

Urea-Indole/Broth

356-3713
356-3714

DEFINITION

Medium used as a biochemical test in the identification of enterobacteria.

PRESENTATION

Ready-to-use

Pack: 1 ml x 50 vials

code 356-3713

Pack: 10 ml x 10 vials

code 356-3714

STORAGE

- Ready-to-use: + 2°C to 8°C.
- Expiration date and batch number are shown on the package.

THEORETICAL FORMULA

L-Tryptophan	0.3 g
KH ₂ PO ₄	0.1 g
K ₂ HP0 ₄	0.1 g
NaCl	0.5 g
Urea	2.0 g
95° alcohol	1.0 ml
1% Phenol red	0.25 ml
Distilled water	100 ml

Final pH (25°C) = 6.8 ± 0.2

OTHER PRODUCTS REQUIRED (NOT SUPPLIED)

- **Kovacs reagent** code 355-5313
- Iron perchloride

EQUIPMENT REQUIRED (NOT SUPPLIED) (non-exhaustive)

- Sterile pipettes (0.1 ml, etc)
- Hemolysis tubes
- Thermostatically-controlled incubator or incubation room, precise to ± 0.5°C, depending on the temperature of incubation
- All usual laboratory equipment

PROTOCOL

Inoculation and incubation

Urea-Indole medium enables detection of:

- **UREASE**
- **INDOLE PRODUCTION**
- **TRYPTOPHAN DESAMINASE (TDA)**

Under sterile conditions, dispense 0.25 to 0.50 ml of Urea-Indole medium in hemolysis tubes, each tube being used for the examination of different strains and/or different tests:

A first tube can be used to detect urease and indole production in a given strain;

A second tube is reserved for the detection of TDA in this same strain;

Inoculate each tube abundantly from a culture taken from an agar medium (e.g. a whole colony taken from an isolation medium).

Incubate in the incubator, or better still on a water-bath at 37°C ± 1°C.

READING AND INTERPRETATION

• Bacteria possessing urease

The medium becomes alkaline due to the formation of ammonium carbonate and turns a violet-red color:

- in 5 to 10 minutes for *Proteus morganii* and *Yersinia enterocolitica*,
- in 2 to 4 hours for other *Proteus*,
- in 12 to 18 hours for *Klebsiella* and some *Citrobacter*.

• No urease

The color of the medium remains unchanged.

• Detection of indole production

After 24 hours incubation, pour 4 to 5 drops of Kovacs reagent into the tube of inoculated Urea-Indole medium: the presence of indole is revealed by the appearance of a red coloration on the surface.

• Test for TDA

After 24 hours incubation, pour pharmaceutical-grade iron perchloride, diluted to 1/3 (100 µl for 500 µl of medium) in the tube of inoculated Urea-Indole medium reserved for this purpose:

- reddish-brown coloration: TDA +
- orangey-yellow coloration: TDA –

Based on the results obtained, identification can be carried out with the help of Table 1 (*next page*).

PRECAUTIONS

Comply with Good Laboratory Practice.

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Table I

	Urease	TDA	Indole
<i>Salmonella SE I in general</i>	-	-	-
<i>S.typhi</i>	-	-	-
<i>S.paratyphi A</i>	-	-	-
<i>S.arizona SE III</i>	-	-	-
<i>Citrobacter</i>	+	-	-
<i>Edwardsiella</i>	-	-	+
<i>Escherichia coli</i>	-	-	+
<i>Alkalescens</i>	-	-	+
<i>S.dysenteria</i>	-	-	d
<i>S.boydii, flexneri</i>	-	-	d
<i>S.sonnei</i>	-	-	-
<i>Proteus vulgaris</i>	+	+	+
<i>Proteus mirabilis</i>	+	+	-
<i>Proteus rettgeri</i>	+	+	+
<i>Proteus morgani</i>	+	+	+
<i>Providencia</i>	-	+	+
<i>Levinea</i>	-	-	+
<i>Y.enterocolitica</i>	+	-	d
<i>Y.pseudotuberculosis</i>	+	-	-
<i>K.pneumoniae</i>	+ slow	-	-
<i>K.oxytoca</i>	+ slow	-	+
<i>E.aerogenes</i>	-	-	-
<i>K.ozonae</i>	d	-	-
<i>K.rhinoscleromatis</i>	-	-	-
<i>E.cloacae</i>	-	-	-
<i>E.agglomerans</i>	-	-	-
<i>Hafnia alvei</i>	-	-	-
<i>Serratia marcescens and liquefaciens</i>	-	-	-
<i>V. parahaemolyticus</i>	-	-	+

PERFORMANCES / QUALITY CONTROL OF THE TEST

The growth performances of the media are verified with the following strains:

STRAINS	Results after 24h culture at 37°C		
	Urease	TDA	Indole
<i>Escherichia coli</i> ATCC 25922	-	-	+
<i>Klebsiella pneumoniae</i> ATCC 13883	+	-	-
<i>Salmonella</i> <i>Typhimurium</i> ATCC 14028	-	-	-
<i>Proteus vulgaris</i> ATCC 13315	+	+	+
<i>Proteus mirabilis</i> ATCC 25933	+	+	-

QUALITY CONTROL OF MANUFACTURER

Every product manufactured and marketed by Bio-Rad is subject to a quality-assurance procedure at all stages, from the reception of raw materials to the marketing of the end-product. Each batch of finished product undergoes quality control and is marketed only if it satisfies the acceptability criteria.

Documentation relative to the production and control of each batch is kept on file.

KEY WORDS

Urea - Indole / *Enterobacteria* / Biochemical test Identification / Medium.