49940 ONPG Disks
(2-Nitrophenyl β-D-galactopyranoside Disks, β-Galactosidase Test Disks)

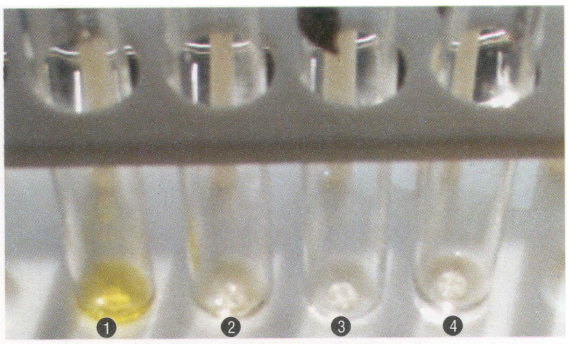
ONPG Disks are used to detect the presence of β-galactosidase, an enzyme found in lactose-fermenting organisms. Lactose utilization depends upon two enzymes: β-galactoside permease (not present in late lactose fermenters), which catalyzes transport of lactose into the cell, and β-galactosidase, which breaks down lactose into galactose and glucose. β-Galactosidase is not lactose specific and can act on simple galactosides including the ONPG (o-nitrophenyl-β-D-galactopyranose) substrate. ONPG hydrolysis results in the release of galactose, and the yellow chromogenic compound, o-nitrophenol. The test substrate, ONPG, does not depend on an induced or constitutive permease enzyme to enter the cell, therefore reactions are rapid and occur within a 24-hour period even for late lactose fermenters.
To group enterobacteriaceae the ability of fermenting lactose is routinely used.

Composition:
(1 package contains 50 disks)
Sterile filter paper disks (diameter 6mm) impregnated with o-nitrophenyl-β-D-galactopyranose

Directions:
Place one ONPG disc into a sterile test tube. Add 0.1 ml of sterile 0.85% (w/v) sodium chloride solution (physiological saline, pH 7.0) or according ISO with a phosphate buffer (34.5g/L NaH_2P0_4, pH 7.0). Pick up the colony under test with a sterile loop and emulsify it in the tube containing the disc and physiological saline. Incubate at 35°C. To detect active lactose fermenters observe the tube at an interval of one hour, for up to 6 hours. To detect the late lactose fermenters, incubate the negative tubes for up to 24 hours.

Quality control:
Cultural characteristics in 0.85% (w/v) sodium chloride solution with an ONPG Disk after 4 hours at 35°C.

Test Organisms (ATCC)	ONPG Hydrolysis
Citrobacter freundii (8090)	+
Enterobacter aerogenes (13048)	+
Escherichia coli (25922)	+
Proteus vulgaris (8427)	-
Salmonella serotype Arizonae (13314)	+
Salmonella serotype Typhimurium (14028)	-



1. Positive Colony
2. Negative Colony
3. Negative Colony
4. Negative Control

References:

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2. J. Sanbrook, E.F. Fritsch, T. Maniatis, Molecular Cloning: A Laboratory Manual 2nd ed., Cold Spring Harbor, NY (1989)
3. S.R. Maloy, J.E. Conran (Jr.), D. Freifelder, Microbial Genetics 2nd ed. Jones and Bartlett Boston , MA (1994)
4. V.E. Becker, H.J. Evans, The influence of monovalent cations and hydrostatic pressure on β-galactosidase activity., Biochim. Biophys. Acta, 191, 95 (1969)
5. M.C. Neville, G.N. Ling, Synergistic activation of β-galactosidase by Na^+ and Cs^+, Arch. Biochem. Biophys., 118, 596, (1967)
6. J. Lederberg, The β-galactosidase of Escherichia coli, strain K-12., J. Bact., 60, 381 (1950)
7. ISO 6579-1:2017, Microbiology of the food chain -- Horizontal method for the detection, enumeration and serotyping of Salmonella -- Part 1: Detection of Salmonella spp.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.