



EC MEDIUM (7206)

Intended Use

EC Medium is used for the detection of coliform bacteria at 37°C and *Escherichia coli* at 44.5°C.

Product Summary and Explanation

EC Medium was developed by Hajna and Perry¹ in an effort to improve the methods for the detection of the coliform group and *E. coli*. This medium consists of a buffered lactose broth with the addition of 0.15% Bile Salts Mixture. Growth of spore-forming bacteria and fecal streptococci are inhibited by the bile salts, while growth of *E. coli* is enhanced by its presence. This medium can be used at 37°C for the detection of coliform organisms or at 45.5°C for the isolation of *E. coli*.

EC Medium is employed in elevated-temperature tests for distinguishing organisms of the total coliform group that also belong to the fecal coliform group.² The fecal coliform test, using EC Medium, is applicable to investigations of drinking water, stream pollution, raw water sources, wastewater treatment systems, bathing waters, seawaters, and general water-quality monitoring. Prior enrichment in presumptive media is required for optimum recovery of fecal coliforms when using EC Medium. EC Medium is used in methods for food and water testing.²⁻⁴

Principles of the Procedure

Enzymatic Digest of Casein provides nitrogen, vitamins, and amino acids in EC Medium. Lactose is the carbon source. Bile Salts Mixture is the selective agent against Gram-positive bacteria, particularly bacilli and fecal streptococci. Dipotassium Phosphate and Monopotassium Phosphate are the buffering agents. Sodium Chloride maintains the osmotic balance of the medium.

Formula / Liter

| | |
|----------------------------------|-------|
| Enzymatic Digest of Casein | 20 g |
| Lactose | 5 g |
| Bile Salts Mixture | 1.5 g |
| Dipotassium Phosphate | 4 g |
| Monopotassium Phosphate | 1.5 g |
| Sodium Chloride | 5 g |

Final pH: 6.9 ± 0.2 at 25°C

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

Precautions

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

Directions

1. Dissolve 37 g of the medium in one liter of purified water.
2. Mix thoroughly.
3. Distribute into tubes containing inverted fermentation Durham tubes.
4. 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 brilliant to clear.

1X Solution: Gold

2X Solution: Medium to dark orange amber

Precipitate: None to light

Expected Cultural Response: Cultural response in EC Medium incubated in an aerobic atmosphere and the indicated temperature. Cultures were examined for growth after 24 ± 2 hours incubation.

| Microorganism | Approx. Inoculum (CFU) | Expected Results | | | |
|---|------------------------|-------------------|-------------------|----------|-------------|
| | | 35°C Growth | 44.5°C Growth | 35°C Gas | 44.5°C Gas |
| <i>Enterobacter aerogenes</i> ATCC® 13048 | 10 - 300 | Good to excellent | None to poor | + / - | - |
| <i>Enterococcus faecalis</i> ATCC® 29212 | 10 ³ | Inhibited | Inhibited | N/A | N/A |
| <i>Escherichia coli</i> ATCC® 25922 | 10 - 300 | Good to excellent | Fair to excellent | + | weak + to + |
| <i>Escherichia coli</i> ATCC® 11775 | 10 - 300 | Good to excellent | Good to excellent | + | + |

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

Test Procedure

Refer to appropriate references for specific procedures using EC Medium.²⁻⁴

Results

Gas production with growth in EC Medium within 24 hours or less is considered a positive fecal coliform reaction. Failure to produce gas with little or no growth is a negative reaction.²

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 the 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 varying nutritional requirements, some strains may be encountered that grow poorly or fail to grow on this medium.

Packaging

| | | | |
|------------------|-----------------|--------------|--------------|
| EC Medium | Code No. | 7206A | 500 g |
| | | 7206B | 2 kg |
| | | 7206C | 10 kg |

References

1. **Hajna and Perry.** 1943. Am J. Public Health. **33**:550.
2. **Eaton, A. D., L. S. Clesceri, and A. E. Greenberg (eds.).** 1995. Standard methods for the examination of water and wastewater, 19th ed., American Public Health Association, Washington, D.C.
3. **Cunniff, P. (ed.).** 1995. Official Methods of Analysis AOAC International, 16th ed., AOAC International, Gaithersburg, MD.
4. **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.

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.