Urea Agar Slant (M1630)

Recommended for detection of urease production by microorganisms.

Composition

Ingredients	g/ L
Peptone	1.000
Dextrose	1.000
Sodium chloride	5.000
Disodium hydrogen phosphate	1.200
Potassium dihydrogen phosphate	0.800
Phenol red	0.012
Urea	20.000
Agar	15.000

Description

Urea Agar is used to detect urease production. Urea Agar described by Christensen detected urease activity by all rapidly urease-positive Proteus organisms and also by other members of Enterobacteriaceae that exhibited a delayed urease reaction.

This was accomplished by :
a) adding glucose to the medium.
b) decreasing the peptone concentration and
c) decreasing the buffering system, as a less buffered medium detects even smaller amount of alkali

Peptone is the source of essential nutrients. Dextrose is the energy source. Sodium chloride maintains the osmotic equilibrium of the medium whereas phosphates serve to buffer the medium. Urea is hydrolyzed to liberate ammonia. Phenol red indicator detects the alkalinity generated by visible colour change from orange to pink. Prolonged incubation may cause alkaline reaction in the medium. A medium without urea serves as negative control to rule out false positive results. Also, all urea test media rely on the alkalinity formation and so they are not specific for determining the absolute rate of urease activity. The utilization of proteins may raise the pH to alkalinity due to protein hydrolysis and excess of amino acids liberation results in false positive reaction.

Type of specimen

Clinical samples

Specimen Collection and Handling

For clinical samples follow appropriate techniques for handling specimens as per established guidelines. After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions

In Vitro diagnostic use only. For professional use only. Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture.

Limitations

1. Prolonged incubation may cause alkaline reaction in the medium.
2. Also, all urea test media rely on the alkalinity formation and so they are not specific for determining the absolute rate of urease activity.
3. The utilization of proteins may raise the pH to alkalinity due to protein hydrolysis and excess of amino acids liberation results in false positive reaction.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality control

Physical/Chemical control

Color : Yellowish orange coloured slant
pH: 6.60-7.00

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Microbiological activity

Organisms	Inoculum CFU/ml	Urease
Escherichia coli ATCC 25922	50-100	negative, growth, yellow color change
Klebsiella pneumonia ATCC 700603	50-100	positive, growth, pink color change
Proteus mirabilis ATCC 12453	50-100	positive, growth, pink color change

Storage and Shelf Life ,

Store between 2-8°C. Use before expiry date on the label. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques.

Reference

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2. Isenberg, H.D. Clinical Microbiology Procedures Handbook, Vol. I, II & III. American Society for Microbiology, Washington, D.C.
3. King, E.O. 1960. The Identification of Unusual Pathogenic Gram Negative Bacteria, U.S.D.H.E.W., CDC, Atlanta, GA.
4. MacFaddin, J.F. 1985. Media for Isolation, Cultivation, Identification, Maintenance of Bacteria, Vol. I. Williams & Wilkins, Baltimore, MD.
5. Jorgensen., et al. Manual of Clinical Microbiology, American Society for Microbiology, Washington, D.C.
6. Quality Assurance for Commercially Prepared Microbiological Culture Media, M22. Clinical and Laboratory Standards Institute (CLSI - formerly NCCLS)