*. 2012 Dec 15;21(26):5443-55.