Technical Information

Urea Agar Base, Christensen

Product Code: DM 1112I

Application: Urea Agar Base, Christensen 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
Monopotassium phosphate	2.000
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 as described by Christensen [1, 4] detect urease activity by all rapidly urease-positive *Proteus* organisms and also by other members of *Enterobacteriaceae* that exhibited a delayed urease reaction [1, 2]. This is 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 [3].

ISO Committee has recommended Urea Agar Base, Christensen (DM1112I), with one phosphate, instead of two phosphates for detection of rapid urease activity [5].

Heavy inoculum of growth is inoculated on the surface of the slants. On incubation urea is utilized to liberate ammonia, which makes the medium alkaline, showing a pink-red colour by the change in the phenol red indicator. Prolonged incubation may cause alkaline reaction in the medium. Check using medium without urea as the negative controls must to rule out any possibility of false positivity.

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.

Methodology

Suspend 24.01 grams of powder media in 950 ml distilled water. Shake well & heat to dissolve the medium completely. Sterilize by autoclaving at 10 lbs pressure (115°C) for 15 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 a 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 1112I: Cultural characteristics observed on addition of 40% Urea Solution (MS2048) after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Urease
Escherichia coli ATCC 25922	50-100	luxuriant	negative reaction, no change
Enterobacter aerogenes ATCC 13048	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.
5. International Organization for Standardization (ISO), 1993, Draft ISO/DIS 6579.

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