MALDI Biotyper®

MBT HT Mycobacteria IVD Module

Confident mycobacteria identification

Innovation with Integrity

IVD

Confident mycobacteria identification

The genus *Mycobacterium* includes, as major groups, the important pathogens of the *Mycobacterium tuberculosis* complex (MTC) and the nontuberculous mycobacteria (NTM). Members of the latter group are cited increasingly as the cause for opportunistic infections among immunocompromised patients. This trend and the rise of antibiotic resistance in this genus demand improved differentiation among *Mycobacterium* species.

Covering the vast majority of Mycobacteria

The MBT HT Mycobacteria IVD Module is the comprehensive solution for clinical laboratories in need of highly reliable and fast mycobacteria identification via MALDI-TOF mass spectrometry. It is composed of a software module and a specific reference spectrum library covering most of the currently known mycobacteria species.

The accompanying MBT Mycobacteria IVD software, which is part of the MBT HT Mycobacteria IVD Module, triggers adapted data acquisition and analysis of mycobacteria samples, securing highly sensitive identifications.

Optimized and safe extraction

In general, *Mycobacterium* species are more demanding for MALDI-TOF MS analysis than most other bacteria. This is due to the rigid cell wall and a low metabolic activity, which is associated with a lower number of ribosomes.

As ribosomal proteins are the main analyte molecules for microorganism identification by MALDI-TOF, an optimized sample preparation protocol is key to yielding good quality spectra.
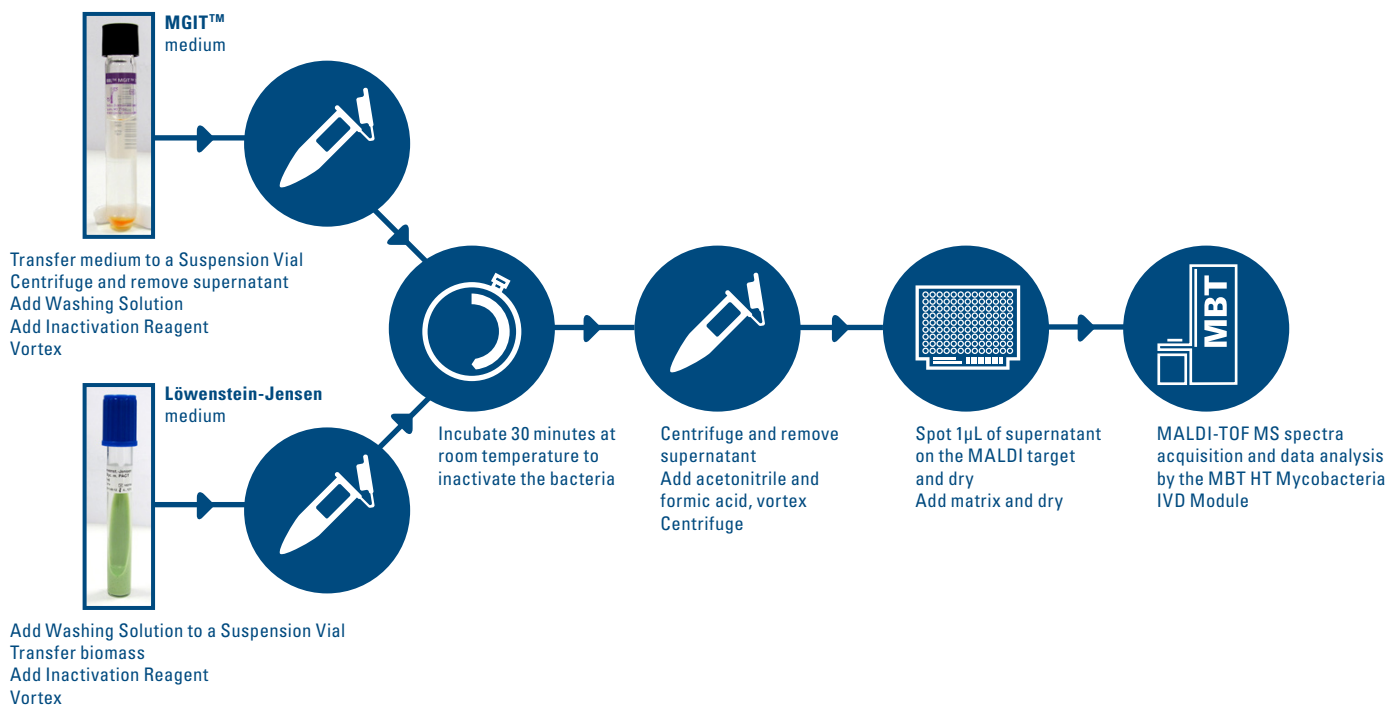
Mycobacterium samples need to be considered as biosafety level 3 organisms until the identification result is available, hence reliable inactivation is an indispensable step of the sample preparation protocol.

