

STANTON TERRITORIAL HEALTH AUTHORITY

Yellowknife, Northwest Territories

TITLE: Motility	Revision Date:	Issue Date:
	20-April-2018	20-April-2016
Document Number: MIC51300	Status: Approved	
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Approved by:	Signed by:	
S. Asmussen, Manager of Diagnostic Services	land	Encorer 1

PURPOSE:

The Motility Test is used to detect the presence of flagella by bacteria, allowing them to travel in the microscopic field. Movement is observed microscopically.

SAMPLE INFORMATION:

Туре	Well isolated colonies
Source	18-24 hour culture

REAGENTS and/or MEDIA:

Туре	TSB broth	
Source	Oxoid	
Stability	Stable until expiration date indicated	
Storage	Store at 2-8°C away from direct light	
Requirements	Store at 2-6 C away from direct light	
Criteria for rejection	Do not use if there are signs of contamination or deterioration	
and follow up action	(shrinking/discoloration).	
For wet prep	Sterile saline or any broth which does not contain carbohydrate and	
	will support the growth of organisms (BHI, TSB)	

SUPPLIES:

- Inoculating wire
- · Motility test tube
- Glass slides and cover slips

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SPECIAL SAFETY PRECAUTIONS:

Containment Level 2 facilities, equipment, and operational practices for work involving infectious or potentially infectious materials or cultures.

- Lab gown must be worn when performing activities with potential pathogens.
- Gloves must be worn when direct skin contact with infected materials is unavoidable.
- Eye protection must be used where there is a known or potential risk of exposure to splashes.
- All procedures that may produce aerosols, or involve high concentrations or large volumes should be conducted in a biological safety cabinet (BSC).
- The use of needles, syringes, and other sharp objects should be strictly limited.

PROCEDURE INSTRUCTIONS:

Step	Action			
Perfo	Performing a Motility Test			
	LIS CODE: ^MOTWP			
1	Make a light suspension of isolated colonies in broth or saline			
	Saline can be used for Gram negative bacilli but not for Listeria sp			
2	Place a drop on the centre of a microscope slide; add cover slip. Allow the organisms			
_	to "settle" for a minute.			
3	Swing the condenser out of the path of illumination			
3	Observe under high power (40X) for forward, directional movement.			
IF		THEN		
Sample show forward, directional movement		Organism is motile		
No directional movement observed		Incubate organism in broth, proceed to Step 4		

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Incubate as follows:

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• Enterobacteriaceae: 35°C for 24h

• Listeria sp and Yersinia sp: incubate 2 tubes:

➤ One at 35°C

➤ One at 25°C

If there is a question regarding a negative result, incubate at 25°C

INTERPRETATION OF RESULTS:

Result	Interpretation	
Directional purposeful motility	POSITIVE; motile	
	Listeria sp will exhibit tumbling motility at	
	25°C	
	 Campylobacter sp will exhibit darting 	
	motility	
	Enterobacteriaceae .casseliflavus and	
	<i>E.gallinarum</i> are motile	
	B.anthracis is motile	
Vibrational or jiggling/shaking movement	NEGATIVE; non-motile	
	Brownian movement	

NOTES AND PRECAUTIONS:

- Motility tests may show a false-negative reaction. The organism may be weakly motile, or the flagella may be damaged due to heating, shaking, or other trauma.
- 2. Bacillus spp. should be motile. Lack of motility could indicate B. anthracis.
- 3. A large number of *E. casseliflavus* and *E. gallinarum* organisms have been reported as non-motile using some tube motility agar. If a vancomycin MIC is between 4 and 16 μg/mL and the isolate is ampicillin susceptible, but the enterococcus is non-motile, confirm results with the 2h broth method (incubate the suspension for two hours in broth before examining).

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- 4. Listeria organisms are motile at 25°C but not at 35°C. On wet mount they exhibit tumbling motility.
- 5. Yersinia enterocolitica is motile at 25°C but not at 35°C.

REFERENCES:

 Garcia, L. S. (2010). Motility Tests. Clinical Microbiology Procedures Handbook vol.1, pp. 3.17.31.1-3.17.31.3.

REVISION HISTORY:

REVISION	DATE	Description of Change	REQUESTED BY
1.0	31Dec2013	Initial Release	A.Darrach
2.0	31March16	Update of "Special Safety Precautions" to reflect risk assessment recommendations.	C. Russell