

Nitrocefin Discs

REF CK2001

Intended Use

Nitrocefin discs are intended for use in the rapid testing of isolated colonies of *Neisseria gonorrhoeae*⁸, *Moraxella catarrhalis*⁹, *Staphylococcus* spp.¹⁰, *Haemophilus influenzae*^{3, 11} and anaerobic bacteria, notably *Bacteroides* spp.¹².

Background

Nitrocefin is a chromogenic cephalosporin which has been found to be effective in detecting all known B-lactamase enzymes⁴⁻⁷. B-lactamase enzymes hydrolyse the amide bond in the B-lactam ring of Nitrocefin resulting in a distinctive colour change from yellow to red⁴.

The Nitrocefin test is of little use for closely related taxonomic groups of organisms e.g. members of the family *Enterobacteriales*⁷. This is because organisms within a taxonomic group or even a single strain may produce a diversity of B-lactamase enzymes with different substrate specificities.

A positive result should be interpreted as resistance to penicillin or cephalosporin activity. Susceptibility should be confirmed by standard growth-dependent susceptibility testing methods. Negative results imply but do not guarantee susceptibility.

Precautions

This product is for in-vitro diagnostic use and should be used by properly trained laboratory professionals. Universal precautions should be taken in the handling, processing and discarding of all materials used to perform the test. Do not use reagents

after the expiration date shown on the product label has expired.

Methods

Use a fresh 18-24 hour culture as older cultures could be less metabolically active and results from these may be unreliable.

1. Place the required number of Nitrocefin discs into a clean empty Petri dish or onto a microscope slide.
2. Discs may be moistened with one drop of deionised water. Do not over-moisten.
3. Using a sterile loop or applicator stick remove several well-isolated and similar colonies and smear onto the surface of a disc.
4. Observe disc for colour change.

Alternatively: moisten the disc with one drop of deionised water, then holding the disc in forceps wipe across a colony on an agar plate.

Results

Positive Reaction – a yellow to red colour change on the area where the culture was applied.

Negative Reaction – no colour change on the disc

For most bacterial strains a positive results will develop within 5 minutes. However, positive reactions for some staphylococci and anaerobic species may take up to 60 minutes to develop.

Limitations

Resistance to B-lactam antibiotics has been rarely reported in the specified organisms without the production of B-lactamases¹³. Nitrocefin Discs should be used only as a rapid supplemental test and should not replace conventional susceptibility testing. Some strains of *Staphylococcus aureus* produce small amounts of the B-lactamase enzyme unless enzyme production is induced by growth in a medium containing sub-inhibitory concentrations of a B-lactam antibiotic.

Quality Control

A quality control should be undertaken daily or immediately prior to use.

Positive control

Bacteroides fragilis NCTC 9343

Staphylococcus aureus NCTC 12973

Negative control

Clostridioides difficile NCTC 11204

Shelf Life & Storage

The expiry date, storage temperature (frozen) and storage conditions are indicated on the outer package label.

Materials provided

Each pack contains 50 discs, each disc contains 20µg Nitrocefin.

Materials required but not provided

Sterile loops or needles









Sterile distilled water

Petri dish or microscope slides

References

1. Abraham EP, Chain E. Nature 1940; 146: 837.
2. McCarthy LR. Clin Microbiol Newsl. 1980; 2: 1-3.
3. Thornsberry C, Gavan TL, Gerlach EH. In: Cummitech. Sherris JC, editor. Washington DC: American Society for Microbiology, 1977; 1-2.

4. O'Callaghan CH, Morris A, Kirby S, Shingler AH. Antimicrob Agents and Chemother. 1972; 1: 283-288.
5. Citri M, Pollock MR. Adv in Enzymol. 1966; 28: 237-323.
6. Richmond MH, Sykes RB. In: Advances in Microbial Physiology. Rose AH, Tempest DW, editors. London and New York: Academic Press, 1973; 9: 31-88.
7. Sykes RB, Matthew M. J Antimicrob Chemother. 1976; 2: 115-157.
8. Ashford WA, Golash RG, Hemming VG. Lancet. 1976; ii: 657-658.
9. Malmvall BE, Brorsson JE, Johnsson J. J Antimicrob Chemother. 1977; 3: 374-375.
10. Adam AP, Barry AL, Benner EA. J Infect Dis. 1970; 122: 544-546.
11. Skinner A, Wise R. J Clin Pathol. 1977; 30: 1030-1037.
12. Olsson B, Dornbush K, Nord CE. Med Microbiol Immunol. 1977; 163: 183-194.

	Catalogue number
	Batch number
	Use by date
	In-Vitro Diagnostic device
	Contains sufficient for <n> tests
	Temperature storage limitations
	Consult instructions for use
	Manufacturer

Issue	Date	Comments
4	09/09/2020	IFU format revision.