The above needs were addressed while developing the MBT Mycobacteria IVD Kit, which offers a dedicated and safe sample preparation method for *Mycobacterium* spp. The kit facilitates mycobacteria sample preparation for samples cultivated in liquid as well as on solid media, while reducing hands-on time compared to other procedures requiring boiling for inactivation.

MBT Mycobacteria IVD Kit

One workflow for solid media and liquid cultures

The new MBT Mycobacteria IVD Kit offers a dedicated sample preparation method for *Mycobacterium* spp. cultivated in liquid as well as on solid media. Unlike other procedures, the inactivation method of this kit does not require boiling but comprises a convenient and user-friendly incubation of the bacteria with an Inactivation Reagent, at room temperature. Additionally, the MBT Mycobacteria IVD Kit reduces the overall hands-on time from more than 1 hour to less than 45 minutes.

MGIT™ medium

Transfer medium to a Suspension Vial
Centrifuge and remove supernatant
Add Washing Solution
Add Inactivation Reagent
Vortex

Löwenstein-Jensen medium

Add Washing Solution to a Suspension Vial
Transfer biomass
Add Inactivation Reagent
Vortex

Incubate 30 minutes at room temperature to inactivate the bacteria

Centrifuge and remove supernatant
Add acetonitrile and formic acid, vortex
Centrifuge

Spot 1µL of supernatant on the MALDI target and dry
Add matrix and dry

MALDI-TOF MS spectra acquisition and data analysis by the MBT HT Mycobacteria IVD Module
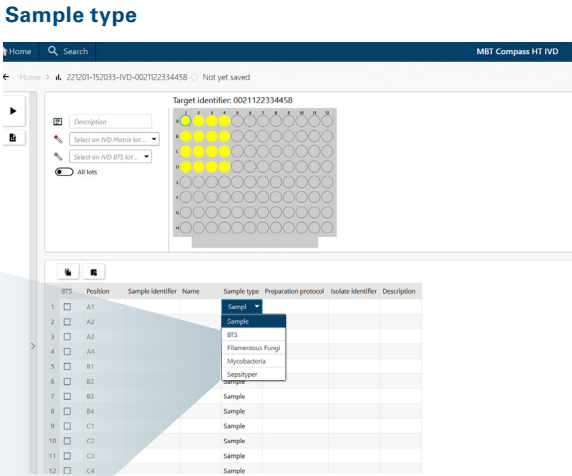
MBT Mycobacteria IVD Kit

MBT HT Mycobacteria IVD Module

Dedicated software

As *Mycobacterium* species are generally more demanding for MALDI-TOF MS analysis than most other bacteria, the comprehensive library is accompanied by a carefully designed software module.

Besides optimized sample preparation, also adapted data acquisition and subsequent data analysis are crucial to yielding good identification results. Thorough validation of the matching scores resulted in reliably accepting lower thresholds for *Mycobacterium* spp., ensuring highly specific and sensitive identification.

Selection of the appropriate sample type as "Mycobacteria" while setting up the analysis run automatically triggers the use of the dedicated software module for data acquisition, followed by matching the unknown spectrum against the reference spectra incorporated in the MBT HT Mycobacteria IVD Module, taking into account the specific log(score) thresholds for reliable identification.

Sample type

Sample
BTS
Filamentous Fungi
Mycobacteria
Sepsityper

Easy selection of the sample type while setting up the run for optimized data acquisition and analysis

One reference library for solid media and liquid cultures

Spectra of most mycobacteria strains grown on solid Löwenstein-Jensen or BACTEC™ MGIT™ (BD Diagnostics) liquid media show no significant variation. For those with varying spectra, reference spectra from both liquid and solid media are stored in the mycobacteria reference library.

International mycobacteria consortium

The aim of this consortium is to collect securely identified mycobacteria strains to create a library as the basis for the highest performance in mycobacteria identification.

