

PRODUCT INFORMATION AND QUALITY CONTROL SHEET

UREA AGAR SLANT

I. INTENDED USE

Urea Agar Base, when combined with agar, is used for differentiating microorganisms based on urease activity.

II. SUMMARY AND EXPLANATION

Christensen¹ devised a urea agar medium containing peptone and dextrose that had a reduced buffer content. The medium supported a more vigorous growth of many of the gram-negative enteric bacilli and readily permitted observation of urease production.

Ewing² used Urea Agar as a differential medium in the examination of many cultures from stool specimens. Urea Agar may be used as a screening medium (along with Triple Sugar Iron Agar) for the selection of *Salmonella* and *Shigella* cultures for serological classification.³ Qadri⁴ et al. developed a spot test for the rapid detection of urease activity by applying diluted Urea Agar Base Concentrate to filter paper and inoculating the paper with a loopful of 24-48 hour culture. Urease-positive results were obtained within 2 minutes. When combined with results of other rapid screening methods, Urea Agar is the most common way to detect the production of urease by yeasts.⁵

III. PRINCIPLES OF THE PROCEDURE

Peptone provides carbon and nitrogen required for good growth of a wide variety of organisms. Yeast Extract provides vitamins and cofactors required for growth and as an additional source of nitrogen and carbon. Dextrose is included as an energy source. Sodium Chloride maintains the osmotic balance of the medium. Monobasic Potassium Phosphate provides buffering capability. Urea provides a source of nitrogen for those organisms producing urease. This is indicated by a color change of the pH indicator, Phenol Red, from yellow (pH 6.8) to red to pink-red (pH 8.1).

IV. TYPICAL FORMULA AND APPEARANCE

(Approximate formula* per liter of processed water)

Appearance = yellowish-orange, slightly opalescent

Enzymatic Digest of Gelatin	1 g
Dextrose	1 g
Sodium Chloride	5 g
Monopotassium Phosphate	2 g
Urea	20 g
Phenol Red	0.012 g

Final pH: 6.8 ± 0.2 @ 25°C.

*adjusted and/or supplemented to meet performance criteria.

V. PRECAUTIONS

This product is for IN VITRO diagnostic use only. Culture specimens may contain microorganisms which can be potentially infectious to the user. Strict adherence to aseptic techniques and established precautions against microbiological hazards should be followed throughout the procedure. Carefully dispose of all items which contact patient specimens or isolated bacteria.

VI. STORAGE/SHELF LIFE

Media should be stored at 2-8°C (36-46°F). Product that has exceeded the assigned expiration date noted on the label, should not be used. Do not use tubes that exhibit evidence of drying, cracking, discoloration, microbial contamination or any other signs of deterioration.

VII. SPECIMEN COLLECTION

The quality of culture results depends primarily on the adequacy and condition of the specimen submitted for examination. Refer to appropriate references for specimen collection and preparations.

VIII. MATERIALS PROVIDED

Urea Agar Slant Tubes – 10 each per box.

IX. MATERIALS REQUIRED BUT NOT PROVIDED

Incubator maintaining 33-37°C.

Ancillary culture media, reagents and laboratory equipment as required.

X. PROCEDURE

Use a heavy inoculum of growth from a pure 18-24 hour culture. Inoculate the specimen as soon as possible after it is received in the laboratory. Streak the specimen with a sterile swab.

NOTE: DO NOT STAB THE BUTT BECAUSE IT SERVES AS A COLOR CONTROL.

NOTE: Incubate the tubes with loosened caps at 35 ± 2°C.

Examine reactions after 6 and 24 hours and every day thereafter for a total of 6 days.¹ Longer periods of incubation may be necessary.

XI. EXPECTED RESULTS

NCCLS Control Organisms (ATCC Strains)

Escherichia coli (ATCC 25922) Inhibition (partial to complete)
no color change in the medium

Proteus vulgaris (ATCC 13315) Growth, red or cerise medium

XII. LIMITATIONS

The ability to detect microorganisms by culture techniques can be affected by the following factors: improper specimen collection, storage and inoculation, initiation of anti-infective therapy prior to specimen collection, improper culture incubation temperatures and atmospheres, improper length of culture incubation, and improper storage and handling of culture media.

XIII. REFERENCES

1. Christensen, W.B. 1946. Urea decomposition as a means of differentiating *Proteus* and paracolon cultures from each other and from *Salmonella* and *Shigella* types. J. Bacteriol. **52**:461.
2. Ewing, W.H. 1946. An additional *Shigella paradysenteriae* serotype. J. Bacteriol. **51**:433-445.
3. Ewing, W.H., and D.W. Bruner. 1947. Selection of *Salmonella* and *Shigella* cultures for serologic classification. Am. J. Clin. Path. **17**:1-12.
4. Quadri, S. M. Hussain, S. Zubairi, H.P. Hawley, and E.G. Ramirez. 1984. Simple spot test for rapid detection of urease activity. J. Clin. Microbiol. **20**(6):1198-1199.
5. Baron, E.J., L. R. Peterson, and S. M. Finegold. 1994. Bailey & Scott's Diagnostic Microbiology, 9th edition. Mosby-Year Book, Inc., St. Louis, MO.

USER QUALITY ASSURANCE/ QUALITY CONTROL PROCEDURES AND INFORMATION

HealthLink recommends that the following quality assurance and quality control procedures be performed on each batch of product.

I. QUALITY ASSURANCE

The following quality assurance procedures must be performed to assure the product will perform according to its intended use within the assigned expiry date:

1. Daily, document that product storage refrigerator

maintains temperature within the recommended range:
2-8⁰C.

2. Daily, document that laboratory incubator maintains temperature within the recommended range: 33-37⁰C.

II. QUALITY CONTROL

The following incoming inspection procedures must be performed for each batch (batch = same lot, same shipment) of culture media received in the laboratory:

Inspect tubes according to instructions contained in Section VI "STORAGE/SHELF LIFE"

Note: Notify Technical Service immediately if media does not meet the inspection criteria.

TECHNICAL SERVICE

HealthLink provides a toll free technical service line (1-800-638-2625) to assist with product usage. To have technical questions answered; please call between the hours of 9:00 am to 5:00 pm EST.

HealthLink
3611 St. Johns Bluff Rd. So. Ste. 1
Jacksonville, FL 32224

1-800-638-2625

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