STANTON TERRITORIAL HEALTH AUTHORITY

Yellowknife, Northwest Territories

TITLE: Urea	**Revision Date:** 20-April-2018	**Issue Date:** 20-April-2016
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Distribution: Microbiology Test Manual	**Page:** 1 of 4	
Approved by: S. Asmussen, Manager of Diagnostic Services	**Signed by:** 	

PURPOSE:

Urea medium is used to determine the ability of an organism to split urea by the action of the enzyme urease. This test can be used as part of the identification of several genera and species of *Enterobacteriaceae,* including *Proteus*, *Klebsiella*, and some *Yersinia* and *Citrobacter* species, as well as some *Corynebacterium* species. It is also useful to identify *Cryptococcus spp*. and *Brucella,* which produce the urease enzyme.

PRINCIPLE:

Urea medium contains urea and the pH indicator phenol red. Many organisms, especially those that infect the urinary tract, have a urease enzyme, which is able to split urea in the presence of water to release two molecules of ammonia and carbon dioxide. The ammonia combines with the carbon dioxide and water to form ammonium carbonate, which turns the medium alkaline, turning the indicator from its original **orange-yellow** colour to **bright pink**.

SAMPLE INFORMATION:

Type	Well isolated colonies
Source	18-24 hour culture

REAGENTS and/or MEDIA:

Type	Urea Agar Slant
Source	Oxoid Catalog # MT2119
Storage	Store at 2-8°C away from direct light.
Criteria for rejection	Do not use if there are signs of contamination or deterioration

and follow up action	(shrinking, cracking, evaporation, discoloration).

SUPPLIES:

- Inoculating wire/loop
- 35°C ambient air incubator

SPECIAL SAFETY PRECAUTIONS:

Containment Level 2 facilities, equipment, and operational practices for work involving infectious or potentially infectious materials or cultures.

- Lab gown must be worn when performing activities with potential pathogens.
- Gloves must be worn when direct skin contact with infected materials is unavoidable.
- Eye protection must be used where there is a known or potential risk of exposure to splashes.
- All procedures that may produce aerosols, or involve high concentrations or large volumes should be conducted in a biological safety cabinet (BSC).
- The use of needles, syringes, and other sharp objects should be strictly limited.

QUALITY CONTROL:

This medium is considered exempt from User QC testing according to CLSI M22-A3.

PROCEDURE INSTRUCTIONS:

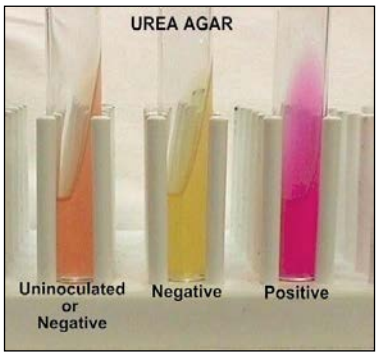
Step	Action
Performing an Urea Slant	
1	In the plate log, Order **^UREA**
2	Prior to inoculation, the medium should be brought to room temperature.
3	Pick up colonies with a sterile wire or loop and using a fishtail motion, cover the entire

	slant. Do not stab the butt.
4	Incubate aerobically, with cap loosened, at 35°C for up to 6 days.
5	Examine daily for colour change.

INTERPRETATION OF RESULTS:

Positive: Intense **pink-red** colour

Negative: No colour change or change to pale yellow



NOTES AND PRECAUTIONS:

1. A rapid positive test is a positive reaction in 1-6 hours and is usually indicative of Proteus species. A delayed positive is indicated by a pink colour development in 1-6 days.
2. Failure to incubate with caps loose may lead to erroneous results.
3. This medium should not be used to determine the absolute rate of urease activity. Organisms vary in their capability and speed of hydrolysis.
4. When performing overnight tests from medium that contains peptone, the alkaline reaction may not be due to urease but to hydrolysis of peptone.

REFERENCES:

1. Urea Media Technical Data Sheet #795 REV.2, PML microbiologicals, Inc., 2001
2. Clinical Microbiology Procedures Handbook, Third Edition, Lynn S. Garcia - Editor in Chief, 2007
3. Quality Control for Commercially Prepared Microbiological Culture Media, Approved Standard-Third Edition, NCCLS document M22-A3, Vol.24 No.19, 2004

REVISION HISTORY:

REVISION	DATE	Description of Change	REQUESTED BY
1.0	31Dec2013	Initial Release	A.Darrach
2.0	31Mar2016	Update of “Special Safety Precautions” to reflect risk assessment recommendations.	C. Russell