



Urea Agar Base (Christensen)

M112S

Urea Agar Base is recommended for the detection of urease production, particularly by *Proteus vulgaris*, Micrococci and paracolon organisms.

Composition**

Ingredients	Gms / Litre
Dextrose	1.000
Peptic digest of animal tissue	1.500
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

Directions

Suspend 24.51 grams in 950 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 50°C and aseptically add 50 ml of sterile 40% Urea Solution (FD048) 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.

Principle And Interpretation

Urea Agar Base Media is a slight modification of Christensen formulation (1, 2) and is recommended by BIS (3, 4) for identification of urease activity. Rustigian and Stuart (5) had originally formulated a medium to detect urease activity. These media differentiate between rapid urease positive *Proteus species* and other urease positive organisms like *Citrobacter*, *Enterobacter* and *Klebsiella* and the bacteria other than *Enterobacteriaceae*. Christensen observed that addition of peptic digest of animal tissue, dextrose and reduced content of buffer helps to support an early luxuriant growth.

Heavy inoculum of growth is inoculated on the surface of the slants. When urea is utilized, ammonia is formed during incubation 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 control.

Quality Control

Appearance

Light pink coloured homogeneous free flowing powder

Gelling

Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium

Yellowish orange coloured clear gel forms in tubes as slants.

Reaction

Reaction of 2.45% w/v aqueous solution at 25°C. pH : 6.8±0.2

pH

6.60-7.00

Cultural Response

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

Organism	Inoculum (CFU)	Growth	Urease
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Cultural Response

<i>Enterobacter aerogenes</i> ATCC 13048	50-100	luxuriant	Negative reaction, no change
<i>Escherichia coli</i> ATCC 25922	50-100	luxuriant	Negative reaction, no change
<i>Klebsiella pneumoniae</i> ATCC 13883	50-100	luxuriant	Positive reaction, cerise colour
<i>Proteus mirabilis</i> ATCC 12453	50-100	luxuriant	Positive reaction, cerise colour
<i>Proteus vulgaris</i> ATCC 13315	50-100	luxuriant	Positive reaction, cerise colour
<i>Salmonella Typhimurium</i> ATCC 14028	50-100	luxuriant	Negative reaction, no change

Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

Reference

1. Christensen, W.B., 1946, J. Bact., 52:461.
2. MacFaddin J., 1980, Biochemical Tests for Identification of Medical Bacteria, 2nd ed., Williams and Wilkins, Baltimore.
3. Bureau of Indian Standards, IS : 5887 (Part I) - 1976, reaffirmed 1986.
4. Bureau of Indian Standards, IS : 5887 (Part III) - 1999.
5. Rustigian and Stuart, 1941, Proc. Soc. Exp. Biol. Med., 47:108.

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