Motility GI Medium

Intended Use
Motility GI Medium is used for detecting motility of microorganisms and for separating organisms in their motile phase.

Summary and Explanation
Motility GI Medium is prepared according to the formulation of Jordan, Caldwell and Reiter.[1] It is a semisolid gelatin-heart infusion medium that is adaptable to use in both tubes and plates for motility studies.

Principles of the Procedure
Beef heart infusion, peptone and gelatin provide nitrogen, vitamins and amino acids. Agar is the solidifying agent. Motility is evidenced by the presence of diffuse growth away from the line or spot of inoculation. Nonmotile organisms grow only along the line of inoculation.

Formula
Difco™ Motility GI Medium

Approximate Formula* Per Liter		
Beef Heart, Infusion from 500 g	10.0	g
Tryptose	10.0	g
Sodium Chloride	5.0	g
Gelatin	53.4	g
Agar	3.0	g

**Adjusted and/or supplemented as required to meet performance criteria.*

Directions for Preparation from Dehydrated Product
1. Suspend 81.4 g of the powder in 1 L of purified water. Mix thoroughly.
2. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
3. Autoclave at 121°C for 15 minutes.
4. Test samples of the finished product for performance using stable, typical control cultures.

Procedure
1. If tubes are desired, dispense the molten medium to a depth of 60-75 mm and cool in cold water up to the depth of the medium. Cool flasks of medium to 50-55°C; pour into sterile Petri dishes to a depth of 1/8 inch or more and allow to solidify.
2. Inoculate with growth from an 18-24 hour pure culture. If tubes are used, inoculate by stab inoculation. If plates are used, spot the inoculum on the surface or stab just below the medium surface.
3. Incubate at a temperature and duration appropriate for the suspected organism being tested.
4. Examine tubes or plates for growth and signs of motility.

Expected Results
Motility is evidenced by the presence of diffuse growth away from the line or spot of inoculation. Nonmotile organisms grow only along the line of inoculation.

Limitations of the Procedure
1. All weak or questionable motility test results should be confirmed by flagella stain or by direct wet microscopy.[2]
2. Some flagellar proteins are not synthesized at higher temperatures.[3]
3. Some isolates of *Yersinia enterocolitica* demonstrate motility at 35°C while others may be nonmotile at 25°C.[2] The motility of *Proteus* is also temperature dependent. This effect of temperature on motility needs to be taken into account when deciding on a testing regimen.
4. Due to the temperature dependency of motility in some organisms, a negative test tube or plate should be incubated an additional 5 days at a lower temperature of 22-25°C.[3]

User Quality Control

Identity Specifications

Difco™ Motility GI Medium

Dehydrated Appearance:	Light tan, free-flowing, slightly gritty, homogeneous.
Solution:	8.14% solution, soluble in purified water upon boiling. Solution is medium amber, clear to slightly opalescent, may have a slight precipitate.
Prepared Appearance:	Medium amber, slightly opalescent, may have a slight precipitate.
Reaction of 8.14% Solution at 25°C:	pH 7.2 ± 0.2

Cultural Response

Difco™ Motility GI Medium

Prepare the medium per label directions. Inoculate tubes of the medium with fresh cultures by stabbing with an inoculating wire and incubate at 35 ± 2°C for 18-48 hours.

ORGANISM	ATCC™	RECOVERY	MOTILITY
Enterobacter aerogenes	13048	Good	+
Escherichia coli	25922	Good	+
Klebsiella pneumoniae	13883	Good	–
Proteus mirabilis	25933	Good	+/–*

**Motility of* Proteus *is temperature dependent, being more pronounced at 20°C and possibly absent at 35°C.*

Uninoculated

References

1. Jordan, Caldwell and Reiter. 1934. J. Bacteriol. *27*:165.
2. D'Amato and Tomfohrde. 1981. J. Clin. Microbiol. *14*:347.
3. MacFaddin. 1985. Media for isolation-cultivation-identification-maintenance of medical bacteria, vol. 1. Williams & Wilkins, Baltimore, Md.

Availability

Difco™ Motility GI Medium

Cat. No. 286910 Dehydrated – 500 g