LETHEEN BROTH BASE (7105)

Intended Use

Letheen Broth Base is used with Polysorbate 80 for the testing of quaternary ammonium compounds for antimicrobial activity.

Product Summary and Explanation

In 1948, Weber and Black described the value of a highly nutritional solid medium containing neutralizing agents for 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 while testing germicidal activity. Letheen Agar is a modification of TGE Agar with the addition of Lecithin and Polysorbate 80.

Letheen Broth Base was developed as a subculture medium for the neutralization of quaternary ammonium compounds in disinfectant testing. Quisno, Gibby, and Foter discovered that adding Lecithin and Polysorbate 80 to F.D.A. Broth resulted in a medium that neutralized high concentrations of quaternary ammonium salts.[2] The resulting medium, termed "Letheen" (a combination of Lecithin and Tween) was easy to prepare and clear in appearance, aiding to visual inspection for growth. Letheen Broth Base is recommended by the Official Methods of Analysis of the Association of Official Analytical Chemists (AOAC) for use with disinfectants containing cationic surface active materials.[3]

Letheen Broth Base is specified for use by the American Society for Testing Materials (ASTM) in Standard Test Method for Preservatives in Water-Containing Cosmetics.[4] Total neutralization of disinfectants is critical. Disinfectant residues can result in a false negative (no-growth) test.

Principles of the Procedure

Enzymatic Digest of Animal Tissue and Beef Extract provide nitrogen, carbon, vitamins, and minerals in Letheen Broth Base. Sodium Chloride maintains the osmotic balance. Lecithin neutralizes quaternary ammonium compounds and Polysorbate 80 neutralizes phenols, hexachlorophene, formalin, and with Lecithin, ethanol.[2,5-7]

Formula / Liter	
Enzymatic Digest of Animal Tissue	10 g
Beef Extract	5 g
Sodium Chloride	5 g
Lecithin	0.7 g

Final pH: 7.0 ± 0.2 at 25°C

Formula may be adjusted and/or supplemented as required to meet performance specifications.

Supplement / Liter

Polysorbate 80, 5 g

Precautions

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

Directions

1. Dissolve 20.7 g of the medium and 5 g of Polysorbate 80 in one liter of purified water.
2. Heat with frequent agitation and boil for one minute to completely dissolve the medium.
3. Autoclave at 121°C for 15 minutes.

Quality Control Specifications

Dehydrated Appearance: Powder is homogeneous, free flowing, and beige.

Prepared Appearance: Prepared medium is gold to amber, and clear to slightly hazy with no to slight precipitate.

Expected Cultural Response: Cultural response in Letheen Broth Base at 35°C after 18 - 24 hours incubation.

Microorganism	Response
Enterococcus faecalis ATCC® 29212	growth
Escherichia coli ATCC® 25922	growth
Pseudomonas aeruginosa ATCC® 27853	growth
Staphylococcus aureus ATCC® 25923	growth
Staphylococcus epidermidis ATCC® 12228	growth

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

Test Procedure

Letheen Broth Base is used in a variety of procedures. Consult appropriate references for complete information.[3,4]

Results

Refer to appropriate references and procedures for results.

Storage

Store 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 by keeping container tightly closed.

Expiration

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

Limitation of the Procedure

Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.

Packaging

Letheen Broth Base	**Code No.**	**7105A**	**500 g**
		7105B	**2 kg**
		7105C	**10 kg**

References

1. **Weber, G. R., and L. A. Black.** 1948. Relative efficiency of quaternary inhibitors. Soap and Sanit. Chem. **24:**134-139.
2. **Quisno, R., I. W. Gibby, and M. J. Foter.** 1946. A neutralizing medium for evaluating the germicidal potency of the quaternary ammonium salts. Am. J. Pharm. **118:**320-323.
3. **Association of Official Analytical Chemists.** 1995. Official methods of analysis, 16th ed. Association of Official Analytical Chemists, Washington, D.C.
4. **American Society for Testing Materials.** 1991. Standard test method for preservatives in water-containing cosmetics, E 640-78. Annual Book of ASTM Standards, Philadelphia, PA.
5. **Erlandson, A. L., Jr., and C. A. Lawrence.** 1953. Inactivating medium for hexachlorophene (G-11) types of compounds and some substituted phenolic disinfectants. Science. **118:**274-276.
6. **Brummer, B.** 1976. Influence of possible disinfectant transfer on *Staphylococcus aureus* plate counts after contact sampling. Appl. Environ. Microbiol. **32:**80-84.
7. **Favero (chm.).** 1967. Microbiological sampling of surfaces-a state of the art report. Biological Contamination Control Committee, American Association for Contamination Control.

Technical Information

Contact Acumedia Manufacturers, Inc. for Technical Service or questions involving dehydrated culture media preparation or performance at (410)780-5120 or fax us at (410)780-5470.