

PROGRAM Standard Operating Procedure – Laboratory Services	
Title: MIC53300 – Motility Test	Policy Number:
Program Name: Laboratory Services	
Applicable Domain: Lab, DI and Pharmacy Services	
Additional Domain(s):	
Effective Date:	Next Review Date:
Issuing Authority: Director of Health Services	Date Approved:
Accreditation Canada Applicable Standard: N/A	

GUIDING PRINCIPLE:

The motility test is used to detect the presence of flagella by bacteria microscopically.

PURPOSE/RATIONALE:

This standard operating procedure describes how to perform the motility test.

SCOPE/APPLICABILITY:

This procedure applies to Medical Laboratory Technologists (MLTs) performing the motility test.

SAMPLE INFORMATION:

Type	Few, fresh, well isolated colonies
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REAGENTS and/or MEDIA:

- Thioglycollate broth (THIO)

SUPPLIES:

- Disposable loops
- Wooden sticks
- Sterile pipettes
- Glass microscope slides
- Cover slips
- Sterile saline

EQUIPMENT:

- 35° ambient air incubator

SPECIAL SAFETY PRECAUTIONS:

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

- Ensure that appropriate hand hygiene practices be used.
- 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 when there is a known or potential risk of exposure of 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.

All patient specimens are assumed to be potentially infectious. Routine Practices must be followed. Since viable micro-organisms are used, all cultures must be handled with appropriate precautions. All equipment in contact with cultures should be decontaminated by appropriate methods.

QUALITY CONTROL:

- Quality control performed as tested:
 - Positive: *Escherichia coli* ATCC 25922
 - Negative: *Klebsiella pneumoniae* ATCC 700603
- A TQC order is automatically generated when test is ordered to record the QC results

PROCEDURE INSTRUCTIONS:

Step	Action
Performing the motility test	
1	Use fresh growth from an agar plate and suspend isolated colonies into the Thioglycollate broth. Use a light inoculum (not visibly turbid) NOTE: It is acceptable to suspend the organism in a small amount of saline for an initial wet mount, but follow with incubation of Thioglycollate broth if the result is negative.
2	Incubate the Thioglycollate broth as follows: <ul style="list-style-type: none">• <i>Listeria</i> and <i>Enterococcus</i> spp. for 2 to 4 hours at room temperature• Non-fermenting, Gram-negative rods for 24 hours at room temperature• Other organisms, including <i>Bacillus</i> spp. for 2 to 24 hours at 35°C
3	While wearing gloves, place a small drop of the broth on the center of a microscope slide. Add a coverslip and allow the organism to "settle" for a minute.
4	Move the condenser out of the path of illumination and observe under high power magnification (40X).

INTERPRETATION OF RESULTS:

IF	THEN
Directional and purposeful motility	Motility Test = Positive
No directional movement observed	Motility Test = Negative

LIMITATIONS:

1. *Bacillus* spp. is best tested directly from a fresh plate. If a fresh plate is not available, inoculate a plate and incubate for 4 hours and then perform wet mount.
2. *Bacillus* spp. should be motile. Lack of motility could indicate *Bacillus anthracis*.
3. *Enterococcus casseliflavus* and *Enterococcus gallinarum* are motile.
4. *Listeria* organisms are motile at room temperature but not at 35°C, with tumbling motility.
5. *Yersinia enterocolitica* is motile at room temperature but not at 35°C.
6. *Campylobacter* spp. will display darting motility.
7. Excessive heat on microscope can affect the results.

REFERENCES:

1. Clinical Microbiology Procedures Handbook, 4th edition, ASM Press, 2016

APPROVAL:

Date

REVISION HISTORY:

REVISION	DATE	Description of Change	REQUESTED BY
1.0	05 Apr 19	Initial Release	L. Steven
2.0	30 Jun 21	Procedure reviewed and added to NTHSSA policy template	L. Steven

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