

Technical Information

Urea Broth Medium 18

Product Code: DM 1111M

Application: Urea Broth Medium 18 is recommended for the identification of bacteria on the basis of urea utilization, specifically for the differentiation of *Proteus* species from *Salmonella* and *Shigella* species in accordance with Indian Pharmacopoeia.

Composition**

| Ingredients | Gms / Litre |
|---------------------------------------|-------------|
| Potassium dihydrogen orthophosphate | 9.100 |
| Yeast extract | 0.100 |
| Anhydrous disodium hydrogen phosphate | 9.500 |
| Urea | 20.000 |
| Phenol red | 0.010 |

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Urea Broth Medium 18 was developed by Rustigian and Stuart ⁽¹⁾ Based on urea utilization ^(3, 4) this medium is especially recommended by Indian Pharmacopoeia ⁽⁵⁾ for the differentiation of *Proteus* species from *Salmonella* and *Shigella* species in the diagnosis of enteric infection ⁽²⁾. It is also recommended for microbial limit tests. Other Gram-negative enteric bacilli are unable to utilize urea and fail to grow because of reduced availability of other nutrients.

Urea Broth Medium becomes alkaline as indicated by pink red colour due to the utilization of urea by the organisms & liberating ammonia during incubation, All urea test media rely on the alkalinity formation and are not specific for urease testing. Yeast extract provides essential vitamins and other growth factors. Phosphates aids as good buffering agent.

The utilization of proteins may raise the pH to alkalinity due to protein hydrolysis and excess of amino acids results in false-positive reaction. This medium shows positive reaction with Genus *Proteus* and few species of *Providencia* and *Morganella*.

Methodology

Suspend 38.71 grams of powder media in 1000 ml purified/ distilled water. Mix well to dissolve the medium completely and sterilize by filtration. DO NOT AUTOCLAVE OR HEAT the medium. Aseptically dispense in sterile tubes as desired.

Quality Control

Physical Appearance

Light yellow to light pink homogeneous free flowing powder

Colour and Clarity of prepared medium

Yellow orange coloured clear solution

Growth Promotion Test

Growth Promotion is carried out in accordance with Indian Pharmacopoeia.

Cultural Response/Characteristics

DM 1111M: Cultural characteristics observed after an incubation at 36-38°C for 18-24 hours.

| Organism | Inoculum (CFU) | Urease |
|--|----------------|----------------------------------|
| <i>Enterobacter aerogenes</i> ATCC 13048 | 50-100 | Negative reaction, no change |
| <i>Salmonella Typhimurium</i> ATCC 14028 | 50-100 | Negative reaction, no change |
| <i>Proteus vulgaris</i> ATCC 13315 | 50-100 | Positive reaction, cerise colour |
| <i>Klebsiella pneumonia</i> ATCC 13883 | 50-100 | Negative reaction, no change |
| <i>Escherichia coli</i> ATCC 8739 | 50-100 | Negative reaction, no change |
| <i>Klebsiella pneumonia</i> ATCC 10031 | 50-100 | Negative reaction, no change |
| <i>Escherichia coli</i> NCTC 9002 | 50-100 | Negative reaction, no change |



Dehydrated Culture Media
Bases / Media Supplements

Storage and Shelf Life-

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.

Prepared Media: 2-8^o in sealable plastic bags for 2-5 days.

Further Reading

1. Rustigian and Stuart, 1941, Proc. Soc. Exp. Biol. Med., 47:108.
2. Forbes, B.A.; Sahm, D.F. and Weissfeld, A.S., 2002, Bailey and Scott's Diagnostic Microbiology, 11th ed., The C.V. Mosby Co., St. Louis.
3. Christensen, 1946, J. Bact., 52:461.
4. MacFaddin J., 2000, Biochemical Tests for Identification of Medical Bacteria, 3rd ed., Williams and Wilkins, Baltimore.
5. Indian Pharmacopoeia, 2007 Govt. of India, Ministry of Health and Family Welfare, New Delhi, India.

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