Skim Milk • Skim Milk Medium

Intended Use
Skim Milk is used for preparing microbiological culture media. Skim Milk Medium may be used for the cultivation and differentiation of microorganisms based on the coagulation and proteolysis of casein.

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 can be used to prepare Skim Milk Agar for detecting proteolytic microorganisms in foods,[1] including dairy products.[2] It can also be used to prepare litmus milk, a differential test medium for determining lactose fermentation and for detecting proteolytic enzymes that hydrolyze casein (milk protein) and cause coagulation (clot formation).[3]

Skim Milk Medium, 10% skim milk solution prepared in tubes, is used for the maintenance and propagation of lactic acid bacteria. It is especially useful in species differentiation within the genus *Clostridium*.

Principles of the Procedure
Skim Milk is a source of lactose and casein and other nutrients required for the growth of lactobacilli.[4] Clostridial species can be differentiated based on their ability to enzymatically degrade proteins to peptones (peptonization) or coagulate milk.[5] It may be used to detect the stormy fermentation produced by *Clostridium perfringens*.

User Quality Control

Identity Specifications
Difco™ Skim Milk

Dehydrated Appearance:	White to off-white, free-flowing, homogeneous.
Solution:	10% solution, soluble in purified water upon warming. Solution is white, opalescent.
Prepared Appearance:	Off-white to beige, opaque.
Reaction of 10% Solution at 25°C:	pH 6.3 ± 0.2

Cultural Response
Difco™ Skim Milk

Prepare the medium per label directions. Inoculate with a drop or loopful of fresh culture and incubate at 35 ± 2°C for 1-7 days.

ORGANISM	ATCC™	GROWTH	APPEARANCE
Clostridium perfringens	12919	Good	Stormy fermentation
Escherichia coli	25922	Good	Acid, curd
Lactobacillus rhamnosus	9595	Good	Acid, curd

Formula
Difco™ Skim Milk

Approximate Formula* Per Liter

Skim Milk Powder	100.0	g

**Adjusted and/or supplemented as required to meet performance criteria.*

Directions for Preparation from Dehydrated Product
1. Dissolve 100 g of the powder in 1 L of purified water.
2. Warm, if necessary, to completely dissolve the powder.
3. Autoclave at 121°C for 15 minutes.
4. Test samples of the finished product for performance using stable, typical control cultures.

Procedure
Heat the medium in a boiling water bath for 2-5 minutes with caps loosened and cool to room temperature with caps tightened.

Inoculate tubes using a calibrated loop or sterile disposable pipet. For the study of anaerobic organisms, sterile mineral oil can be layered over the medium following inoculation.

Incubate tubes, with tightened caps for clostridia and loosened caps for other organisms, at 35 ± 2°C and read at intervals for 7 days for growth and reactions.

Expected Results
Consult an appropriate reference for the expected reactions for specific microbial species.[4,5]

Limitation of the Procedure
Skim Milk Medium supports growth of many microorganisms. Perform microscopic examination and other biochemical tests to identify isolates to the genus and species level, if necessary.

References

1. Downes and Ito (ed.). 2001. Compendium of methods for the microbiological examination of foods. 4th ed. American Public Health Association, Washington, D.C.
2. Wehr and Frank (ed.). 2004. Standard methods for the examination of the dairy products, 17th ed. American Public Health Association, Washington, D.C.
3. MacFaddin. 1985. Media for isolation-cultivation-identification-maintenance of medical bacteria, vol. 1. Williams & Wilkins, Baltimore, Md.
4. Sneath and Holt (ed.). 1986. Bergey's Manual™ of systematic bacteriology, vol.2. Williams & Wilkins, Baltimore, Md.
5. Allen, Emery and Siders. 1999. *In* Murray, Baron, Pfaller, Tenover and Yolken (ed.), Manual of clinical microbiology, 7th ed. American Society for Microbiology, Washington, D.C.

Availability
Difco™ Skim Milk

Cat. No. 232100 Dehydrated – 500 g

BBL™ Skim Milk Medium

Cat. No. 298240 Prepared Tubes (D Tubes) – Pkg. of 10