PRODUCT SPECIFICATION SHEET

Endo Agar Base (DM693)

Intended Use

Endo Agar Base (DM693) is recommended for preparing Endo Agar to confirm presumptive test for lactose fermenting coliforms.

Product Summary and Explanation

The majority of the enteric plating media developed in the early years of the 20th century utilized either mixtures of bile salts or individual salts as selective agents to achieve inhibition of gram-positive species. In 1904, Endo had first developed a culture medium for differentiation of lactose fermenters and lactose non-fermenters while inhibiting gram-positive bacteria.[1] Inhibition of gram-positive microorganisms 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. The original formula has been modified extensively since its introduction. The meat infusions have been replaced by a peptic digest of animal tissue. The dye composition and concentration also have been adjusted. Endo Agar is recommended by APHA as an important medium in the microbiological examination of water and wastewater, dairy products and foods.[2-4] 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 fecal coliforms from milk, dairy products and food.

Principles of the Procedure

Endo Agar Base contains peptic digest of animal tissue which provide nitrogen, carbon, vitamins and minerals required for bacterial growth. The selectivity of Endo Agar is due to the sodium sulphite and basic fuchsin combination, which results in the suppression of gram-positive microorganisms. It is classified as only slightly selective since other media contain more potent inhibitors of the gram-positive microorganisms. Lactose fermenting coliforms produce aldehyde and acid. The aldehyde in turn liberates fuchsin from the fuchsin sulphite complex, giving rise to a red colouration of colonies. With *Escherichia coli*, this reaction is very pronounced as the fuchsin crystallizes, exhibiting a permanent greenish metallic lustre (fuchsin lustre) to the colonies.

Formula / Liter

Ingredients	Gms / Liter
Peptic digest of animal tissue	10.00
Lactose	10.00
Dipotassium phosphate	3.50
Sodium sulphite	2.50
Agar	12.00
Final pH: 7.5 ± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions

1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.
3. Basic fuchsin is a potential carcinogen and care should be taken to avoid inhalation of the powdered dye and contamination of the skin.

Directions

1. Suspend 38 grams of medium in one liter of distilled water.
2. Add 4 ml of 10% Basic Fuchsin (MS048A).
3. Heat to boiling to dissolve the medium completely.
4. Autoclave at 121°C, 15 psi pressure, for 15 minutes.
5. Mix well before pouring into sterile Petri plates.

6. 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.

Quality Control Specifications

Dehydrated Appearance	Cream to yellow homogeneous free flowing powder
Prepared Medium	After addition of MS048A: Orangish pink coloured, clear to slightly opalescent gel with fine precipitate forms in Petri plates
Reaction of 3.8% Solution	pH : 7.5 ± 0.2 at 25°C
Gel Strength	Firm, comparable with 1.2% agar gel

Expected Cultural Response: Cultural characteristics observed with added Basic fuchsin (MS048A) after an incubation at 35-37°C for 18-24 hours.

Sr. No.	Organisms	Results to be achieved			
		Inoculum (CFU)	Growth	Recovery	Colour of the colony
1.	*Bacillus subtilis ATCC 6633*	>=10 ^{3}	inhibited	0%	--
2.	*Enterobacter aerogenes ATCC 13048*	50-100	good-luxuriant	>=50%	pink
3.	*Enterococcus faecalis ATCC 29212*	50-100	none-poor	<=10%	pink, small
4.	*Escherichia coli ATCC 25922*	50-100	good-luxuriant	>=50%	pink to rose red with metallic sheen
5.	*Klebsiella pneumoniae ATCC 13883*	50-100	good-luxuriant	>=50%	pink, mucoid
6.	*Proteus vulgaris ATCC 13315*	50-100	good-luxuriant	>=50%	colourless to pale pink
7.	*Pseudomonas aeruginosa ATCC 27853*	50-100	good-luxuriant	>=50%	colourless, irregular
8.	*Salmonella Typhi ATCC 6539*	50-100	good-luxuriant	>=50%	colourless to pale pink
9.	*Shigella sonnei ATCC 25931*	50-100	good-luxuriant	>=50%	colourless to pale pink
10.	*Staphylococcus aureus ATCC 25923*	>=10 ^{3}	inhibited	0%	--
11.	*Enterobacter cloacae ATCC 13047*	>=10 ^{3}	good	40-50%	pink
12.	*Salmonella Typhimurium ATCC 14028*	50-100	good-luxuriant	>=50%	colourless
13.	*Salmonella Enteritidis ATCC 13076*	50-100	good-luxuriant	>=50%	colourless
14.	*Shigella flexneri ATCC 12022*	50-100	good-luxuriant	>=50%	colourless

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure
Refer to appropriate references for standard test procedures.

Results
Refer to appropriate references and test procedures for interpretation of results.

Storage
Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration
Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure

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1. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
2. Consult appropriate texts for detailed information and recommended procedures.

Packaging
Product Name : Endo Agar Base
Product Code : DM693
Available Pack sizes : 100gm/500gm

References

1. Endo, 1904, Zentralbl. Bakteriol., Abt. I. Orig., 35:109.
2. Eaton A. D., Clesceri L. S., Rice E. W. and Greenberg A. W., (Eds.), 2005, Standard Methods for the Examination of Water and Wastewater, 21st Ed., APHA, Washington, D.C.
3. Downes F. P. and Ito K.,(Eds.), 2001, Compendium of Methods for the Microbiological Examination of foods, 4th 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.

Further Information

For further information please contact your local MICROMASTER Representative.

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	Checked By	Approved By
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