

Urea Indole Broth ISO

Cat. 1227

For the differentiation of Enterobacteria on the basis of urease and indole production and the transdeamination of tryphophan (TDA).

Practical information

Applications	Categories
Confirmation	Enterobacteria

Industry: Food

Regulations: ISO 10273

Principles and uses

Urea Indole Broth can be used for the determination of urease and indole production by Enterobacteriaceae as well as microorganisms of the families of Brucella, Bacillus, Micrococcus, Mycobacteria and Proteus.

L-Tryptophan is an essential amino acid and is converted to skatole and indole. Sodium chloride maintains the osmotic balance. Potassium phosphates act as a buffer system. Urea is a source of nitrogen for those organisms producing urease. Phenol red is the pH indicator.

This medium is recommended for the presumptive identification of Yersinia enterocolitica.

Formula in g/L

Dipotassium phosphate	1	Monopotassium phosphate	1
Phenol red	0,025	Sodium chloride	5
Urea	20	L-Tryptophan	3

Preparation

Suspend 30 grams of the medium in one liter of distilled water. Mix well. Add 10 ml of 95% ethanol. Dispense in 1-5 ml amounts into sterile tubes. AVOID OVERHEATING. DO NOT AUTOCLAVE.

If desired add 2 g/L of agar for the detection of bacterial motility

Instructions for use

- Prepare a heavy suspension of the organism isolated from plated media.
- Inoculate the Urea Indole Broth tubes.
- Incubate at 35±2 °C for 18-24 hours.
- Observe at 3-4 hours for any positive urease in tubes that turn the indicator a deep violet red color (alkalinization), typical of Proteus or Yersinia. Klebsiella and some Citrobacter develop positive tubes after 18 hours.
- Indole production is determined by adding a few drops of Kovacs Reagent (Cat. 5205). A positive test is indicated by the development of a red color in the reagent layer.
- Tryptophan deaminase (TDA) is demonstrated by adding to a 24 hours culture a few drops of a 30% solution, diluted 1:3. of iron perchloride. The appearance of a brown or red-brown color indicates a positive TDA.
- For the presumptive identification of Yersinia enterocolitica. Inoculate and incubate at 30 °C for 24 hours. If the medium is not inoculated with a sufficient quantity of inoculum, it is possible to find false negatives.

CHARACTERISTICS OF THE BACTERIA

Escherichia coli : Urea (-), Indole (+), TDA (-).
 Shigella dysenteriae, boydii, flexneri: Urea (-), Indole (variable), TDA (-).
 Shigella sonnei: Urea (-), Indole (-), TDA (-).
 Salmonella: Urea (-), Indole (-), TDA (-).
 Salmonella arizonae SG III: Urea (-), Indole (-), TDA (-).
 Citrobacter: Urea (-), Indole (-), TDA (-).
 Edwardsiella: Urea (-), Indole (+), TDA (-).

Proteus vulgaris: Urea (+), Indole (+), TDA (+).
 Proteus rettgeri: Urea (+), Indole (+), TDA (+).
 Proteus morganii: Urea (+), Indole (+), TDA (+).
 Proteus mirabilis: Urea (+), Indole (-), TDA (+).
 Providencia: Urea (-), Indole (+), TDA (+).
 Yersinia enterocolitica: Urea (+), Indole (variable), TDA (-).
 Y. pseudotuberculosis: Urea (+), Indole (-), TDA (-).
 Klebsiella pneumoniae: Urea (+ slow), Indole (-), TDA (-).
 K. oxytoca: Urea (+ slow), Indole (+), TDA (-).
 Enterobacter aerogenes: Urea (-), Indole (-), TDA (-).
 E. cloacae, E. hafniae: Urea (-), Indole (-), TDA (-).
 E. agglomerans: Urea (-), Indole (variable), TDA (-).
 Serratia marcescens, liquefaciens: Urea (-), Indole (-), TDA (-).

Quality control

Solubility	Appearance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25°C)
w/o rests	Fine powder	Pink	Orange	6,8±0,2

Microbiological test

Incubations Conditions: (35±2 °C / 18-24 h)

Microorganisms	Specification
Proteus vulgaris ATCC 13315	Urease (+), Indole (+)
Klebsiella pneumoniae ATCC 13883	Urease (+), Indole (-)
Salmonella typhimurium ATCC 14028	Urease (-), Indole (-)
Yersinia enterocolitica ATCC 23715	Urease (+), Indole (±)
Escherichia coli ATCC 25922	Urease (-), Indole (+)

Storage

Temp. Min.: 2 °C
 Temp. Max.: 25 °C

Bibliography

Roland F. Bourbon D, Sztrum S. Ann. Inst. Pasteur, 73. 914-916.
 ISO 10273:2003 Microbiology of food and animal feeding stuffs — Horizontal method for the detection of presumptive pathogenic Yersinia enterocolitica.