Urea indole medium (UI-F)

IVD

Detection of Urease, Indole and TDA characteristics

SUMMARY AND EXPLANATION

This medium enables the detection of the presence of urease or tryptophan deaminase (TDA) and the production of indole in enterobacteria (1). It thus enables the presumptive differentiation of bacteria possessing these characteristics (2).

PRINCIPLE

The degradation of urea by bacteria possessing urease is accompanied by alkalinization, causing the color indicator (phenol red) to change to reddish purple.
The medium contains L-tryptophan (1):

- its degradation by bacteria possessing tryptophanase is accompanied by the production of indole, detected using Kovacs' reagent: in the case of a positive indole reaction, a red ring appears on the surface of the broth.
- its degradation by bacteria possessing tryptophan deaminase is accompanied by the production of indole-pyruvic acid, detected by the appearance of a brown color with the use of an iron perchloride solution.

CONTENT OF THE KIT

	Ready-to-use medium
REF 55752	10 x 10 ml bottles

COMPOSITION

Theoretical formula.

This medium can be adjusted and/or supplemented according to the performance criteria required:

L-Tryptophan	3 g
Monopotassium phosphate	1 g
Dipotassium phosphate	1 g
Sodium chloride	5 g
Urea	20 g
Phenol red	0.025 g
95% alcohol	0.01 mL
Purified water	1 L

pH 6.7

REAGENTS AND MATERIALS REQUIRED BUT NOT PROVIDED

Reagents:

- Kovacs' reagent (Ref. 55631)
- Indole TDA ID reagent (Ref. 56541)

Material:

- Bacteriology incubator
- Graduated pipettes
- Test tubes

WARNINGS AND PRECAUTIONS

- **For *in vitro* diagnostic use only.**
- **For professional use only.**
- All specimens, microbial cultures and inoculated products should be considered infectious and handled appropriately. Aseptic technique and usual precautions for handling the bacterial group studied should be observed throughout this procedure. Refer to "CLSI® M29-A, *Protection of Laboratory Workers From Occupationally Acquired Infections*; *Approved Guideline* – Current Revision". For additional information on handling precautions, refer to "Biosafety in Microbiological and Biomedical Laboratories – CDC/NIH – Latest edition", or the current regulations in the country of use.
- Do not use reagents after the expiry date.
- Do not use bottles which show signs of contamination.
- Before use, check that the cap is intact.
- Microscopic elements, possibly coming from dead microorganisms, may be observed in the broth, but this does not alter the performance of the medium.
- The performance data presented were obtained using the procedure indicated in this package insert. Any change or modification in the procedure may affect the results.
- Interpretation of the test results should be made taking into consideration colonial and microscopic morphology and the results of any other tests performed.

STORAGE CONDITIONS

Store the bottles at 2-8°C until the expiry date.

SPECIMENS

The medium is inoculated with a strain to be tested.

INSTRUCTIONS FOR USE

1. **Allow bottles to come to room temperature.**
2. Dispense the medium into sterile test tubes (1 mL per tube).
3. Prepare a suspension of the organism to be tested in 1 mL of sterile demineralized water. The suspension must be equivalent to a no. 2 McFarland turbidity standard.
4. Inoculate 1 drop (= 50 µL) of this suspension into 2 test tubes containing urea indole medium.
5. Incubate the tubes at 37°C for 24 hours. The user is responsible for choosing the appropriate temperature for the intended use, in accordance with current standards.

READING AND INTERPRETATION

Detection of urease and indole production (tube No. 1)

- The presence of urease is characterized by a spontaneous change of color of the medium to reddish purple (alkalinization).
- Indole production is characterized by the appearance of a red ring on the surface of the medium, detected by adding 4 to 5 drops of Kovacs' reagent.

Detection of TDA (tube No. 2)

- The presence of TDA is characterized by an immediate change of color of the medium from light brown to reddish brown, with or without a precipitate, detected by the addition of 7 or 8 drops of R2 reagent from the ID Indole TDA pack.

QUALITY CONTROL

Protocol:

The characteristics tested for may be detected using the following strains:

- *Escherichia coli* ATCC® 25922™
- *Proteus mirabilis* ATCC® 12453™

Expected results at 33-37°C:

Strain	Urease	Indole	TDA
Escherichia coli ATCC® 25922™	-	+	-
Proteus mirabilis ATCC® 12453™	+	-	+

Note:

It is the responsibility of the user to perform Quality Control taking into consideration the intended use of the medium, and in accordance with any local applicable regulations (frequency, number of strains, incubation temperature, etc.).

LIMITATIONS OF THE METHOD

In case of suspected *Yersinia*, to increase the sensitivity of the test it is recommended to prepare a suspension of the organism in 1 mL of sterile demineralized water. The suspension must be equivalent to a no. 4 McFarland turbidity standard. Then inoculate 200 µL of this suspension into 2 test tubes containing urea indole medium.

PERFORMANCE

The 3 characteristics were evaluated at 37°C using 20 strains of enterobacteria.

Results:

Nine strains caused the medium to change color to red, revealing the presence of urease.
Indole production was observed for 10 enterobacteria with the appearance of a red ring.
Six bacterial strains caused the medium to change color to brown, characteristic of the presence of tryptophan deaminase.

WASTE DISPOSAL

Unused reagents may be considered as non hazardous waste and disposed of accordingly. Dispose of used reagents as well as any other contaminated disposable materials following procedures for infectious or potentially infectious products.
It is the responsibility of each laboratory to handle waste and effluents produced according to their nature and degree of hazardousness and to treat and dispose of them (or have them treated and disposed of) in accordance with any applicable regulations.

LITERATURE REFERENCES

1. RICHARD C. - Techniques de recherche d'enzymes utiles au diagnostic de bactéries à Gram négatif – *Ann. Biol. Clin.*, 1978, vol. 36, p. 407-424.
2. ROLAND F., BOURBON D., SZTRUM S., Différenciation rapide des enterobactériacées sans action sur le lactose, *Ann. Inst. Pasteur*, 1947, vol. 73, p. 914 - 916.
3. MURRAY P.R., BARON E.J., PFALLER M.A. et al. - 1995 – *Manual of clinical microbiology, 6th ed*. - American Society for Microbiology, Wahington, D.C. – ISBN 1-55581-086-1.

INDEX OF SYMBOLS

Symbol	Meaning
REF	Catalog number
IVD	*In Vitro* Diagnostic Medical Device
	Manufacturer
	Temperature limit
	Use by date
LOT	Batch code
	Consult Instructions for Use
	Date of manufacture

REVISION HISTORY

Change type categories

N/A	Not applicable (First publication)
Correction	Correction of documentation anomalies
Technical change	Addition, revision and/or removal of information related to the product
Administrative	Implementation of non-technical changes noticeable to the user
Note:	*Minor typographical, grammar, and formatting changes are not included in the revision history*

Release date	Part Number	Change Type	Change Summary
2015/10	08540**F**	Technical change	INSTRUCTIONS FOR USE, LIMITATIONS OF THE METHOD
		Administrative	INDEX OF SYMBOLS, REVISION HISTORY

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