# M17 Agar w/o Lactose

M1019

## Intended Use

On addition of lactose, this medium can be used for cultivation and isolation of lactic Streptococci

## Composition**

| Ingredients | Gms / Litre |
|---|---|
| Tryptone | 5.000 |
| Soya peptone | 5.000 |
| HM extract # | 5.000 |
| Yeast extract | 2.500 |
| Ascorbic acid | 0.500 |
| Magnesium sulphate | 0.250 |
| Disodium - ß - glycerophosphate | 19.000 |
| Agar | 11.000 |
| Final pH ( at 25°C) | 6.9±0.2 |

**Formula adjusted, standardized to suit performance parameters
# Equivalent to Meat extract

## Directions

Suspend 48.25 grams in 950 ml purified/distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C and aseptically add 50 ml of 10% w/v lactose solution sterilized separately by autoclaving at 15 lbs pressure (121°C) for 15 minutes or by filtration through a 0.2µm membrane filter. Mix well and dispense as desired.

## Principle And Interpretation

M17 agar is based on the formulation described by Terzaghi and Sandine (10) for the cultivation and enumeration of lactic Streptococci and their bacteriophages.
Lactic Streptococci are nutritionally fastidious and require complex media for optimal growth (2,7). Tryptone, soya peptone, yeast extract, HM extract provide carbonaceous, nitrogenous compounds, vitamin B complex and other essential growth factors. Lactose is the fermentable carbohydrate. Ascorbic acid is stimulatory for the growth of lactic Streptococci. Magnesium sulphate provides essential ions to the organisms. Disodium - ß - glycerophosphate maintains the pH about 5.7 due to its buffering action. Shankar and Davies (9) reported isolation and enumeration of *Streptococcus thermophilus* from yoghurt. Disodium glycerophosphate suppresses *Lactobacillus bulgaricus*. This medium is a standard medium for isolating lactic streptococi (8). M17 Agar is recommended by the International Dairy Federation (3) and ISO Committee (4) for selective enumeration of *Streptococcus thermophilus* from yoghurt. It is also suitable for cultivation and maintenance of starter cultures for cheese and yoghurt manufacturing.

## Type of specimen

Food and Dairy samples

## Specimen Collection and Handling

For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (1,8,11). After use, contaminated materials must be sterilized by autoclaving before discarding.

## Warning and Precautions :

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidleines should be followed while handling specimens. Saftey guidelines may be referred in individual safety data sheets.

## Limitations :

1. Due to variable nutritional requirements, some strains show poor growth on this medium.
2. Further biochemical and serological tests must be carried out for further identification.

## Performance and Evaluation

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

## Quality Control

**Appearance**
Cream to yellow homogeneous free flowing powder

**Gelling**
Firm, comparable with 1.1% Agar gel.

**Colour and Clarity of prepared medium**
Light yellow coloured clear to slightly opalescent gel forms in Petri plates

**Reaction**
Reaction of 4.83% w/v aqueous solution at 25°C. pH : 6.9±0.2

**pH**
6.70-7.10

**Cultural Response**
Cultural characteristics observed after an incubation at 35-37°C for 24-48 hours.

| Organism | Inoculum (CFU) | Growth | Recovery |
|---|---|---|---|
| *Enterococcus faecalis* ATCC 29212 (00087*) | 50-100 | good-luxuriant | >=50% |
| *Lactobacillus bulgaricus* ATCC 11842 | 50-100 | none-poor | <=10% |
| *Lactobacillus leichmannii* ATCC 4797 | 50-100 | good-luxuriant | >=50% |
| *Lactobacillus plantarum* ATCC 8014 | 50-100 | good-luxuriant | >=50% |
| *Streptococcus thermophilus* ATCC 14485 | 50-100 | good-luxuriant | >=50% |

Key: * Corresponding WDCM numbers

## Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle inorder to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in 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.

## Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (5,6).

## Reference

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10. Terzaghi B.E. and Sandine W.E., 1975, Appl. Microbiol., 29:807.
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