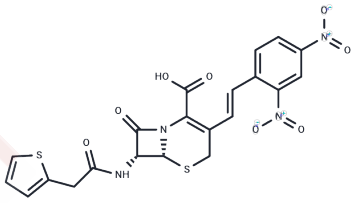
Data Sheet (Cat.No.T19709)

TargetMol

Nitrocefin

Chemical Properties



CAS No. : 41906-86-9

Formula: C21H16N4O8S2

Molecular Weight: 516.5

Storage: Store at low temperature,Keep away from direct sunlight
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Nitrocefin is a chromogenic substrate and a detection tool for β-lactamase, featuring high sensitivity and rapid color development. Used for β-lactamase activity detection and drug resistance research, with enzyme activity intuitively reflected by the color change from yellow to red.
Targets(IC50)	Others,Antibacterial,Antibiotic
In vitro	**Methods**: In the Nitro-Carba test, 31 carbapenemase-producing Enterobacterales and 56 non-carbapenemase-producing strains were used as test organisms. After enzyme extraction, the enzyme solutions were added to wells containing or without carbapenem antibiotics, incubated for 5 minutes, then Nitrocefin was added to a final concentration of 1 g/L, and observed at room temperature for 20 minutes. **Results**: Carbapenemase-producing strains caused Nitrocefin to change from yellow to red in all wells, while non-carbapenemase-producing strains only showed color change in the antibiotic-free control wells. [1] **Methods**: The disk method and liquid method were used to detect Nitrocefin activity in vitro. The test strains included Neisseria gonorrhoeae 8903, WHO O, WHO F, F62, and Escherichia coli DH5α, C600. N. gonorrhoeae was cultured on GC medium at 37°C with 5%–7% CO_2 for 18–24 h; E. coli was cultured on LB medium at 37°C. **Results**:: The positive control WHO O showed immediate color change, while N. gonorrhoeae 8903 required 35 min to show positive Results. Transformed E. coli showed Nitrocefin hydrolysis activity at ≥4 h, and transformed F62 at >6 h. [2]

Solubility Information

Solubility	H2O: < 1 mg/mL (insoluble) DMSO: 255 mg/mL (493.71 mM), (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.9361 mL	9.6805 mL	19.3611 mL
5 mM	0.3872 mL	1.9361 mL	3.8722 mL
10 mM	0.1936 mL	0.9681 mL	1.9361 mL
50 mM	0.0387 mL	0.1936 mL	0.3872 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Teethaisong, Yothin et al. Nitro-Carba test, a novel and simple chromogenic phenotypic method for rapid screening of carbapenemase-producing Enterobacteriaceae. Journal of global antimicrobial resistance vol. 18 (2019): 22-25.

Ma Z, Hou B, Liao A, et al.Light-Activable Inhibitor Overcomes Antimicrobial Resistance and Regulates Antibacterial Activity.Journal of Medicinal Chemistry.2024

Singh, Reema et al. A β-lactamase-producing plasmid from Neisseria gonorrhoeae carrying a unique 6 bp deletion in blaTEM-1 encoding a truncated 24 kDa TEM-1 penicillinase that hydrolyses ampicillin slowly. The Journal of antimicrobial chemotherapy vol. 74,10 (2019): 2904-2912.

Shen Z, Ding B, Ye M, Wang P, Bi Y, Wu S, Xu X, Guo Q, Wang M. High ceftazidime hydrolysis activity and porin OmpK35 deficiency contribute to the decreased susceptibility to ceftazidime/avibactam in KPC-producing Klebsiella pneumoniae. J Antimicrob Chemother. 2017 Mar 15. doi: 10.1093/jac/dkx066. [Epub ahead of print] PubMed PMID: 28333323.

Hombach M, Weissert C, Senn MM, Zbinden R. Comparison of phenotypic methods for the detection of penicillinase in Staphylococcus aureus and proposal of a practical diagnostic approach. J Antimicrob Chemother. 2017 Apr 1;72 (4):1089-1093. doi: 10.1093/jac/dkw521. PubMed PMID: 28069883.