

# MAST<sup>®</sup>ID

## Indirect Carbapenemase Test (ICT) - D74

For the detection of genuine carbapenemase producers

- Suitable for use with *Acinetobacter* and *Pseudomonas* spp.

- Screening tool for MBL, KPC and OXA enzymes

- Easy to perform

- Simple interpretation

## Antibiotic Resistance

Due to misuse and overuse of antibiotics, antibiotic resistance has quickly disseminated and is considered a major threat to healthcare worldwide. Bacteria are now developing an abundance of mechanisms that allow them to confer resistance to antibiotics, resulting in the development of untreatable super-bugs.

Of increasing concern is the level of carbapenem resistance amongst Gram-negative bacteria caused by carbapenemases, which is not only confined to *Enterobacteriaceae* but is now found in *Pseudomonas* and *Acinetobacter* spp. Carbapenems are often a last resort when treating resistant Gram-negative infections; however the development of carbapenemases is rapidly rendering them useless.

Although collectively classified as carbapenemases, they vary in their ability to hydrolyze beta-lactams and can be further categorized as Ambler class A, B or D (see figure 1).

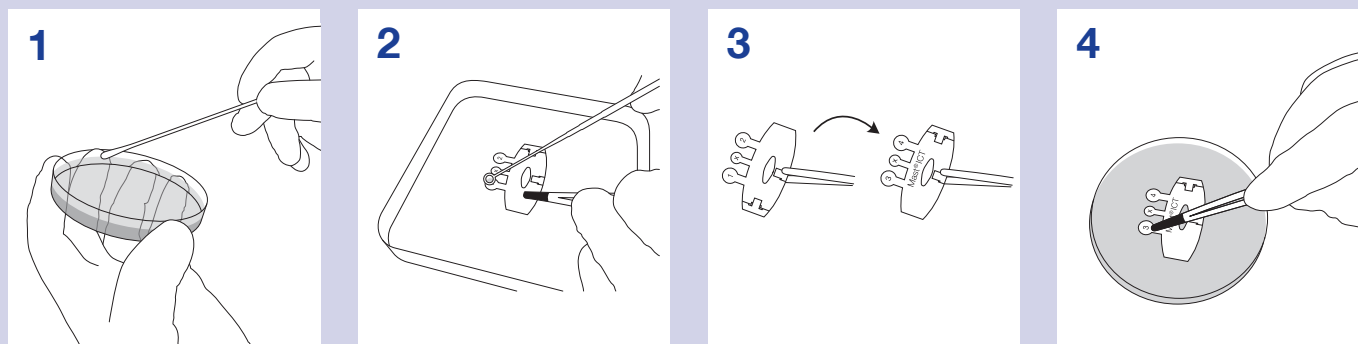
Ambler class	Mechanism	Carbapenemase type
A	Serine based hydrolytic mechanism	KPC
B	Metallo-Zinc catalysed at active site	MBL (IMP, VIM & NDM)
D	Carbapenem-hydrolyzing class D β-lactamases	OXA

Figure 1. Carbapenemase classification

## MAST® ID – Indirect Carbapenemase Test

Carbapenemases are found in organisms that reside in the bowel and are often associated with high mortality rates. They are highly transmissible in healthcare settings and detection is imperative for infection control purposes. Although there are commercial solutions for the detection of carbapenemases in *Enterobacteriaceae*, options for *Pseudomonas* and *Acinetobacter* spp. remain limited.

Mast Group Ltd. has developed **MAST® ID** Indirect Carbapenemase Test; a paper test device, based on the principles of the Indirect Carbapenemase Test (ICT). The ICT method utilises a cell permeabilising agent to release carbapenemase enzyme from a Carbapenemase-Producing-Organism (CPO) to hydrolyse an indicator antibiotic in the test system. This allows a normally carbapenem susceptible reporter organism to grow where antibiotic has been hydrolysed, thus producing a distorted zone of inhibition. If the test organism produces no carbapenemase, the reporter organism will form a regular, circular zone of inhibition around the indicator tip.



Swab suspension of reporter organism across clean Mueller Hinton plate.

Apply colonies of negative control to **Tip 1** and colonies of test organism to **Tip 2**.

Flip the **MAST® ID** ICT device with clean forceps.

Apply the **MAST® ID** ICT device to the inoculated Mueller Hinton plate, with **Tips 1 and 2** in direct contact with the agar surface.



## Interpretation of results

Tip 1/4 and 2/3 –ESBL & AmpC Inhibitors + Porinating agent

Tip X – Penem

### Positive



### Negative



## Features and Benefits

### Detects the 'Big-5-Carbapenemases'

MAST® Indirect Carbapenemase Test is a reliable screening tool for OXA, KPC, NDM, IMP and VIM enzymes - also known as the 'Big-5-Carbapenemases'

### Convenient format

Each device is provided individually wrapped with its own desiccant, allowing the product to be used according to your personal laboratory demand.

### Suitable for use with *Acinetobacter*, *Pseudomonas spp.* and *Enterobacteriaceae*

Simple assay for screening of problematic carbapenemase producers, that is easy to perform and cost-effective.

### Interpretation by simple observation


Distortion of the zone around Tip 3 indicates carbapenemase-production. No specialist equipment for interpretation.



## Ordering Information

Order Code	Product 	No. Tests
171742	<b>MAST® ID</b> Indirect Carbapenemase Test (ICT) - D74	25

## Additional products from Mast's Resistance Range

Order Code	Product 	No. Tests
171732	<b>MASTDISCS® COMBI Carba plus</b> - D73C	50
171722	<b>MASTDISCS® COMBI AmpC, ESBL &amp; Carbapenemase Detection Set</b> - D72C	50
171712	<b>MASTDISCS® ID</b> - Carbapenemase Activity Test (CAT) - D71C	250



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