ARENA BioScien

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Endo Agar

For confirmation of the presumptive test for members of the coliform group from clinical and non-clinical samples.

REF: BS.1/EN01.100.0100	100 Gram	REF: BS.1/EN01.250.0250	250 Gram
REF: BS.1/EN01.500.0500	500 Gram		

CLINICAL SIGNIFICANCE [1]

Endo Agar was developed by Endo to differentiate gram-negative bacteria on the basis of lactose fermentation, while inhibiting gram-positive bacteria (1). Inhibition of the later was achieved without the use of bile salts as was traditionally used. Endo was successful in inhibiting gram-positive bacteria on his medium by the incorporation of sodium sulphite and basic fuchsin. The resulting Endo Agar, also known as Fuchsin Sulphite and Infusion Agar, was used to isolate the typhoid bacilli. Many modifications of this media have been done over the years. Endo Agar is recommended by APHA as an important medium in the microbiological examination of water and wastewater, dairy products and foods (2,3,4).
Endo Agar is used to confirm the detection and enumeration of coliform bacteria following presumptive test of drinking water. It is also used for the detection and isolation of coliforms and faecal coliforms from milk, dairy products and food.

METHOD PRINCIPLE [2-3]

The medium contains peptone which provide nitrogen, carbon, vitamins and minerals required for bacterial growth. Sodium sulphite and basic fuchsin make this medium selective by suppressing gram-positive organisms. Coliforms produce pink colonies on fermentation of lactose while lactose non-fermenters produce colourless colonies on the medium.
With Escherichia coli. This reaction is very pronounced as the fuchsin crystallizes, exhibiting a permanent greenish metallic luster (fuchsin luster) to the colonies. Medium should be stored away from light to avoid photo-oxidation

MEDIA COMPOSITION

Item	Formula per liter of medium
- Peptone	10.00 gm
- Lactose	10.00 gm
- Dipotassium hydrogen phosphate	3.500 gm
- Sodium sulphite	2.500 gm
- Basic fuchsin	0.500 gm
- Agar	15.00 gm

PRECAUTIONS AND WARNINGS

Media to be handled by entitled and professionally educated person. Do not ingest or inhale.

Good Laboratories practices using appropriate precautions should be followed in:

- Wearing personnel protective equipment (overall, gloves, glasses,).
- Do not pipette by mouth.
- In case of contact with eyes or skin; rinse immediately with plenty of soap and water. In case of severe injuries; seek medical advice immediately.
- Respect country requirement for waste disposal.
  S56: dispose of this material and its container at hazardous or special waste collection point.
  S57: use appropriate container to avoid environmental contamination.
  S61: avoid release in environment.

For further information, refer to the Endo agar material safety data sheet.

STORAGE AND STABILITY [2]

BioScien Endo Agar dehydrated media are stable until expiration date stated on label when properly stored 10-30°C. The prepared medium should be stored at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to avoid lump development due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in a dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

Final pH 7.5 ± 0.2 at 25°C

MEDIA PREPARATION

Suspend 41.5 grams in 1000 ml purified/distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Mix well before pouring into sterile Petri plates. If the solidified culture medium is somewhat too red, then to remove the colour add a few drops (max. 1 ml/litre) of a freshly prepared 10% Sodium sulphite solution and boil.

Deterioration
The color of ***BioScien*** Endo Agar medium is Light pink to purple homogeneous free flowing powder. If there are any physical changes, discard the medium.
The hydrated medium is Orangish pink coloured, clear to slightly opalescent gel with fine precipitate forms in Petri plates, media should not be used if there are any signs of deterioration (shrinking, cracking, or discoloration), and contaminations.

SPECIMEN COLLECTION AND PRESERVATION [1-3]

Clinical samples - urine; Food and dairy samples; Water samples.

EQUIPMENT REQUIRED NOT PROVIDED

- Sterile cups
- Sterile petri-dishes
- Incubator

PERFORMANCE CHARACTERISTICS

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature

Test Organisms	Growth	Colour of Colony
Klebsiella aerogenes ATCC 29212	good-luxuriant	pink
Escherichia coli ATCC 25922	good-luxuriant	pink to rose red with metallic sheen
Klebsiella pneumoniae ATCC 13883	good-luxuriant	pink, mucoid
Enterobacter cloacae ATCC 13047	good	pink
Proteus vulgaris ATCC 13315	good-luxuriant	colourless to pale pink
Pseudomonas aeruginosa ATCC 27853	good-luxuriant	colourless, irregular
Salmonella Typhi ATCC 6539	good-luxuriant	colourless to pale pink
Staphylococcus aureus subsp.aureus ATCC 25923	*inhibited*	
Bacillus subtilis subsp. spizizenni ATCC 6633	*inhibited*	

SYMBOLS IN PRODUCT LABELLING	
IVD For in-vitro diagnostic use	Number of <n> test in the pack
LOT Batch Code/Lot number	Caution
REF Catalogue Number	Do not use if package is damaged
Temperature Limitation	Consult Instruction for use
Expiration Date	
Manufactured by	

QUALITY CONTROL

To ensure adequate quality control, it is recommended that positive and negative control included in each run. If control values are found outside the defined range, check the system performance. If control still out of range please contact ***BioScien*** technical support.

REFERENCES

1. Endo S., 1904, Zentralbl. Bakteriol., Abt. 1, Orig.35:109-11
2. Baird R.B., Eaton A.D., and Rice E.W., (Eds.), 2015, Standard Methods for the Examination of Water and Wastewater, 23rd ed., APHA, Washington, D.C.
3. Salfinger Y., and Tortorello M.L. , 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.
4. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed.,APHA Inc., Washington, D.C.
5. Isenberg, H.D. Clinical Microbiology Procedures Handb0ook. 2nd Edition.
6. 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.