

Phenol-red Broth Base

Test culture medium used, together with various reactants, for the biochemical identification of microorganisms by means of fermentation tests.

Mode of Action

Fermentation of the added reactant by the inoculated culture causes phenol red to change its colour from red to yellow. When testing anaerobes, addition of a small quantity of agar stabilizes the anaerobiosis.

Typical Composition (g/litre)

Peptone from casein 5.0; peptone from meat 5.0; sodium chloride 5.0; phenol red 0.018.

Also to be added (g/litre):

reactant 5.0-10.0; if required, agar-agar 0.5-1.0.

Preparation

Suspend 15 g/litre, if requested, together with 0.5-1.0 g agar-agar/litre, dispense into test tubes, if necessary insert DURHAM tubes, autoclave (15 min at 121 °C). After cooling to about 60 °C add the desired reactants (final concentration 5.0-10.0 g/litre) as filter-sterilized solutions.

pH: 7.4 ± 0.2 at 25 °C.

The prepared broth is clear and red.

Experimental Procedure and Evaluation

Inoculate the tubes dropwise with pure cultures of the microorganisms to be identified. Tubes without reactant should also be inoculated to serve as growth controls.

In case of particularly fastidious microorganisms, it is advised to add a few drops of sterile, inactivated serum to each tube. Anaerobes should be tested under anaerobic conditions in a culture medium containing agar.

Incubation: up to 14 days at the optimal incubation temperature (usually 35 °C), in general 24 hours aerobically.

Check the tubes daily during incubation for gas formation in the DURHAM tubes and to see whether the colour has changed from red to yellow. If the phenol red is degraded, it may be freshly added dropwise as 5 % solution, when checking the tubes.

Ordering Information

Product	Merck Cat. No.	Pack size
Phenol-red Broth Base	1.10987.0500	500 g
Agar-agar purified	1.01614.1000	1 kg
Phenol red indicator	1.07241.0005	5 g

Merck reactants for fermentation tests

Product	Merck Cat. No.	Pack size
Adonitol	1.00846.0025	25 g
L(+)-Arabinose	1.01492.0100	100 g
Dulcitol	1.05990.0050	50 g
Esculin	1.00842.0005	5 g
D(-)-Fructose	1.05323.0250	250 g
D(+)-Galactose	1.04062.0050	50 g
D(+)-Glucose monohydrate	1.08342.1000	1 kg
Glycerol (about 87 %)	1.04094.0500	500 ml
Glycogen	1.04202.0001	1 g
Inulin	1.04733.0010	10 g
D(-)-Mannitol	1.07657.1000	1 kg
Maltose (monohydrate)	1.05910.0500	500 g
meso-Erythritol	1.03160.0025	25 g
myo-Inositol	1.04728.0100	100 g
Raffinose (pentahydrate)	1.07549.0100	100 g
L(+)-Rhamnose (monohydrate)	1.04736.0025	25 g
Salicin	1.07665.0025	25 g
D(-)-Sorbitol	1.07758.1000	1 kg
Starch	1.01252.0100	100 g
Sucrose	1.07651.1000	1 kg
Trehalose (dihydrate)	1.08353.0005	5 g
D(+)-Xylose	1.08689.0025	25 g

Quality control

Test strains	Growth*	Colour change to yellow	Gas formation
Staphylococcus aureus ATCC 25923	good / very good	+	-
Enterococcus faecalis ATCC 11700	good / very good	+	-
Klebsiella pneumoniae ATCC 13883	good / very good	+	+
Proteus vulgaris ATCC 13315	good / very good	+	+ (poor)
Shigella flexneri ATCC 12022	good / very good	± (orange)	-
Salmonella typhimurium ATCC 14028	good / very good	-	-

*in medium base with 1 % sucrose