Endo LES Agar Base

Cat. 1137

For the detection and enumeration of coliforms in water using the membrane filter technique

Practical information

Aplications	Categories
Selective enumeration	Coliforms
Detection	Coliforms

Industry: Water

Principles and uses

Endo LES Agar Base is a modification of Endo Agar Base (Cat. 1118), for testing water by the membrane filter technique. It uses Lauryl Sulfate Broth (Cat. 1310) as previous enrichment, obtaining greater growth. LES stands for Lawrence Experimental Station. It is a standard formula for testing waters and is also specified in the coliforms fermentation technique.

Like Endo Agar, it uses fuchsin to differentiate between positive lactose-fermenting and lactose non fermenting bacteria. Acetaldehyde production by lactose fermenting organisms such as Escherichia coli produce characteristic red colonies and a red surrounding area, marked by its reaction with Sodium sulfite in the presence of fuchsin. Lactose non-fermenters form colorless, transparent colonies.

Casein and Meat peptones, and Tryptose provide nitrogen, vitamins, minerals and amino acids essential for growth. Yeast extract is a source of vitamins, particularly of the B-group. Lactose is the fermentable carbohydrate providing carbon and energy. Potassium phosphates act as a buffer system. Sodium desoxycholate inhibit growth of gram positive bacteria. Sodium lauryl sulphate partially inhibits organisms other than coliforms. Sodium chloride supplies essential electrolytes for transport and osmotic balance. Bacteriological agar is the solidifying agent.

Note: Basic fuchsin is a potential carcinogen and precautions should be taken to avoid inhalation of the dye powder as well as contact with skin.

Formula in g/L

Bacteriological agar	15	Casein peptone	3,7
Dipotassium phosphate	3,3	Lactose	9,4
Meat peptone	3,7	Monopotassium phosphate	1
Sodium chloride	3,7	Sodium deoxycholate	0,1
Sodium lauryl sulfate	0,05	Sodium sulfite	1,6
Tryptose	7,5	Yeast extract	1,2

Preparation

Suspend 50,25 grams of the medium in one liter of distilled water. Add 8 ml of an alcoholic solution at 10% (w/v) of basic fuchsin in 95% ethanol. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Sterilize in autoclave at 121ºC for 15 minutes. Cool to 50ºC, mix well and dispense into plates.

Instructions for use

Use the membrane filter technique to inoculate filters and pre-incubate on pads saturated with Lauryl Sulfate Broth (Cat. 1310) at 35 ± 2°C for 1,5 - 2,5 hours. Transfer filters to plates of Endo Les Agar Base and incubate at 35 ± 2°C for 18-24 hours.

Rapid lactose fermenters produce red colonies with a metallic sheen. Slow lactose fermenters produce red colonies. Lactose non fermenters produce colorless colonies.

Caution: On exposure to oxygen, the plated medium gradually becomes red due to the oxidation of sulfite and can thus no longer be used. The culture medium oxidized (very intense red) should not be used because it decreases productivity of the culture medium.

Quality control

Solubility	Appareance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)
w/o rests	Fine powder	Beige	Pinkish (once fuchsin is added)	7,2 ± 0,2

Microbiological test

Incubation conditions: (35±2 ºC / 18-24 h)

Microrganisms	Specification	Characteristic reaction
Salmonella typhimurium ATCC 14028	Good growth	Colony color: Pink
Escherichia coli ATCC 25922	Good growth	Colony color: Red with metallic sheen
Staphylococcus aureus ATCC 25923	Marked to Complete Inhibition	

Storage

Temp. Min.:2 ºC
Temp. Max.:25 ºC

Bibliography

APHA (1980) Standard Methods for the Examination of Water and Wastewater.15th.
Ed. Washington, D.C.