

## 63016 M-17 Agar

Media proposed for the cultivation, detection and enumeration of lactic streptococci in milk and dairy products. The M-17 media are superior to other comparable culture media for the cultivation of the fastidious species *Strept. cremoris*, *Strept. diacetylactis* and *Strept. lactis*. It is also suitable for cultivation and maintenance of starter cultures for cheese and yogurt manufacturing. This medium helps in detecting streptococcal mutants which are lactose non-fermenters. Recommended by the "Schweizerisches Lebensmittelbuch" 5th ed., chapter 56A, the International Dairy Federation and the ISO Committee.

### Composition:

Ingredients	Grams/Litre
Casein peptone	2.5
Meat peptone	2.5
Soya peptone (papainic)	5.0
Yeast extract	2.5
Meat extract	5.0
Disodium $\beta$ -glycerophosphate pentahydrate	19.0
Magnesium sulphate hydrate	0.25
Ascorbic acid	0.5
Agar	12.75
Final pH (at 25°C)	7.1 $\pm$ 0.2

Store prepared media below 8°C protected from direct light and dehydrated powder, in a dry place, in tightly-sealed containers at 2-25°C.

### Directions:

Dissolve 50 g in 950 ml distilled water and sterilise by autoclaving at 121°C for 15 minutes. After cooling add 50 ml aseptic 10% lactose solution. Mix thoroughly and dispense into petri dishes. Inoculate the plates and incubate them for 24-48 hours at 28-30°C aerobically.

### Principle and Interpretation:

Casein peptone, meat peptone, soya peptone, yeast extract and meat extract provide carbonaceous, nitrogenous compounds, vitamin B complex and other essential growth factors. Ascorbic acid is stimulatory for the growth of lactic streptococci. Magnesium sulphate provides essential ions to the organisms. Disodium  $\beta$ -glycerophosphate pentahydrate increases the buffering capacity of the medium, this promotes the growth of lactic streptococci and inhibits lactobacilli growth.

Phage infection can be recognised by the presence of large, distinct plaques in the opaque growth of the host bacteria grown on M-17 agar but only in absence of glycerophosphate (1, 2, 3, 4).

Glycerophosphate prevents the calcium precipitation which is needed for the plaque assay of lactic bacteriophages.



Cultural characteristics after 24-48 hours at 35°C.

Organisms (ATCC)	Growth
<i>Streptococcus agalactiae</i> (13813)	+++
<i>Streptococcus thermophilus</i> (14486)	+++
<i>Lactococcus lactis</i> spp. <i>cremoris</i> (19257)	+++
<i>Lactococcus lactis</i> spp. <i>lactis</i> (19435)	+++
<i>Enterococcus faecalis</i> (11700)	+++
<i>Escherichia coli</i> (25922)	+++
<i>Staphylococcus aureus</i> (25923)	+++
<i>Lactobacillus acidophilus</i> (4356)	++
<i>Lactobacillus casei</i> (393)	+
<i>Lactobacillus fermentum</i> (9338)	+/-

#### References:

1. E. Brinchmann, E. Namork, B.V. Johansen, T. Langsrud: A morphological study of lactic streptococcal bacteriophages isolated from Norwegian cultured milk.
2. B.P. Keogh: Appraisal of media and methods for assay of bacteriophages of lactic streptococci.- AppI. Environ. Microbiol., 40; 798-802 (1980).
3. B.E. Terzaghi: Morphologies and host sensitivities of lactic streptococcal phages from cheese factories.- N.Z.J. Dairy Sci. Technol., 11; 155-163 (1976).
4. B.E. Terzaghi, W.E. Sandine, Improved medium for lactic streptococci and their bacteriophages, AppI. Microbiol., 29, 807-813 (1975).
5. P.A. Shankar, F.L. Davies, Selective Technique for Yoghurt Bacteria Enumeration, J. Sac. Dairy Technol., 30, 28 (1977)
6. R.M. Atlas, L.C. Parks, Handbook of Microbiological Media. CRC Press, Inc. London (1993)
7. C. Vanderzant, D.F. Splittstoesser, Compendium of Methods for the Microbiological Examination of Foods. 3<sup>rd</sup> Ed. APHA. Washington (1992)

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

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