



PRODUCT SPECIFICATION SHEET

Letheen Broth (DM315U)

Intended Use

Letheen Broth (DM315U) is recommended for evaluating the bactericidal activity of quaternary ammonium compounds, and to determine the suitability of preservatives for use in cosmetic formulations in compliance with USP.

Product Summary and Explanation

In 1948, Weber and Black described the value of a highly nutritional solid medium containing lecithin and polysorbates to neutralize the antimicrobial action of quaternary ammonium compounds in sanitizers.⁽¹⁾ The addition of Lecithin and Polysorbate 80 to Tryptone Glucose Extract (TGE) Agar resulted in a medium that effectively neutralizes quaternary ammonium compounds in testing of germicidal activity. Total neutralization of disinfectants is critical. Disinfectant residues can result in a false negative (no-growth) test. The word Letheen represents a combination of lecithin and polysorbate 80. Letheen Broth was developed by Quisno, Gibby and Foter⁽¹⁾ by the addition of lecithin and Polysorbate 80 to FDA Broth. Letheen Broth is recommended by AOAC to determine the phenol coefficient of cationic surfactants.⁽²⁾ Letheen Medium is also recommended for testing of cosmetics.⁽³⁾

Letheen Broth was developed as a subculture medium for the neutralization of quaternary ammonium compounds in disinfectant testing. Quisno, Gibby and Foter found that the addition of lecithin and polysorbate 80 to F.D.A. Broth resulted in a medium that neutralized high concentrations of quaternary ammonium salts. The resulting medium, termed "Letheen" (a combination of Lecithin and Tween), was easy to prepare and clear in appearance, which aided in visual inspection for growth.

Glucose Extract Agar was developed according to APHA (1) for use in the microbiological examination of water. Weber and Black (2) modified it further with addition of lecithin and polysorbate 80 and developed a laboratory procedure for evaluating bactericidal activity of quaternary ammonium compounds proposed for sanitizing food utensils. (3) Letheen media are recommended by USP in disinfectant challenge testing. (4)

Beef extract and peptone, supply nitrogenous compounds, carbon, sulphur and other trace elements to the organisms. Lecithin and polysorbate 80 enables the recovery of bacteria from solutions containing residues of disinfectant used in sanitization of utensils and equipments. Lecithin neutralizes quaternary ammonium compounds and polysorbate 80 neutralizes phenolic disinfectants, hexachlorophene and formalin. (5, 6)

Dehydrated medium may appear moist with brown sugar appearance, does not indicate deterioration.

Principles of the Procedure

Letheen Broth, AOAC contains beef extract, casein enzymic hydrolysate, which supplies essential nutrients and other trace elements for the microbial growth. Lecithin and polysorbate 80 enables the recovery of bacteria from solutions containing residues of disinfectant used in sanitization of utensils and equipments. Lecithin neutralizes quaternary ammonium compounds and polysorbate 80 neutralizes phenolic disinfectants, hexachlorophene and formalin. Dehydrated medium may appear moist with brown sugar appearance, which does not indicate deterioration.

Formula / Liter

Ingredients	Gms / Liter
Part A	
Peptic digest of animal tissue	10.00
Beef extract	5.00
Sodium chloride	5.00
Lecithin	0.70
Part B	
Polysorbate 80	5.00
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.





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Directions

1. Suspend 20.7 grams of part A and 5.00 grams of Part B of the medium in one liter of distilled water.
2. Heat if necessary to dissolve the medium completely.
3. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.

Quality Control Specifications

Dehydrated Appearance	Part A: Off-white to yellow homogeneous free flowing powder Part B: Yellow colored solution
Prepared Medium	Light yellow coloured clear to slightly opalescent solution(Part A +Part B)
Reaction of % Solution	Not Applicable
Gel Strength	Not Applicable

Expected Cultural Response: Cultural characteristics observed after an incubation at 35-37°C for 24-48 hours.

Sr. No.	Organisms	Results to be achieved	
		Inoculum (CFU)	Growth
1.	<i>Staphylococcus aureus</i> ATCC 6538	50 -100	good-luxuriant
2.	ATCC 6538 <i>Escherichia coli</i> ATCC 8739	50 -100	good-luxuriant
3.	<i>Staphylococcus aureus</i> ATCC 6538	50 -100	good-luxuriant
4.	<i>Escherichia coli</i> ATCC 8739	50 -100	good-luxuriant

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 test procedures for interpretation of results.

Storage

Store the sealed bottle containing the dehydrated medium at 2 - 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. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
2. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name **Lethen Broth**

Product Code : **DM315U**

Available Pack sizes : **500gm**

References

1. Weber and Black, 1948, Am. J. Public Health, 38:1405.
2. Horwitz, (Ed.), 2000, Official Methods of Analysis of AOAC International, 17th Ed., Vol.I, AOAC International, Gaithersburg, Mb.
3. American Society for Testing and Materials, 1991, Standard Test Methods for preservatives in water-containing cosmetics, E640-78. Annual Book of ASTM Standards, ASTM, Philadelphia, Pa.





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Further Information

For further information please contact your local MICROMASTER Representative.



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