PRODUCT SPECIFICATION SHEET

Urea Agar Base (Christensen) (Autoclavable) (DM283)

Intended Use

Urea Agar Base (Christensen) (Autoclavable) (DM283) is recommended for detection of *Proteus vulgaris, Micrococci* and *paracolon* organisms on basis of urease production.

Product Summary and Explanation

Urea Agar is used to detect urease production. Urea Agar Base described by Christensen[1,2] for the detection of rapid urease activity of the urease-positive *Proteae*. The urea medium may be used for the detection of urea hydrolysis by some other *Enterobacteriaceae*[1] but the incubation period is much longer 24±48 hours.[3] This was achieved by addition glucose; decreasing the peptone concentration and decreasing the buffering system, as a less buffered medium detects even smaller amount of alkali.[4]

Principles of the Procedure

Urea Agar Base contains peptic digest of animal tissues which provides essential nutrients required for growth of organisms. Dextrose is the carbon and energy source. Sodium chloride maintains the osmotic equilibrium of the medium whereas phosphates help 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.

Formula / Liter

Ingredients	Gms / Liter
Peptic digest of animal tissue	1.00
Dextrose	1.00
Sodium chloride	5.00
Disodium phosphate	1.20
Monopotassium phosphate	0.80
Phenol red	0.012
Agar	15.00
Final pH: 6.8 ± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions

1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions

1. Suspend 24.01 grams of the medium in 950 ml of distilled water.
2. Heat to boiling to dissolve the medium completely.
3. Autoclave at 10 lbs pressure (115°C) for 20 minutes.
4. Cool to 50°C and aseptically add 50 ml of sterile 40% Urea Solution (MS031) and mix well.
5. Dispense into sterile tubes and allow to set in the slanting position.
6. Do not overheat or reheat the medium as urea decomposes very easily.

Quality Control Specifications

Dehydrated Appearance	Light yellow to light pink homogeneous free flowing powder
Prepared Medium	Yellowish orange coloured clear to slightly opalescent gel forms in tubes as slants
Reaction of 2.4% Solution	pH : 6.8 ± 0.2 at 25°C

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Gel Strength	Firm, comparable with 1.5% Agar gel

Expected Cultural Response: Cultural characteristics observed on addition of sterile 40% Urea Solution (MS031) after an incubation at 35-37°C for 18-24 hours.

Sr. No.	Organisms	Results to be achieved		
		Inoculum (CFU)	Growth	Urease
1.	*Enterobacter aerogenes ATCC 13048*	50 - 100	good-luxuriant	negative reaction, no change
2.	*Escherichia coli ATCC 25922*	50 - 100	good-luxuriant	negative reaction, no change
3.	*Klebsiella pneumoniae ATCC 13883*	50 - 100	good-luxuriant	positive reaction, cerise colour
4.	*Proteus mirabilis ATCC 25933*	50 - 100	good-luxuriant	positive reaction, cerise colour
5.	*Proteus vulgaris ATCC 13315*	50 - 100	good-luxuriant	positive reaction, cerise colour
6.	*Salmonella Typhimurium ATCC 14028*	50 - 100	good-luxuriant	negative reaction, no change

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure
Refer to appropriate references for specific procedures for detection and enumeration of yeast, mould and aciduric microorganisms.

Results
Refer to appropriate references and procedures for results.

Storage
Store the sealed bottle containing the dehydrated medium at 2 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration
Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure
1. Prolonged incubation may cause alkaline reaction in the medium.
2. A medium without urea serves as negative control to rule out false positive results.
3. 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]
4. 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.
5. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
6. Consult appropriate texts for detailed information and recommended procedures.

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Packaging
Product Name : Urea Agar Base (Christensen) (Autoclavable)
Product Code : DM283
Available Pack sizes : 100gm/500gm

References

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

Further Information

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