

MOTILITY TEST AGAR (7247)

Intended Use

Motility Test Agar is used for the differentiation of microorganisms on the basis of motility.

Product Summary and Explanation

In 1936, Tittsler and Sandholzer reported using a semisolid agar for the detection of bacterial motility.¹ Motility Test Agar is a modification of this formulation.

Bacterial motility is observed macroscopically by a diffuse zone of growth spreading from the line of inoculation. Certain species of motile bacteria will show diffuse growth throughout the entire medium, while others may show diffusion from one or two points appearing as nodular outgrowths along the stab. Tittsler and Sandholzer reported tubes incubated for one day gave identical results with the hanging drop method, and incubation for two days permitted demonstration of motility in an additional 4% of cultures tested.¹

Motility Test Agar is recommended for detection of microbial motility in food and dairy standard methods.²⁻⁴

Principles of the Procedure

The nitrogen, carbon, and vitamin sources are provided by Enzymatic Digest of Gelatin and Beef Extract in Motility Test Agar. Sodium Chloride maintains the osmotic environment. Agar is the solidifying agent used at a low concentration.

Formula / Liter

Enzymatic Digest of Gelatin	10 g
Beef Extract	3 g
Sodium Chloride	5 g
Agar	4 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. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions

1. Suspend 22 g of the medium 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 trace to slightly hazy and yellow-beige.

Expected Cultural Response: Cultural response in Motility Test Agar incubated aerobically at 35 ± 2°C and examined for growth after 18 - 24 hours.

Microorganism	Approx. Inoculum (CFU)	Expected Results	
		Response	Motility
<i>Escherichia coli</i> ATCC® 25922	Direct Inoculation	Growth	Positive
<i>Salmonella choleraesuis</i> ATCC® 13076	Direct Inoculation	Growth	Positive
<i>Staphylococcus aureus</i> ATCC® 25923	Direct Inoculation	Growth	Negative

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

Test Procedure

Inoculate tubes by stabbing through center of the medium with inoculating needle to approximately one-half the depth of the medium. Incubate at the proper temperature for the organism under consideration and examine at 18 – 48 hours. If negative, continue incubation at 22 - 25°C for an additional 5 days.

Results

Motility is observed visually by diffuse growth spreading from the line of inoculation. Certain strains of motile bacteria will show diffuse growth throughout the entire medium, while others may show diffusion from one or two points only, appearing as nodular growths along the stab line. Non-motile organisms grow only along the line of inoculation.

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.

Limitations of the Procedure

1. Many organisms fail to grow deep in semisolid media, inoculating pour plates may be advantageous.⁵
2. Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.

Packaging

Motility Test Agar	Code No.	7247A	500 g
		7247B	2 kg
		7247C	10 kg

References

1. **Tittsler, R. P., and L. A. Sandholzer.** 1936. The use of semi-solid agar for the detection of bacterial motility. *J. Bacteriol.* **31**:575-580.
2. **Harmon, S. M., D. A. Kautter, D. A. Golden, and E. J. Rhodehamel.** 1995. *Bacteriological analytical manual*, 8th ed. AOAC International, Arlington, VA.
3. **Marshall, R. T. (ed.)**. *Standard methods for the examination of dairy products*, 16th ed. American Public Health Association, Washington, D.C.
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.
5. **MacFaddin, J. D.** 1985. *Media for isolation-cultivation-identification-maintenance of medical bacteria*, vol. 1, p. 110-114. Williams & Wilkins, Baltimore, MD.

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.