MIU AGAR BASE (MOTILITY INDOLE UREA)

MUIA-0EP-500

- **Principle**

Motility Urea Indole Agar Base is a differential medium used for the determination of motility, urease activity and indole production, mainly for the identification of Enterobacterales and other Gram-negative bacilli. The semi-solid nature of the medium allows evaluation of motility, while incorporated substrates support the detection of characteristic enzymatic reactions.

The medium contains L-tryptophan as the substrate for indole production, dextrose as a carbon and energy source, and sodium chloride to maintain osmotic balance. It is typically supplemented with urea, which is hydrolysed by urease-positive organisms to ammonia, increasing the pH and producing a pink colour change in the presence of phenol red. Urease-negative organisms leave the medium light orange.

Indole production is detected by the addition of Kovacs reagent; a pink to red colour in the reagent indicates a positive result. Motility is interpreted by growth spreading away from the stab line. If a single tube is used, the urease reaction should be read before adding Kovacs reagent, as the reagent may interfere with the colour of the medium.

- **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**
L-Tryptophan	10.00
Dextrose	1.00
Sodium Chloride	5.00
Phenol Red	0.01
Agar	2.00

- **Preparation**

Dissolve 1.80 grams in 95.00 ml distilled water. Boil to dissolve all the ingredients completely. Sterilize the medium by autoclaving at 121 °C for 15 minutes at 15lbs. Allow to at 40-50 °C and aseptically add 5 ml of sterile 40% urea solution. Mix well and distribute in sterile test tubes. Allow to solidify in an upright position and inoculate test sample aseptically.

- **Applications and use**

Motility Urea Indole Agar is used for the presumptive identification and differentiation of Gram-negative bacilli, particularly members of the Enterobacterales. It is widely applied in clinical

microbiology laboratories for the biochemical characterisation of isolates obtained from clinical specimens such as urine, stool, wound swabs and blood cultures.

The medium is especially useful in distinguishing closely related genera and species based on their motility, urease activity and ability to produce indole. It aids in the differentiation of organisms such as *Escherichia coli*, *Klebsiella* spp., Proteus spp., *Morganella* spp., *Providencia* spp. and Enterobacter spp. It is also employed as part of routine identification schemes in food, environmental and water microbiology when enteric bacteria are being investigated.

- **Quality control**

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

- **Microbiological test**

Cultural characteristics observed with added 40% Urea solution after incubation at 35-37°C for 18-24 hours. Inoculum 50-100 CFU.

Microorganism	ATCC	Growth	Urease activity	Indole production	Motility
Proteus vulgaris	13315	Luxuriant	Positive (pink)	Positive (Pinkish)	Positive, growth away from stab line
Proteus mirabilis	12453	Luxuriant	Positive (pink)	Negative	Positive, growth away from stab line
Salmonella typhimurium	14028	Luxuriant	Negative	Negative	Positive, growth away from stab line

- **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**

Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.

- **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.