Nisin Z

Cat. No.:	HY-P3466
CAS No.:	137061-46-2
Molecular Formula:	$C_{141}H_{229}N_{41}O_{38}S_7$
Molecular Weight:	3331.05
Target:	Bacterial; Fungal
Pathway:	Anti-infection
Storage:	Sealed storage, away from moisture and light, under nitrogen Powder -80°C 2 years -20°C 1 year * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light, under nitrogen)

BIOLOGICAL ACTIVITY

Description

Nisin Z is an antimicrobial and anti-inflammatory peptide. Nisin Z is effective against Gram-positive bacteria and fungi, such as C. albicans[1][4].

In Vitro

Nisin Z (10 μg/mL, 24 h) increases gingival fibroblasts detachment and differentiation[2].
Nisin Z (25-75 μg/mL, 24 h) decreases C. albicans adhesion to the gingival cells[2].
Nisin Z (500 and 1000 μg/mL, 24 h) inhibits germ tube formation by C. albicans[3].
Nisin Z (100 μg/mL, 12 h) reduces the production of LPS-induced pro-inflammatory cytokines (i.e., IL-6, TNF-α, IL-1β) in MCF10A cells[4].
Nisin Z (10-100 μg/mL, 12 h) inhibits the activation of the ERK1/2 and p38 MAPK signaling pathway in LPS-induced MCF10A cells[4].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[3]

Cell Line:	C. albicans
Concentration:	100, 500, 1000 μg/mL
Incubation Time:	24, 48, and 72 h
Result:	Reduced C. albicans growth.

Western Blot Analysis[4]

Cell Line:	LPS-induced MCF10A cells
Concentration:	10-100 μg/mL
Incubation Time:	12 h
Result:	Inhibited the phosphorylation of p38 and and ERK1/2.

In Vivo

Nisin Z (1, 5, and 10 mg/kg, i.p.) prevents the pathological damage in mastitis mouse mode caused by LPS[4].

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Animal Model:	Mastitis mouse model[4]
Dosage:	1, 5, and 10 mg/kg
Administration:	i.p., one hour before treatment of LPS.
Result:	Reduced inflammatory cell infiltration. Showed a reduction in inflammatory cytokine levels.

REFERENCES

[1]. Webber JL, et al. Incorporation and antimicrobial activity of nisin Z within carrageenan/chitosan multilayers. Sci Rep. 2021 Jan 18;11(1):1690.

[2]. Akerey B, et al. In vitro efficacy of nisin Z against Candida albicans adhesion and transition following contact with normal human gingival cells. J Appl Microbiol. 2009 Oct;107(4):1298-307.

[3]. Le Lay C, et al. Nisin Z inhibits the growth of Candida albicans and its transition from blastospore to hyphal form. J Appl Microbiol. 2008 Nov;105(5):1630-9.

[4]. Huang F, et al. Nisin Z attenuates lipopolysaccharide-induced mastitis by inhibiting the ERK1/2 and p38 mitogen-activated protein kinase signaling pathways. J Dairy Sci. 2022 Apr;105(4):3530-3543.

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