LISTERIA ENRICHMENT BROTH (7398)

Intended Use

Listeria Enrichment Broth is used for selective enrichment of *Listeria* spp.

Product Summary and Explanation

Listeria monocytogenes, first described in 1926 by Murray, Webb, and Swann,[1] is an extensive problem in public health and food industries. This organism has the ability to cause human illness and death, particularly in immunocompromised individuals and pregnant women.[2] Epidemiological evidence from outbreaks of listeriosis has indicated that the principle route of transmission is via consumption of foodstuffs contaminated with *Listeria monocytogenes*.[3] Implicated vehicles of transmission include turkey frankfurters,[4] coleslaw, pasteurized milk, Mexican style cheese, and pate′. *Listeria* spp. are ubiquitous in nature, being present in a wide range of unprocessed foods as well as in soil, sewage, and river water.[5]

Listeria Enrichment Broth is based on the formula developed by Lovett et al.[6] in which Tryptic Soy Broth is supplemented with Yeast Extract for optimum growth. *Listeria* spp. grow over a pH range of 5.0 - 9.6, and survive in food products with pH levels outside these parameters.[7] *Listeria* spp. are microaerophilic, Gram-positive, asporogenous, non-encapsulated, non-branching, short, motile rods. Motility is pronounced at 20°C. Identification of *Listeria* is based on successful isolation of the organism, biochemical characterization, and serological confirmation.

Principles of the Procedure

Enzymatic Digest of Casein, Enzymatic Digest of Soybean Meal, and Yeast Extract provides nitrogen, vitamins, and minerals in Listeria Enrichment Broth. Dextrose is a carbohydrate source. Sodium Chloride maintains osmotic balance of the medium. Dipotassium Phosphate is a buffering agent. Nalidixic Acid inhibits growth of Gram-negative organisms. Acriflavin inhibits Gram-positive bacteria. Cycloheximide is used to inhibit growth of saprophytic fungi.

Formula / Liter

Enzymatic Digest of Casein	17 g
Enzymatic Digest of Soybean Meal	3 g
Yeast Extract	6 g
Dextrose	2.5 g
Sodium Chloride	5 g
Dipotassium Phosphate	2.5 g
Cyclohexamide	0.05 g
Acriflavin	0.015 g
Nalidixic Acid	0.04 g

Final pH: 7.3 ± 0.2 at 25°C

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

Precautions

1. For Laboratory Use.
2. TOXIC. Toxic if swallowed, inhaled, or absorbed through the skin. Irritating to eyes, respiratory system, and skin. Possible risk of harm to unborn child. Possible carcinogen.

Directions

1. Dissolve 36.1 g of the medium in one liter of purified water.
2. Mix thoroughly.
3. Autoclave at 121°C for 15 minutes.

Quality Control Specifications

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

Prepared Appearance: Prepared medium is clear to slightly hazy, gold to orange-amber with green opalescent top, and may have light precipitate.

Expected Cultural Response: Cultural response in Listeria Enrichment Broth incubated aerobically at 30± 2°C and examined for growth after 18 - 48 hours.

Microorganism	Approx. Inoculum (CFU)	Response
Escherichia coli ATCC® 25922	1000	Inhibited
Listeria monocytogenes ATCC® 7644	10 - 300	Good growth
Listeria monocytogenes ATCC® 15313	10 - 300	Good growth
Staphylococcus aureus ATCC® 25923	10 - 300	Suppressed at 24 hours; none to fair growth at 48 hours

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

Test Procedure

Use recommended laboratory procedures for isolating *Listeria* in food samples.

Results

Refer to appropriate references and procedures for results.

Storage

Store the sealed bottle containing the dehydrated medium at 2 - 30°C. Once opened and recapped, place the 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 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. Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.
2. *Listeria* spp., other than *Listeria monocytogenes*, can grow on isolation media. An identification of *Listeria monocytogenes* must be confirmed through biochemical and serological testing.[8]

Packaging

Listeria Enrichment Broth	**Code No.**	**7398A**	**500 g**
		7398B	**2 kg**
		7398C	**10 kg**

References

1. **Murray, E. G. D., R. A. Webb, and M. B. R. Swann.** 1926. A disease of rabbits characterized by large mononuclear leucocytosis caused by ahitherto undescribed bacillus *Bacterium monocytogenes*. J. Path. Bact. **29:**407-439.
2. **Monk, J. D., R. S. Clavero, L. R. Beuchat, M. P. Doyle, and R. E. Brackett.** 1994. Irradiation inactivation of *Listeria monocytogenes* and *Staphylococcus aureus* in low and high fat, frozen refrigerated ground beef. J. Food Prot. **57:**969-974.
3. **Bremer, P. J., and C. M. Osborne.** 1995. Thermal-death times of *Listeria monocytogenes* in green shell mussels prepared for hot smoking. J. Food Prot. **58:**604-608.
4. **Grau, F. H., and P. B. Vanderlinde.** 1992. Occurrence, numbers, and growth of *Listeria monocytogenes* on some vacuum-packaged processed meats. J. Food Prot. **55:**4-7.
5. **Patel, J. R., C. A. Hwang, L. R. Beuchat, M. P. Doyle, and R. E. Brackett.** 1995. Comparison of oxygen scavengers for their ability to enhance resuscitation of heat-injured *Listeria monocytogenes*. J. Food Prot. **58:**244-250.
6. **Lovette, J., D. W. Frances, and J. M. Hunt.** 1987. *Listeria monocytogenes* In raw milk: detection, incidence and pathogenicity. J. Food Prot. **50:**188-192.
7. **Vanderzant, C., and D. F. Splittstoesser (eds.).** 1992. Compendium of methods for the microbiological examination of foods, 3rd ed. American Public Health Association, Washington, D.C.
8. **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.

Technical Information

Contact Acumedia Manufacturers, Inc. for Technical Service or questions involving dehydrated culture media preparation or performance at (517)372-9200 or fax us at (517)372-2006.

NEOGEN CORPORATION
620 Lesher Place, Lansing MI 48912
517/372-9200 • 800/783-3212 • fax: 800/875-8563
neogen-info@neogen.com • www.neogen.com