LOWENSTEIN - JENSEN MEDIUM (7245)

Intended Use

Lowenstein - Jensen Medium is used with fresh eggs and glycerol for the isolation and differentiation of *Mycobacterium* spp.

Product Summary and Explanation

Mycobacterial infections, particularly tuberculosis, are a worldwide health problem. Almost three million people worldwide die of tuberculosis each year.[1] Non-tuberculous mycobacteria infections have also increased since 1985.[2] At least 25 species of mycobacteria are associated with human disease and produce usually slowly developing, destructive granulomas that may undergo necrosis with ulceration or cavitation.[2]

The use of egg-based media for primary isolation of mycobacteria have two significant advantages. First, egg-based media support a wide variety of mycobacteria. Second, growth of mycobacteria on egg media can be used for niacin testing. Liquefaction of Lowenstein-Jensen Medium can occur if contaminated with proteolytic organisms.

Lowenstein-Jensen Medium is a modification of Lowenstein Medium[3], modified by Jensen.[4] Jensen modified the medium by alternating the citrate and phosphate contents, eliminating congo red dye, and increasing malachite green concentration.[5] Lowenstein-Jensen Medium is commonly used in the clinical laboratory to isolate acid fast organisms from sterile and nonsterile sources.[6]

Principles of the Procedure

L-Asparagine and Potato Flour are sources of nitrogen and vitamins in Lowenstein-Jensen Medium. Monopotassium Phosphate and Magnesium Sulfate enhance organism growth and act as buffers. Glycerol and the Egg Suspension provide fatty acids and protein required for the metabolism of mycobacteria. The coagulation of the egg albumin during sterilization provides a solid medium for inoculation purposes. Sodium Citrate and Malachite Green are selective agents to prevent growth of most contaminants and allow early growth of mycobacteria.

Formula / Liter	
L-Asparagine	3.6 g
Monopotassium Phosphate	2.5 g
Magnesium Sulfate	0.24 g
Sodium Citrate	0.6 g
Malachite Green	0.4 g
Potato Flour	30 g

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

Supplements	
Glycerol,	12 mL
Egg Suspension,	1000 mL

Precaution

1. For Laboratory Use.

Directions

1. Suspend 37.3 g of the medium in 600 mL of purified water containing 12 mL of glycerol.
2. Heat with frequent agitation and boil for one minute to completely dissolve the medium.
3. Autoclave at 121°C for 15 minutes.
4. Prepare 1000 mL of a uniform suspension of fresh eggs under aseptic conditions. Avoid whipping air into suspension during the collection and mixing.
5. Aseptically mix the 1000 mL of egg suspension with 600 mL of the sterile Lowenstein-Jensen Medium cooled to 50 - 60°C, avoiding air bubbles.
6. Dispense the finished medium into sterile screw-cap test tubes. Place the tubes in a slanted position and heat at 85°C for 45 minutes.

Quality Control Specifications

Dehydrated Appearance: Powder is homogeneous, free flowing, and blue-green.

Prepared Appearance: Prepared medium with egg suspension is greenish-blue and opaque.

Expected Cultural Response: Cultural response on Lowenstein-Jensen Medium at 35°C after 2 – 3 weeks incubation.

Microorganism	Response
Mycobacterium fortuitum Group IV ATCC® 6841	growth
Mycobacterium intracellulare Group III ATCC® 13950	growth, may be inhibited on Selective L-J
Mycobacterium kansasii Group I ATCC® 12478	growth
Mycobacterium scrofulaceum Group II ATCC® 19981	growth, may be inhibited on Selective L-J
Mycobacterium tuberculosis H37Ra ATCC® 25177	growth

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

Test Procedure
Refer to specific procedures for a complete discussion of the isolation and identification of *Mycobacterium* spp.

Results
Observe for colonies that may or may not be pigmented. Colony morphology depends on the species isolated.

Storage
Store sealed bottle containing 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. Dehydrated medium should be discarded if not free flowing, or if appearance has changed from original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure
1. Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium. Further tests are necessary for confirmation of *Mycobacterium* spp.
2. Negative culture results do not rule out an active mycobacterial infection.

Packaging
Lowenstein - Jensen Medium	**Code No.**	**7245A**	**500 g**
		7245B	**2 kg**
		7245C	**10 kg**

References

1. **Musser, J. M.** 1995. Antimicrobial resistance in Mycobacteria: molecular genetic insights. Clinical Microbiology Reviews. **8:**496-514.
2. **Murray, P. R., E. J. Baron, M. A. Pfaller, F. C. Tenover, and R. H. Yolken (eds.).** 1995. Manual of clinical microbiology, 6th ed. American Society for Microbiology, Washington, D.C.
3. **Lowenstein, E.** 1931. Die Zachtung der Tuberkelbazillen aus dem stramenden Blute. Zentralb. Bakteriol Parasitenkd. infektionskr. hyg. Abt. I orig., **120:**127.
4. **Jensen, K. A.** 1932. Rinzuchtung und Typenbestimmung von Tuberkelbazillentamen. Zentralb. Bakteriol Parasitenkd. infektionskr. hyg. Agt. I Orig., **125:**222.
5. **MacFaddin, J. F.** 1985. Media for isolation-cultivation-identification-maintenance of medical bacteria, vol. 1. Williams & Wilkins, Baltimore, MD.
6. **Isenberg, H. D. (ed.).** 1992. Clinical microbiology procedures handbook, vol. 1 American Society for Microbiology, Washington, D.C.

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.