UREA BROTH BASE

UBBA-00I-500

- **Principle**

Urea Broth Base, originally developed by Rustigian and Stuart (1941), is a differential medium used for the detection of urease activity in Gram-negative enteric bacilli. It is particularly useful for distinguishing rapidly urease-positive organisms, such as Proteus species, from urease-negative enteric pathogens including Salmonella and Shigella in routine clinical bacteriology.

The medium is formulated as a nutrient-limited and strongly buffered system to ensure that pH changes occur primarily because of urea hydrolysis rather than from other metabolic reactions. It contains yeast extract as a source of carbon, nitrogen, vitamins and essential growth factors. Monobasic and dibasic potassium phosphates provide buffering capacity and help maintain stability of the medium during incubation. Phenol red is incorporated as the pH indicator.

Following supplementation with urea, organisms producing urease catalyse the hydrolysis of urea in the presence of water, releasing ammonia and carbon dioxide. The ammonia raises the pH and leads to the formation of alkaline products, causing a colour change of the medium from light orange to magenta pink. Rapid urease-positive organisms typically produce a strong positive reaction, turning the entire broth pink within 24 hours, whereas urease-negative organisms show little or no colour change.

- **Regulatory compliance**

This product is manufactured under a quality management system in accordance with ISO 9001 and ISO 13485, and its formulation and quality control comply with applicable international standards, such as ISO 11133, where relevant.

- **Composition**

Ingredients	**g/L**
Yeast Extract	0.10
Monobasic Potassium Phosphate	9.10
Dibasic Potassium Phosphate	9.50
Phenol Red	0.01

- **Preparation**

Dissolve 18.70 grams in 950 ml distilled water, boil to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure at 121 °C for 15 minutes. Allow to cool the medium and aseptically add 50ml of sterile 40% urea solution. Mix well and distribute in sterile test tubes and inoculate test sample aseptically.

- **Applications and use**

Recommended for the detection of urease activity and for the differentiation of Proteus species and other urease-positive organisms from urease-negative enteric bacteria in clinical

microbiology, particularly as part of routine biochemical identification schemes following primary isolation.

- **Quality control**

Solubility	w/o rests
Appearance	Fine powder
Colour of the dehydrated medium	Light orange to pink
Colour of the prepared medium	Yellow-orange
Final pH (25 °C)	6.8 ± 0.2

- **Microbiological test**

Cultural characteristics observed after incubation at 33-37°C for 18-24 hours.

Microorganism	ATCC	Inoculum	Growth	Urease test
Proteus mirabilis	12.453	50-100	Good	Positive reaction
Escherichia coli	8.739	50-100	Good	Negative reaction
Klebsiella aerogenes	13.048	50-100	Good	Negative reaction
Salmonella typhimurium	14.028	50-100	Good	Negative reaction

- **Storage**

The product is highly hygroscopic; keep the container always closed and store it properly as per the conditions mentioned on the label. The declared expiry is valid only when stored as per the conditions mentioned on the label. Temp. Min.:2 °C Temp. Max.:25 °C.

Note: Sterilize media immediately after reconstitution.

- **Bibliography**

Atlas, R. M. (2005). Handbook of media for environmental microbiology. CRC press.

Difco Manual (1998). 11th Edition. Difco Laboratories., Division of Becton Dickinson and Company, Sparks, Maryland, USA.

MacFaddin J. F, (1985), Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williamsand Wilkins, Baltimore, Md.

Rustigian Robert, and Stuart C. A., (1941) Decomposition of Urea by Proteus. Proceedings of the Society for Experimental Biology and Medicine, Volume: 47 issues: 1, 108-112

- **Product use limitation**

This product is developed, designed and supplied exclusively for research use only. It is not intended for diagnostic applications or drug development, and it is not suitable for administration to humans or animals.