(S)-ZG197

Cat. No.: HY-152097

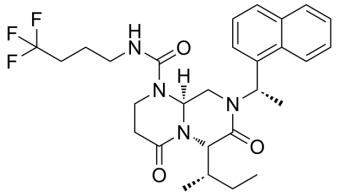
Molecular Formula: $C_{28}H_{35}F_3N_4O_3$

Molecular Weight: 532.6

Target: Bacterial; ClpP

Pathway: Anti-infection; Cell Cycle/DNA Damage

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

(S)-ZG197 is a highly selective Staphylococcus aureus Caseinolytic protease P (***Sa***ClpP) activator with an EC_{50} of 1.4 μM[1].

IC_{50} & Target

EC50: 1.4 μM (SaClpP)[1]
Kd: 5.0 μM (SaClpP)[1]

In Vitro

(S)-ZG197 (10 μM; 2 h) increases the melting temperature (T_m) of SaClpP but barely changes the T_m of HsClpP. (S)-ZG197 significantly increases thermal stability of SaClpP[1].
(S)-ZG197 (0.1-100 μM; 2 h) exhibits a significantly diminished activity on the SaClpPI91W mutant for α-casein hydrolysis[1].
(S)-ZG197 (10 μM; 2 h) fails to induce the T_m shift of SaClpPI91W in intact staphylococcal cells[1].
(S)-ZG197 (0-256 μg/mL; 18 h) inhibits the growth of S. aureus 8325-4, and the MIC is 4 μg/mL. (S)-ZG197 displays strong antibacterial activity on a broad spectrum of S. aureus strains, with MIC values of 2-8 μg/mL[1].
(S)-ZG197 (0-20 μM) decrease SaFtsZ abundance in the 8325-4 S. aureus but not in the corresponding ΔclpP mutant strain[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[1]

Cell Line:	Cell lysates of S. aureus 8325-4 clpP knockout (ΔclpP) strain
Concentration:	0, 2.5, 5 and 10 μM
Incubation Time:	15 min
Result:	SaFtsZ protein was degraded when SaClpP was added.

In Vivo

(S)-ZG197 (25-100 mg/kg; i.p.; once) significantly prolong the survival rate in zebrafish USA300 infection model[1].
(S)-ZG197 (7.5 mg/kg; s.c.; twice a day for 3 days) shows anti-infective efficacy in murine skin S. aureus infection models[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Zebrafish USA300 infection model[1]
Dosage:	25, 50, or 100 mg/kg
Administration:	Intraperitoneal injection, single dose

Result:	Significantly prolong the survival rate at 50 mg/kg. Lost therapeutic effects on zebrafish infected with the ΔclpP mutant strain.

Animal Model:	Female BALB/c mice, S. aureus infection model[1]
Dosage:	7.5 mg/kg
Administration:	Subcutaneous injection, twice a day for 3 days
Result:	Caused a smaller necrotic lesion size in mice compared with the vehicle control.

REFERENCES

[1]. Wei B, et al. Anti-infective therapy using species-specific activators of Staphylococcus aureus ClpP. Nat Commun. 2022 Nov 14;13(1):6909.

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