



SM Growth powder

M1993

Intended use

SM Growth powder is used for cultivation dairy organisms and differentiation of *Clostridium* species.

Composition**

Ingredients	Gms / Litre
SM powder	100.000

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 100.0 grams in a little amount of purified / distilled water to make a smooth paste. Gradually add more distilled water to make a final volume of 1000 ml. Dispense and sterilize by autoclaving at 115°C for 15 minutes.

Principle And Interpretation

SM powder is used for the demonstration of coagulation and proteolysis of casein (1). SM powder is sometimes used as a complete medium or as an ingredient in other media used for propagation of organisms occurring in milk products like *Mycobacterium tuberculosis*, *Corynebacterium diphtheriae* etc. 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 on the agar medium. More clear zones are seen on milk agar if, the bacteria produce acid from fermentable carbohydrates in the medium. In case of SM powder, proteolytic organisms hydrolyze and form a clear solution with the precipitation at the bottom of the tube. SM powder serves as the purpose.

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 (4,6). 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. Overheating may lead to coagulation of medium.

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

White to cream homogeneous free flowing powder

Colour and Clarity of prepared medium

Off white coloured opaque solution in tubes

Cultural Response

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

Organism	Inoculum (CFU)	Growth	Proteolytic activity
<i>Bacillus subtilis subsp. spizizenii</i> ATCC 6633 (00003*)	50-100	good-luxuriant	positive reaction
<i>Escherichia coli</i> ATCC 25922 (00013*)	50-100	good-luxuriant	negative reaction
<i>Enterococcus faecalis</i> ATCC 29212 (00087*)	50-100	luxuriant	negative reaction
<i>Proteus mirabilis</i> ATCC 25933	50-100	luxuriant	positive reaction
<i>Proteus vulgaris</i> ATCC 13315	50-100	luxuriant	positive reaction
<i>Pseudomonas aeruginosa</i> ATCC 27853 (00025*)	50-100	luxuriant	positive reaction
<i>Serratia marcescens</i> ATCC 8100	50-100	luxuriant	positive reaction
<i>Clostridium perfringens</i> ATCC 12924	50-100	luxuriant	positive reaction

Key : (*) Corresponding WDCM numbers.

Chemical Analysis

Total Nitrogen (anhydrous basis)	: >= 4.70%
Total Protein (anhydrous basis)	: >= 35.00%
Water (K.F.)	: <= 10.00%
Sulphated ash	: <= 10.00%
Fat content	: <= 1.50%

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. 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. Bact., 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., 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., 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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