Technical Information

Urea Agar Base (Christensen)

Product Code: DM 1112

Application: Urea Agar Base with the addition of Urea is recommended for the detection of urease production, particularly by members of the genus *Proteus*.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	1.000
Dextrose	1.000
Sodium chloride	5.000
Disodium phosphate	1.200
Monopotassium phosphate	0.800
Phenol red	0.012
Agar	15.000
Final pH (at 25°C)	6.8±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Urea Agar is used to detect urease production. Urea Agar described by Christensen [1, 4] detects urease activity shwon by all rapidly urease-positive *Proteus* organisms and also by other members of *Enterobacteriaceae* that exhibit a delayed urease reaction [1, 2]. This is possible only 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 [3].

Peptic digest of animal tissues 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 produce alkaline reaction in the medium. Therefore medium without urea should be included as negative control to rule out any 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 [2]. The utilization of proteins may raise the pH to alkalinity due to protein hydrolysis and excess of amino acids liberation. These conditions may results in false positive reaction

Methodology

Suspend 24.01 grams of powder media in 950 ml distilled water. Shake well & heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 10 lbs pressure (115°C) for 20 minutes. Cool to 50°C and aseptically add 50 ml of sterile 40% Urea Solution (MS2048) and mix well. Dispense into sterile tubes and allow to set in the slanting position. Do not overheat or reheat the medium as urea decomposes very easily.

Quality Control

Physical Appearance

Light yellow to light pink homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Yellowish orange coloured clear to slightly opalescent gel forms in tubes as slants

Reaction

Reaction of 2.4% w/v aqueous solution at 25°C. pH : 6.8±0.2

pH Range:- 6.60-7.00

Cultural Response/Characteristics

DM 1112: Cultural characteristics observed on addition of sterile 40% Urea Solution (MS2048) after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Urease
Enterobacter aerogenes ATCC 13048	50-100	luxuriant	negative reaction, no change
Escherichia coli ATCC 25922	50-100	luxuriant	negative reaction, no change
Klebsiella pneumoniae ATCC 13883	50-100	luxuriant	reaction, cerise colour
Proteus mirabilis ATCC 25933	50-100	luxuriant	positive reaction, cerise colour
Proteus vulgaris ATCC 13315	50-100	luxuriant	positive reaction, cerise colour
Salmonella Typhimurium ATCC 14028	50-100	luxuriant	negative reaction, no change

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.
Prepared Media: 2-8^{0} in sealable plastic bags for 2-5 days.

Further Reading

1. Christensen W. B., 1946, J. Bacteriol., 52:461.
2. MacFaddin J. F., 2000, Biochemical Tests for Identification of Medical Bacteria, 3rd Ed., Williams and Wilkins, Baltimore. Md.
3. Farmer J. J. III, McWhorter A. C., Huntley G. A., Catignani J., J. Clin. Microbiol. 1975: 1 (1): 106-107.
4. MacFaddin J. F, 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore, Md.

Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
- The product conform solely to the technical information provided in this booklet and to the best of knowledge research and development work carried at **CDH** is true and accurate
- **Central Drug House Pvt. Ltd.** reserves the right to make changes to specifications and information related to the products at any time.
- Products are not intended for human or animal diagnostic or therapeutic use but for laboratory, research or further manufacturing of diagnostic reagents extra.
- Statements contained herein should not be considered as a warranty of any kind, expressed or implied, and no liability is accepted for infringement of any patents. Do not use the products if it fails to meet specificatons for identity and performens parameters.