Thirty laboratories spread across 11 countries have provided well-characterized clinical strains from which more than 580 reference entries have been derived, improving significantly the strain coverage for clinical analyses.

Mycobacteria library

182 species entries

M. abscessus	M. diernhoferi	M. kyorinense	M. pseudoshottsii
M. africanum	M. doricum	M. lacus	M. psychrotolerans
M. agri	M. duvalii	M. lehmannii	M. pulveris
M. aichiense	M. eburneum	M. lentiflavum	M. pyrenivorans
M. algericum	M. elephantis	M. litorale	M. rhodesiae
M. alsense	M. engbaekii	M. llatzerense	M. riyadhense
M. alvei	M. europaeum	M. longobardum	M. rufum
M. angelicum	M. fallax	M. lutetiense	M. rutilum
M. anyangense	M. farcinogenes	M. madagascariense	M. salmoniphilum
M. aquaticum	M. flavescens	M. mageritense	M. saopaulense
M. arabiense	M. florentinum	M. malmoense	M. sarraceniae
M. arcueilense	M. fluoranthenivorans	M. mantenii	M. saskatchewanense
M. aromaticivorans	M. fortuitum	M. marinum	M. scrofulaceum
M. arosiense	M. fragae	M. marseillense	M. sediminis
M. arupense	M. franklinii	M. microti	M. senegalense
M. asiaticum	M. frederiksbergense	M. minnesotense	M. senuense
M. aubagnense	M. gadium	M. monacense	M. seoulense
M. aurum	M. gastri	M. montefiorense	M. septicum
M. austroafricanum	M. genavense	M. montmartrense	M. setense
M. avium	M. gilvum	M. moriokaense	M. sherrisii
M. bacteremicum	M. goodii	M. mucogenicum	M. shigaense
M. basiliense	M. gordonae	M. murale	M. shimoidei
M. boenickei	M. grossiae	M. nebraskense	M. shinjukuense
M. bohemicum	M. haemophilum	M. neoaurum	M. simiae
M. botniense	M. hassiacum	M. neumannii	M. smegmatis
M. bovis	M. heckeshornense	M. neworleansense	M. sphagni
M. bourgelatii	M. heidelbergense	M. nonchromogenicum	M. stephanolepidis
M. branderi	M. helvum	M. noviomagense	M. stomatepiae
M. brisbanense	M. heraklionense	M. novocastrense	M. szulgai
M. brumae	M. hiberniae	M. obuense	M. talmoniae
M. canariasense	M. hippocampi	M. pallens	M. terrae
M. caprae	M. hodleri	M. palustre	M. thermoresistibile
M. celatum	M. holsaticum	M. paraense	M. timonense
M. celeriflavum	M. houstonense	M. paraffinicum	M. tokaiense
M. chelonae	M. icosiumassiliensis	M. parafortuitum	M. triplex
M. chimaera	M. immunogenum	M. paragordonae	M. triviale
M. chitae	M. insubricum	M. parakoreense	M. tuberculosis
M. chlorophenolicum	M. interjectum	M. parascrofulaceum	M. tusciae
M. chubuense	M. intermedium	M. paraseoulense	M. vaccae
M. colombiense	M. intracellulare	M. paraterrae	M. vanbaalenii
M. conceptionense	M. iranicum	M. parmense	M. virginiense
M. confluentis	M. kansasii	M. peregrinum	M. vulnerans
M. conspicuum	M. komossense	M. phlei	M. wolinskyi
M. cookii	M. koreense	M. phocaicum	M. xenopi
M. cosmeticum	M. kubicae	M. porcinum	
M. crocinum	M. kumamotonense	M. poriferae	

ORDER INFORMATION

Part-No. 1877012
MBT HT Mycobacteria IVD Module

Consists of the MBT Mycobacteria IVD
Library and license for the dedicated software
module. Prerequisite for the module is
the MBT Compass HT IVD software.

Part-No. 1877008
MBT HT Mycobacteria IVD Add License

Part-No. 1889166
MBT Mycobacteria IVD Kit

Consists of
- Suspension Vials (50)
- Inactivation Reagent (2 x 30 mL)
- Washing Solution (2 x 10 mL)

Please contact your local representative for availability in your country.
Not for sale in the USA.

CE IVD

Online information
bruker.com/microbiology

Bruker Daltonics GmbH & Co. KG

Bremen · Germany
Phone +49 (0) 421-2205-0

info.md@bruker.com