51138 Nitrate Reagent Disks Kit

Nitrate Reagent Disks are used to detect an organism's ability to reduce nitrate. The test involves detection of the enzyme nitrate reductase which causes the reduction of nitrate in the presence of a suitable electron donor to nitrite, which can be tested by an appropriate colorimetric reagent.

Contents:
Sterile filter paper discs (50pcs, diameter 6mm) impregnated with Nitrate reagent (08086).
Rehydrating fluids (43505, 1 vial à ca. 5 ml)

Storage:
Store in the freezer below 4°C in the containers provided. Allow to equilibrate to room temperature before opening then return to freezer storage immediately after use.

Directions:
The test culture should be grown on suitable agar medium plate containing the nitrate substrate. Place the nitrate reagent disks on suspected colony. Colour change to red-pink of disc indicates positive nitrate reduction reaction. For enhanced color intensity add a drop of the Rehydrating fluid provided in the kit onto the disk.

Principle:
Reduction of nitrate (NO_3) to nitrite (NO_2) and to nitrogen gas (N_2) usually takes place under anaerobic conditions, in which an organism derives its oxygen from nitrate (1). Most facultative anaerobes can reduce nitrate in the absence of oxygen. Almost all Enterobacteriacea reduce nitrate.This anaerobic respiration is an oxidation process in which inorganic substances furnish oxygen to serve as an electron acceptor to provide energy (2). The end product possibilities of nitrate reduction are many depending upon the bacterial species. The more common end product is molecular nitrogen via nitrite reduction (2). Depending upon environmental conditions, these products are usually not further oxidised or assimilated into cellular metabolism but are excreted into the surrounding medium.

Interpretation of results:
Colour change to red-pink of disc indicates positive nitrate reduction reaction.

Quality control:
The list below illustrates a range of performance control strains in routine use:

Test Organisms (ATCC)	Growth	Nitrate reduction
Acinetobacter calcoaceticus (19606)	+++	-
E.aerogenes (13048)	+++	+
E. coli (25922)	+++	+
Sal. Serotype typhimurium (14028)	+++	+

References:

1. Jr. M.J. Pelczar, R.D. Reid, Microbiology, 2nd ed., McGraw-Hill, New York, 567 (1965)
2. R.Y. Stainer, M. Douderoff, E.A. Adelberg, The Microbial World, 2nd ed., Prentice-Hall, 116-117 (1963)
3. Wideman P.A., Citronbaum D.M., Sutter V.L., Simple disk technique for detection of nitrate reduction in anaerobic bacteria, J Clin Micro, 5(3):315-9 (1977)
4. Lennette E.H., Balows A., Hausler W.J., et al., Manual of clinical microbiology, 4th ed. Washington, DC: ASM (1985)
5. Baron E.J., Finegold S.M., Bailey and Scott's diagnostic microbiology, 8th ed., St Louis: Mosby, (1990)

Precautions

For in vitro diagnostic use only. Observe approved biohazard precautions and aseptic techniques. To be used only by adequately trained and qualified laboratory personnel. Sterilise all biohazard waste before disposal. Refer to Product Safety Data sheet.