


# STANTON TERRITORIAL HEALTH AUTHORITY

## Yellowknife, Northwest Territories

<b>TITLE: MCAT – Catarrhalis Test Disk</b>	<b>Revision Date:</b> 20-April-2018	<b>Issue Date:</b> 20-April-2016
<b>Document Number: MIC51200</b>	<b>Status: <span style="color: red;">Approved</span></b>	
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<b>Approved by:</b> S. Asmussen, Manager of Diagnostic Services	<b>Signed by:</b> 	

### PURPOSE:

A rapid biochemical test used to presumptively identify *Moraxella catarrhalis* from culture. The MCAT test can be helpful to differentiate *Moraxella catarrhalis* from similar oxidase-positive, Gram negative diplococci such as the *Neisseria spp.*

### INTRODUCTION:

The MCAT test is a shorter name for the Butyrate Esterase Test. *M. catarrhalis* uses an enzyme butyrate esterase to hydrolyze the substrate indoxyl butyrate into indoxyl. In the presence of oxygen, indoxyl forms a chromogenic (visible) compound called indigo. A positive MCAT test appears **blue-green** within 2 minutes of application, which is the result of the production of indigo on the disk.

- Historically, a positive MCAT required confirmation using a DNase test; however the use of Remel Catarrhalis Test Disk negates this extra step.

### SAMPLE INFORMATION:

<b>Type</b>	Biochemical disk.
<b>Use</b>	Gram Neg diplococci, positive for oxidase & catalase, and also “scoot” or stick together when touched with an application stick or inoculating needle.
<b>Stability</b>	This product should not be used if: a) The colour of the disk has changed from WHITE b) The expiration date has passed c) The desiccant has changed from <b>blue</b> to <b>pink</b> d) There are other signs of deterioration

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<b>Storage Requirements</b>	Store refrigerated between 2-8° Celsius. Bring to room temperature before use. Use disks until the listed expiry date on vial.
<b>Quality Control</b>	<ul style="list-style-type: none"> <li>• Perform a visual check every use. Do not use disks that do not appear white</li> <li>• Perform organism QC every day used. A QC order is generated in the TQC system.</li> <li>• To result: Resulting Worklist → MICS → MCAT <ul style="list-style-type: none"> <li>➤ <b>POSITIVE CONTROL:</b> <i>M. catarrhalis</i> ATCC25240</li> <li>➤ <b>NEGATIVE CONTROL:</b> <i>S.agalactiae</i> ATCC12386</li> </ul> </li> </ul>

**SUPPLIES:**

- Wooden applicator sticks or inoculating loops
- Glass slide or petri dish
- ATCC control strains for QC

**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.



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### PROCEDURE INSTRUCTIONS:

Step	Action
<b>Performing an MCAT Confirmation</b>	
<b>1</b>	Using the small forceps kept in the grey container with the other biochemical disks, remove one MCAT disk from vial. Place on a clean slide or a petri dish, <b>SMOOTH SIDE DOWN</b> . Do <b>NOT</b> moisten disk with distilled water.
<b>2</b>	Using a wooden applicator stick, pick one or two typical MCAT colonies off blood or chocolate agar. It may be necessary to perform a subculture to obtain isolated colonies for testing.
<b>3</b>	Rub colonies into a small portion of the disk. Repeat with QC strains.
<b>4</b>	Wait up to 2 minutes before reading disk. Development of a <b>blue-green</b> colour indicates a positive MCAT test. Reading after 2 minutes can yield false positive results.

### INTERPRETATION OF RESULTS:

IF	THEN
Development of <b>blue-green</b> colour up to 2 minutes after rubbing onto disk. 	<b>POSITIVE</b> MCAT test (isolate produces butyrate esterase and can therefore be presumptively identified as <i>M. catarrhalis</i> )  <b>**Warning**</b> Ensure correct Gram Stain morphology. <i>Eikenella</i> and <i>Acinetobacter</i> produce butyrate esterase therefore giving false positive reactions.
No colour development up to 2 minutes after placement onto disk. 	<b>NEGATIVE</b> MCAT test  <b>**Warning**</b> Using too small an inoculum can cause false negative reactions and is recommended to repeat the test or confirm with DNase.
<b>Blue-green</b> colour AFTER 2 minutes.	<ul style="list-style-type: none"> <li>• Cannot interpret test.</li> <li>• Possible false-positive result.</li> <li>• Repeat test and controls.</li> </ul>
Controls fail to give proper reactions.	<ul style="list-style-type: none"> <li>• Prepare fresh isolates from slants or</li> </ul>

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	glycerol. <ul style="list-style-type: none"> <li>• Visually inspect disk for defects.</li> <li>• Check expiration date.</li> <li>• Obtain new disk if necessary.</li> <li>• Advise Tech II.</li> </ul>
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**REFERENCES:**

- Clinical Microbiology Procedures Handbook, 3<sup>rd</sup> Edition, Volume 1. *Butyrate Esterase Test. Aerobic bacteriology.* Page 3.17.7- 3.17.3. 2007 Update
- Product insert: REMEL Catarrhalis Test Disk.

**REVISION HISTORY:**

REVISION	DATE	Description of Change	REQUESTED BY
1.0	31-Dec-2013	Initial Release	LMD
2.0	31-March-2016	Update of “Special Safety Precautions” to reflect risk assessment recommendations.	C. Russell