Skim Milk Agar (DM613)

Intended Use
Skim Milk Agar (DM613) is recommended for cultivation and enumeration of microorganisms encountered in dairy industry.

Product Summary and Explanation
Skim Milk is soluble, spray-dried skim milk. When prepared in a 10% solution, it is equivalent to fresh skim milk. Skim Milk is sometimes used as a complete medium or as an ingredient in other media used for propagation of organisms occuring in milk products like *Mycobacterium tuberculosis, Corynebacterium diphtheriae* etc. Skim Milk is used for differentiating organisms based on coagulation and proteolysis of casein in foods[1] and dairy products.[2] Addition of skim milk to any nutrient-rich medium creates favourable 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.[3] 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.
Skim Milk Agar is used for the demonstration of coagulation and proteolysis of casein.[4] The medium is recommended by APHA[5] for cultivation and enumeration of microorganisms encountered in dairy industry.[6]

Principles of the Procedure
Skim Milk Agar contains casein enzymic hydrolysate which provides amino acids and other complex nitrogenous substances. Yeast extract supplies vitamin B complex. Addition of skim milk in the medium makes the conditions optimal for microorganisms encountered in milk; it is a source of lactose and casein and other growth nutrients. Dextrose acts as the carbon and energy source.

Formula / Liter

Ingredients	Gms / Liter
Part A	
Casein enzymic hydrolysate	5.00
Yeast extract	2.50
Dextrose	1.00
Agar	15.00
Part B	
Skim milk powder	28.00
Final pH: 7.0 ± 0.2	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions
1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions
1. Prepare **Part A and Part B** separately.
2. Suspend **23.5 grams of Part A** in 500ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize
3.Suspend **28g of Part B** in 500ml distilled water separately. Gently heat to dissolve completely. Do not autoclave/Overheat as Part B is heat sensitive. Autoclave/heated at 100°C for 10min.
4. Mix well and pour into sterile petri plates.

Quality Control Specifications

Dehydrated Appearance	Cream to yellow homogeneous free flowing powder
Prepared Medium	Off white coloured opaque gel forms in petri plates
Reaction of 5.15% Solution	pH 7.0 ± 0.2°C
Gel Strength	Firm, comparable with 1.5% Agar gel

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

Sr. No.	Organisms	Results to be achieved			
		Inoculum (CFU)	Growth	Recovery	Proteolytic activity
1.	*Bacillus subtilis ATCC 6633*	50 – 100	good-luxuriant	>=70%	positive reaction, clear zone surrounding colonies
2.	*Enterococcus faecalis ATCC 29212*	50 – 100	good-luxuriant	>=70%	negative reaction, no clear zone surrounding colonies
3.	*Escherichia coli ATCC 25922*	50 – 100	good-luxuriant	>=70%	negative reaction, no clear zone surrounding colonies
4.	*Proteus mirabilis ATCC 25933*	50 – 100	good-luxuriant	>=70%	positive reaction, clear zone surrounding colonies
5.	*Pseudomonas aeruginosa ATCC 27853*	50 – 100	good-luxuriant	>=70%	positive reaction, clear zone surrounding colonies
6.	*Serratia marcescens ATCC 8100*	50 – 100	good-luxuriant	>=70%	positive reaction, clear zone surrounding colonies

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure
Refer to appropriate references for standard test procedures.

Results
Refer to appropriate references and standard procedures for interpretation results.

Storage
Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration
Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure
1. Skim Milk supports the growth of many microorganisms.
2. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
3. Consult appropriate texts for detailed information and recommended procedures.

Packaging
Product Name : Skim Milk Agar
Product Code : DM613
Available Pack sizes : 100gm / 500gm

References

1. Lee, J. S., and A. A. Kraft. 1992. Proteolytic microorganisms, p. 193-198. *In* Vanderzant, C. and D. F. Splittstoesser (eds.). Compendium of methods for the microbiological examination of foods, 3rd ed. American Public Health Association, Washington, D.C.
2. Frank, J. F., G. L. Christen, and L. B. Bullerman. 1993. Tests for groups of microorganisms, p. 271-286. *In* Marshall, R. T. (ed.). Standard methods for the microbiological examination of dairy products, 16th ed. American Public Health Association, Washington, D.C.
3. 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).
4. Frazier W. C. and Ripp P., 1928, J. Bacteriol., 16: 57.
5. Downes F. P. and Ito K., (Eds.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th Ed., APHA, Washington, D.C.
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.

Further Information

For further information please contact your local MICROMASTER Representative.

MICROMASTER LABORATORIES PRIVATE LIMITED
Unit 38/39, Kalpataru Industrial Estate,
Off G.B. Road, Near 'R-Mall' , Thane (W) – 400607. M.S. INDIA.
Ph: +91-9320126789/9833630009/9819991103
Email: sales@micromasterlab.com

DM613PSS,QAD/FR/024,Rev.00