Urea Agar Slant

Intended Use
Urea Agar Slant is used for detection of urease production, particularly by the genus *Proteus*.

Summary
Christensen devised Urea Agar Base for use as a solid medium for the differentiation of Enteric Bacilli. It differentiates between rapid urease-positive organisms (*Proteus* species, *Morganella morganii* subspecies *morganii*, *Providencia rettgeri* and some *Providencia stuartii*) and other urease-positive organisms: *Citrobacter*, *Enterobacter* and *Klebsiella* and bacteria other than *Enterobacteriaceae*, i.e., some *Bordetella* and *Brucella* species. Urea Agar Base is included in the Bacteriological Analytical Manual for food and cosmetics testing, in IP and is recommended by APHA for the examination of foods.
Rustigian and Stuart had originally formulated Urea Broth to differentiate *Proteus* species from other Gram-negative enteric bacilli capable of utilizing urea; the latter were unable to do so because of limited nutrients and the high buffering capacity of the Urea Broth. To provide a medium with greater use Christensen devised Urea Agar Base with the addition of peptone, dextrose and reduced content of buffer to promote rapid growth of many of the *Enterobacteriaceae* and permit a reduction in incubation time.

Principle
Peptone 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.

Formula*

Ingredients	g/L
Sodium Chloride	5.0
Disodium Phosphate	1.2
Dextrose	1.0
Peptone	1.0
Mono Potassium Phosphate	0.8
Phenol Red	0.012
Agar	15.0
Urea 40%	50 mL
Final pH (at 25°C)	6.8 ± 0.2

*Adjusted to suit performance parameters.

Directions
1. Bring the Urea Agar Slant to the room temperature 22°C-30°C.
2. Use Urea Agar Slant as per required application.

Quality Control
Appearance: Yellow orange coloured, clear to slightly opalescent smooth slants.
Cultural Response: Cultural characteristics observed after an incubation of 18-24 hours at 30°C-35°C.

Organism (ATCC)	Growth	Urease
Escherichia coli (25922)	Good	-
Salmonella enterica subsp. *enterica* serovar *Typhimurium* (14028)	Good	-
Klebsiella aerogenes (13048)	Good	-
Proteus hauseri (13315)	Good	+

Key:
+ = Positive (Pink colouration)
- = Negative (No change in colour)

Storage and Stability

1. Store the ready to use Urea Agar Slant at 15°C-25°C in a cool, dry place away from light.
2. Stability of the kit is as per expiry date mentioned on the label.

Precautions/Limitations

1. Do not reheat the medium as urea decomposes very easily.
2. The alkaline reaction produced in this medium after prolonged incubation may not be caused by urease activity. False positive reactions may occur due to the utilization of peptones (*P. aeruginosa* for e.g.) or other proteins, which raises the pH due to protein hydrolysis, and the release of excess amino acid residue. To eliminate possible protein hydrolysis, perform a control test without urea.
3. Urea Agar rapidly detects urease activity of only the urease positive *Proteus* species. For results to be valid for the detection of *Proteus*, the results must be read within first 2-6 hours after incubation.
4. Urease positive *Enterobacter, Citrobacter* or *Klebsiella* in contrast, hydrolyze urea much more slowly, showing only slight reaction into the butt of the medium in 6 hours and requiring 3-5 days to change the reaction of the entire butt.

Warranty

This product is designed to perform as described on the label and package insert. The manufacturer disclaims any implied warranty of use and sale for any other purpose.

Reference

1. Christensen WB; 1946, J. Bact; Vol. 52:461.
2. US Food and Drug Adm; 1998, Bacteriological Analytical Manual, 8th Ed; Rev. A, AOAC, International, Gaithersburg, Md.
3. IP, 1996, Ministry of Health and Family Welfare, Govt. of India, Vol. 2.
4. Downes and Ito (ed.) 2001, Compendium of Methods for The Microbiological Examination of Foods, 4th edition, APHA Washington DC.
5. Rustigian and Stuart, 1941, Proc. Soc. Exp. Bio. Med; 47: 108.
6. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	Product Description	Pack Size
203210040012	Ready Prepared Slant	12 Slants