Rapid Urease Test Broth

M1828

Rapid Urease Test Broth is recommended for rapid detection of urease production.

Composition**

Ingredients	Gms / Litre
Yeast extract	0.100
Urea	20.000
Monopotassium phosphate	0.091
Disodium phosphate	0.095
Phenol red	0.010
Final pH (at 25°C)	6.8±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 20.30 grams in 1000 ml distilled water. Mix well and sterilize by filtration. DO NOT AUTOCLAVE OR HEAT THE MEDIUM. Dispense in sterile tubes as desired.

Principle And Interpretation

In Rapid Urease test Broth the urease reaction given by *H. pylori* , occurs more quickly than that seen by other organisms which may split urea. As a result, it is an effective presumptive test for the presence of *H. pylori* . It is also used for the rapid detection of urease activity in bacteria such as Proteus spp., or in yeast, (such as Cryptococcus neoformans).

Helicobacter pylori is a gram negative, curved, microaerophilic and motile organism with multiple polar flagella. *Helicobacter pylori* is a spiral urease producing organism that lies in the interface between gastric epithelial cell surface and the overlying mucus gel (1). It resides in the stomach of man and other primates, lining up the gastric mucus secreting cells. Rapid urease test is one of the invasive tests. This method has been used to help simplify the diagnosis of H. pylori, especially those specimens originating from duodenal and gastric ulcers, and chronic antral gastritis (type B).

This medium is develop as per McFaddin (3). Urease activity can be described as the splitting of urea via hydrolysis by a urease enzyme. The end products from this reaction yield ammonium carbonate and ammonia, which are alkaline in nature. The consequent rise in the pH of the medium is detected by phenol red indicator. The test is non-toxic, and the pH change that occurs from accumulation of alkaline end products is detected by a pH indicator in the media (2). *Helicobacter pylori* is an organism that may be easily identified by this test because of its very high endogenous urease activity.

Yeast extract which provides nitogen and vitamin required for growth. Phosphates serve to buffer the medium.

Quality Control

Appearance
Light yellow to light pink homogeneous free flowing powder

Colour and Clarity of prepared medium
Yellowish orange coloured clear solution in tubes.

Reaction
Reaction of basal medium (1.87gm in 100ml distilled water) at 25°C. pH : 6.8±0.2

pH
6.60-7.00

Cultural Response
M1828: Cultural characteristics observed after an incubation at 35-37°C for 4-18 hours.

Organism	Inoculum (CFU)	Urease Cultural Response

Enterobacter aerogenes ATCC 13048	50-100	negative reaction, no change
Escherichia coli ATCC 25922	50-100	negative reaction, no change
Klebsiella pneumoniae ATCC 13883	50-100	weak positive reaction
Proteus vulgaris ATCC 13315	50-100	positive reaction, cerise colour
Salmonella Typhimurium ATCC 14028	50-100	negative reaction, no change
Helicobacter pylori ATCC 43504	50-100	positive reaction, cerise colour
Klebsiella pneumoniae ATCC 10031	50-100	weak positive reaction

Storage and Shelf Life

Store at 2-8°C in tightly capped container. Use before expiry date on the label.

Reference

1.Mendall MA,Pajares-Garcia Epidemiology and transmissin of Helicobacter pylori . Curr Opin Gasteroenterol 1995; 11(supp 1) : 1-4.
2.Klein PD, Graham DY, Gaillour A et al water source as risk factor for Helicobacter pylori infection in Peruvian children. Lancet 1991 ; 337 : 1503-06.
3.MacFaddin, Jean F-Biochemical tests for identification of medical bacteria / Jean F. Macfaddin1980; 424. ,,

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