SM Agar

M763

Intended Use

Recommended for cultivation and enumeration of microorganisms encountered in dairy industry.

Composition**

Ingredients	Gms / Litre
SM powder #	28.000
Tryptone	5.000
Yeast extract	2.500
Dextrose (Glucose)	1.000
Agar	15.000
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Equivalent to Skim Milk powder

Directions

Suspend 51.5 grams of 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. Cool to 45-50°C. Mix well and pour into sterile Petri plates.

Principle And Interpretation

SM Agar is used for the demonstration of coagulation and proteolysis of casein (1). The medium is recommended by APHA (4) for cultivation and enumeration of microorganisms encountered in dairy industry (6). Addition of SM powder to any nutrient-rich medium creates favorable conditions for growth of organisms, which are encountered in milk. The number of bacteria isolated thus is more than the number of organisms isolated on a regular medium (5). Proteolytic bacteria hydrolyze casein to form soluble nitrogenous compounds indicated as clear zone surrounding the colonies. More clear zones are seen on milk agar if, the bacteria produce acid from fermentable carbohydrates in the medium.

Tryptone provides amino acids and other complex nitrogenous substances. Yeast extract supplies vitamin B complex. Addition of SM powder in the medium makes the conditions optimal for microorganisms encountered in milk. Glucose acts as the carbon source.

Type of specimen

Dairy samples

Specimen Collection and Handling:

For Dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (6).
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 guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations :

1. Further biochemical identification is required for identification of species.
2. Some strains show less growth due to variable nutritional requirements.

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 1.5% Agar gel

Colour and Clarity of prepared medium
Off white coloured opaque gel forms in Petri plates

Reaction
Reaction of 5.15% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH
6.80-7.20

Cultural Response
Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Proteolytic activity
Bacillus subtilis subsp. spizizenni ATCC 6633 (00003)*	50-100	good-luxuriant	>=70%	positive reaction, clear zone surrounding colonies
Enterococcus faecalis ATCC 29212 (00087)*	50-100	luxuriant	>=70%	negative reaction, no clear zone surrounding colonies
Escherichia coli ATCC 25922 (00013)*	50-100	good-luxuriant	>=70%	negative reaction,no clear zone surrounding colonies
Proteus mirabilis ATCC 25933	50-100	luxuriant	>=70%	positive reaction, clear zone surrounding colonies
Pseudomonas aeruginosa ATCC 27853 (00025)*	50-100	luxuriant	>=70%	positive reaction, clear zone surrounding colonies
Serratia marcescens ATCC 8100	50-100	luxuriant	>=70%	positive reaction, clear zone surrounding colonies

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 in order 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. Use before expiry date on the label.
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 clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques (2,3).

Reference

1. Frazier W. C. and Ripp P., 1928, J. Bacteriol., 16: 57.

2. Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2nd Edition.

3. 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.

4. Salfinger Y., and Tortorello M.L. Fifth (Ed.), 2015, Compendium of Methods for the Microbiological Examination of Foods, American Public Health Association, Washington, D.C.

5. Terplan G. Rundfeldt,H.u. Zaadhof, K.J. Zur Eignung verschiedener Nährböden für die Bestimmung der Gesamtkeimzahl der Milch. - Arch. Lebensmittelhyg., 18; 9-11 (1967).

6. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.

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