

NATIONAL MYCOBACTERIA REFERENCE LABORATORY

The National Mycobacteria Reference Laboratory (NMRL) provides laboratory diagnosis for tuberculosis and other mycobacterial diseases for all hospitals and health clinics in Brunei Darussalam. As a reference laboratory, NMRL collaborates with healthcare providers and the National TB Coordinating Centre for the effective surveillance, prevention and control of tuberculosis throughout the country.

Our Services

Acid-Fast Bacilli (AFB) Microscopy

- ✓ Detection of fluorochrome and acid-fast bacilli (AFB) from clinical specimens and cultures.

Mycobacteria Culture

- ✓ Isolation of mycobacteria by utilising an automated liquid-based system (MGIT 960) and solid medium (Lowenstein Jensen's).

Drug Susceptibility Testing (DST)

- ✓ Providing first-line drug profile for the treatment of *M. tuberculosis* complex infection.

Molecular Assay

- ✓ Identification and differentiation of *M. tuberculosis* complex (MTBC) and detection of mutated genes associated to Isoniazid and Rifampicin resistance.
- ✓ Identification and differentiation of 30 non-tuberculous mycobacteria species (NTM).



Operating hours:

Monday to Thursday and Saturday
 7.45am – 12.15pm
 1.30pm – 4.30pm

Contact us:

- 📍 Jalan Sumbiling, BS8511, Bandar Seri Begawan
- ☎ 2221821 or 2221842, ext-130
- ✉ nmrl.dls@moh.gov.bn

NATIONAL MYCOBACTERIA REFERENCE LABORATORY TEST CATALOGUE

Updated 25/03/2024

Acid Fast Bacilli (AFB) Smear, Microscopy	
Specimen	• Early morning sputum (EMS), bronchoalveolar lavage, CSF, gastric aspirates, body fluids, aspirations, tissues etc. • Collect specimen in sterile clean screw-capped containers without any preservatives.
Unacceptable	• Saliva • Stool • 24 hours pooled urine • Specimen found leaking upon receiving • Early morning sputum (EMS) containing food particles • Volume of EMS less than 3 mL • Body fluids or aspirations more than 50 mL • Specimen in fixatives or preservatives • Specimen taken with swab
Method	• Smear prepared from N-acetyl-L-cysteine Sodium hydroxide (NALC- NaOH) decontaminated and concentrated clinical specimens • Screening of fluorochrome bacilli: Auramine O Stain • Confirmatory of acid fast bacilli (AFB): Kinyoun stain • If smear is positive (new case), reflex test includes: Molecular detection of known mutations associated with Isoniazid and Rifampicin resistance - Hains MTBDR_{plus} (& Hains Mtbdrsl, if required)
Performed	Monday to Thursday & Saturday
TAT	Two (2) working days
Clinical Usage	• To detect presence of AFB bacilli in clinical specimens and culture
Reference Range	• Smear negative (No AFB seen)

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- Smear positive (AFB seen with quantitation reported)

Quantitation according to World Health Organisation,

NUMBER OF ACID- FAST BACILLI SEEN		Report
AURAMINE STAIN (400X)	KINYOUN STAIN (1000X)	
0	No AFB in 100 fields	No AFB seen
3-24 AFB/ 50 fields	1-9 AFB/ 100 fields	1+
1-6 AFB/ field	10-99 AFB/ 100 fields	2+
7-60 AFB/ field	1-10 AFB/ field	3+
>60 AFB/field	>10 AFB/ field	4+

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Acid- Fast Bacilli (AFB) Culture, Mycobacterial Culture	
Specimen	• Early morning sputum (EMS), bronchoalveolar lavage, CSF, gastric aspirates, body fluids, aspirations, tissues etc. • Blood culture shall be requested through phone. A designated culture bottle vial shall be provided. • Collect specimen in sterile clean screw-capped containers
Unacceptable	• Saliva • Stool • 24 hours pooled urine • Specimen found leaking upon receiving • Early morning sputum (EMS) containing food particles • Volume of EMS less than 3 mL • Body fluids or aspirations more than 50 mL • Specimen in fixatives or preservatives • Specimen taken with swab
Method	• Liquid culture using BBL Middlebrook 7H9 broth (incubated in BACTEC™ MGIT™ 960 instrument, Becton Dickinson, USA) and solid liquid using Lowenstein- Jensen culture • If culture is positive for AFB, reflex tests include: i. Rapid identification of <i>M. tuberculosis</i> complex strain (MTBC) by MPT64 antigen detection. ii. Molecular identification and sub-speciation of MTBC Hain Lifesciences Genotype MTBC iii. Susceptibility testing for <i>Mycobacterium tuberculosis</i>- Isoniazid, Rifampicin, Ethambutol, Streptomycin and Pyrazinamide- BD MGIT liquid system iv. Molecular detection of known mutations associated with Isoniazid and Rifampicin resistance - Hain MTBDRplus v. For Molecular identification and sub-speciation of non- tuberculous mycobacterium (NTM)- Hain Lifesciences Genotype CM and AS

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Performed	Monday to Thursday & Saturday
TAT	Six (6) to Eight (8) weeks • Receipt of specimen to detection of growth: Six (6) weeks • Reflex tests: Additional two (2) weeks. Depend on type of species growing, mixed cultures involved or further tests are required
Clinical Usage	Diagnosis of tuberculosis and other mycobacterial infection
Reference Range	• No growth after six weeks incubation • AFB culture contaminated with other microorganisms • Mycobacteria species identified. For <i>M. tuberculosis</i>, antibiotic susceptibility profile will be reported