

UREA AGAR

INTENDED USE

Remel Urea Agar is a solid medium recommended for use in qualitative procedures for the differentiation of microorganisms on the basis of urease activity.

SUMMARY AND EXPLANATION

This medium was developed by Christensen to aid in the differentiation of rapid urease-positive *Proteus* spp. from other urease-positive enteric gram-negative bacilli.^{1,2} Gelatin peptone and dextrose promote rapid growth of many enteric gram-negative bacilli, allowing for urease activity to be demonstrated in organisms other than *Proteus* which have more complex nitrogen requirements.³ This medium may also be used to determine urease activity of nonenteric gram-negative bacilli, such as *Brucella* and *Bordetella*, and to differentiate *Cryptococcus* from other yeasts.^{4,5}

PRINCIPLE

Urea Agar is a lightly buffered medium containing urea and phenol red, a pH indicator. When organisms utilize urea, ammonia is formed which turns the medium alkaline. Phenol red changes the medium color from pale-yellow to pink-red in an alkaline environment. Gelatin peptone promotes rapid growth of enteric gram-negative bacilli, permitting a decrease in incubation time. Dextrose serves to eliminate false-negative reactions and stimulates urease activity in those organisms which hydrolyze urea slowly.

REAGENTS (CLASSICAL FORMULA)*

Urea	20.0 g	Gelatin Peptone.....	1.0 g
Sodium Chloride.....	5.0 g	Phenol Red.....	12.0 mg
Monopotassium Phosphate.....	2.0 g	Agar.....	15.0 g
Dextrose.....	1.0 g	Deminerlized Water.....	1000.0 ml

pH 6.8 ± 0.2 @ 25°C

*Adjusted as required to meet performance standards.

PROCEDURE

1. Inoculate Urea Agar with a heavy inoculum from a pure, 18-24 hour culture, streaking back and forth over the slant. Do not stab the butt because it serves as a color control.
2. Incubate in ambient air with cap loosened at 33-37°C for up to 6 days.
3. Examine for a pink-red color development after 2, 6, and 24 hours and daily up to 6 days.

Note: *Proteus* is a rapid urease-positive organism and will usually turn the slant and butt pink-red in 2-6 hours. Other members of the *Enterobacteriaceae*, such as *Klebsiella* and *Enterobacter*, exhibit a delayed urease reaction which may require 24-48 hours of incubation.

INTERPRETATION OF THE TEST

Positive Test - Intense pink-red color development
Negative Test - No color change

QUALITY CONTROL

All lot numbers of Urea Agar have been tested using the following quality control organisms and have been found to be acceptable. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, patient results should not be reported.

CONTROL

Cryptococcus neoformans ATCC®34877
Proteus mirabilis ATCC®12453
Escherichia coli ATCC®25922

INCUBATION

Ambient, 24-48 h @ 25-30°C
Ambient, 18-24 h @ 33-37°C
Ambient, 18-24 h @ 33-37°C

RESULTS

Positive
Positive
Negative

LIMITATIONS

1. Urea test media rely on demonstration of alkalinity and are not specific for detection of urease activity. Peptones in the media may be hydrolyzed releasing amino acid residues, raising the pH, and resulting in false-positive reactions. A control test using the same test medium without urea can be used to facilitate interpretation of questionable reactions.⁴
2. For Urea Agar results to be valid for rapid urease-positive organisms (e.g., *Proteus* spp.), the slant should be read within the first 2-6 hours after inoculation/incubation.³

BIBLIOGRAPHY

1. Christensen, W.B. 1946. J. Bacteriol. 52:461-466.
2. Ewing, W.H. 1986. Identification of Enterobacteriaceae. 4th ed. Elsevier, New York, NY.
3. MacFaddin, J.F. 2000. Biochemical Tests for Identification of Medical Bacteria. 3rd ed. Lippincott Williams & Wilkins, Philadelphia, PA.
4. MacFaddin, J.F. 1985. Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria. Vol. 1. Williams & Wilkins, Baltimore, MD.
5. Larone, D.H. 2002. Medically Important Fungi, A Guide to Identification. 4th ed. ASM Press, Washington, D.C.

Refer to the front of Remel *Technical Manual of Microbiological Media* for **General Information** regarding precautions, product storage and deterioration, specimen collection, storage and transportation, materials required, quality control, and limitations.

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remel

12076 Santa Fe Drive, Lenexa, KS 66215, USA

General Information: (800) 255-6730 Website: www.remel.com Email: remel@remel.com
Local/International Phone: (913) 888-0939 International Fax: (913) 895-4128