# Nigericin

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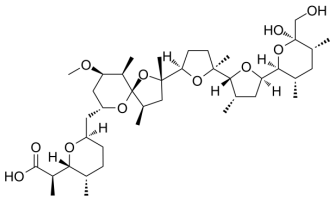
| **Cat. No.:** | HY-127019 |
| **CAS No.:** | 28380-24-7 |
| **Molecular Formula:** | $C_{40}H_{68}O_{11}$ |
| **Molecular Weight:** | 724.96 |
| **Target:** | Sodium Channel; NOD-like Receptor (NLR); Apoptosis; Bacterial; Antibiotic; Pyroptosis; Wnt; β-catenin |
| **Pathway:** | Membrane Transporter/Ion Channel; Immunology/Inflammation; Apoptosis; Anti-infection; Stem Cell/Wnt |
| **Storage:** | Please store the product under the recommended conditions in the Certificate of Analysis. |



## SOLVENT & SOLUBILITY

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| **In Vivo** | 1. Add each solvent one by one: 10% DMSO >> 90% corn oil<br>Solubility: ≥ 2.5 mg/mL (3.45 mM); Clear solution<br>2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline<br>Solubility: 2.08 mg/mL (2.87 mM); Suspended solution; Need ultrasonic |

## BIOLOGICAL ACTIVITY

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| **Description** | Nigericin is an antibiotic derived from Streptomyces hygroscopicus that act as a $K^+/H^+$ ionophore, promoting $K^+/H^+$ exchange across mitochondrial membranes. Nigericin shows promising anti-cancer activities through decreasing intracellular pH (pHi), and inactivation of Wnt/β-catenin signals. Nigericin induces pyroptosis through caspase 1/GSDMD in TNBC[1][2][3][4][5][6][7]. |
| **$IC_{50}$ & Target** | NLRP3 |
| **In Vitro** | Nigericin (0-4 μg/ml; 24 h) induces pyroptosis through caspase 1/GSDMD pathway in TNBC cells[6].<br>Nigericin (1 μg/mL, 8 × MIC; 2 μg/mL, 16 × MIC; 196 h) is a bactericidal antibiotic against MDR gram-positive bacteria[4].<br>Nigericin (0-0.25 μg/ml; 24 h) inactivates Wnt/β-catenin pathway in H460 cells as an anti-cancer effect[7].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

Cell Viability Assay[4]

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| Cell Line: | S. aureus, Staphylococcus epidermidis, Enterococcus faecalis, E. faecium, S. pneumoniae) , and Streptococcus agalactiae |
| Concentration: | 0 μg/ml, 0.05 μg/ml, 0.125 μg/ml, 0.25 μg/ml |
| Incubation Time: | 24 h |
| Result: | Exhibited potent activity against these clinical MDR strains, with MIC values ranging from 0.004-0.25 mg/ml. |

Western Blot Analysis[6]

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| Cell Line: | MDA-MB-231, and 4T1 cells |
| Concentration: | 0 μg/ml, 2 μg/ml, 4 μg/ml |
| Incubation Time: | 24 h |
| Result: | Showed increasing in the proteins level of caspase 1 and N-GSDMD. |

Cell Viability Assay[7]

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| Cell Line: | H460 cells |
| Concentration: | 0.5 μM, 1 μM, 2.5 μM |
| Incubation Time: | 24 h |
| Result: | Showed downregulating in the expression of proteins of the canonical Wnt (LRP6, Wnt5a/b, and β-catenin) signaling pathway. |

**In Vivo**

Nigericin (1 mg/kg; i.p.; every 12 h for 3 D) reduces the infection of S. aureus USA300 in mice[4].
Nigericin (0.025 mg/kg; s.c.; every two days in 4 weeks) plus anti-PD-1 shows synergistic anti-cancer effect[6].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

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| Animal Model: | BALB/c Mice injected orthotopically with 4T1 cells[6] |
| Dosage: | 0.025 mg/kg |
| Administration: | Subcutaneous injection (s.c.) |
| Result: | Showed combination with anti-PD-1 antibody almost completely suppressed tumor growth. |

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| Animal Model: | Mice Infected with S. aureus USA300[4] |
| Dosage: | 1 mg/kg |
| Administration: | Intraperitoneal injection (i.p.) |
| Result: | Showed reduction in the bacterial burden to 1,000-10,000-fold in the major organs. |

## CUSTOMER VALIDATION

- Cell Res. 2023 Sep 19.
- Cell Host Microbe. 2023 Nov 8;31(11):1820-1836.e10.
- Cell Metab. 2020 May 5;31(5):892-908.e11.
- Bioact Mater. 20 July 2022.
- J Extracell Vesicles. 2023 Feb;12(2):e12310.

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## REFERENCES


[1]. Xiaoli Zhu, et al. Nigericin is effective against multidrug resistant gram-positive bacteria, persisters, and biofilms. Front Cell Infect Microbiol. 2022 Dec 20:12:1055929.

[2]. Guanzhuang Gao, et al. Evidence of nigericin as a potential therapeutic candidate for cancers: A review. Biomed Pharmacother. 2021 May:137:111262.

[3]. Lisha Wu, et al. Nigericin Boosts Anti-Tumor Immune Response via Inducing Pyroptosis in Triple-Negative Breast Cancer. Cancers (Basel). 2023 Jun 16;15(12):3221.

[4]. Juan Sebastian Yakisich, et al. Nigericin decreases the viability of multidrug-resistant cancer cells and lung tumorspheres and potentiates the effects of cardiac glycosides. Tumour Biol.2017 Mar;39(3):1010428317694310.

[5]. Zotova L, et al. Novel components of an active mitochondrial K(+)/H(+) exchange. J Biol Chem. 2010 May 7;285(19):14399-414.

[6]. Mariathasan S, et al.Cryopyrin activates the inflammasome in response to toxins and ATP.Nature. 2006 Mar 9;440(7081):228-32.

[7]. Bissinger R, et al. Triggering of Suicidal Erythrocyte Death by the Antibiotic Ionophore Nigericin. Basic Clin Pharmacol Toxicol. 2016 May;118(5):381-9.





Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA