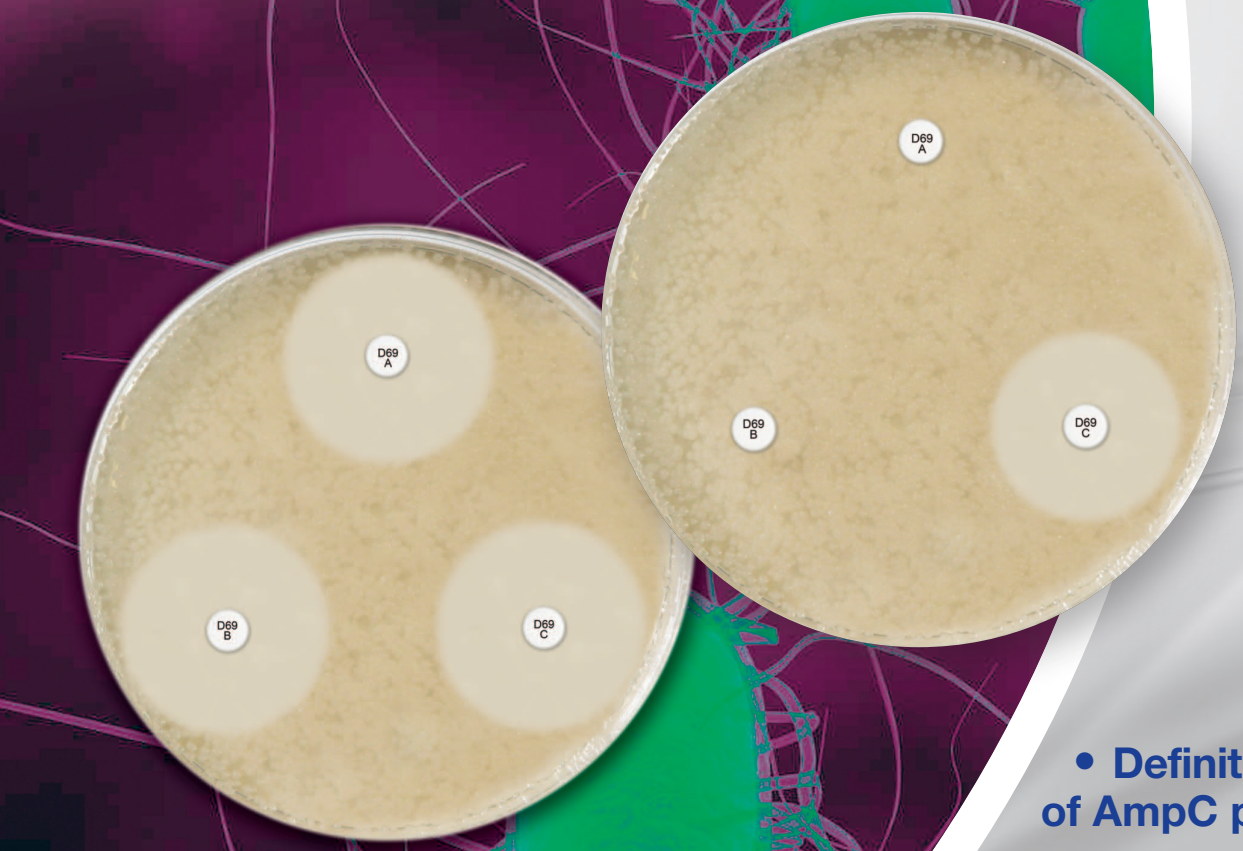
IVD solutions through partnership

Mast Group

mastdiscs™ *combi*

AmpC Detection Set

Combination disc set for the identification of AmpC producing Enterobacteriaceae



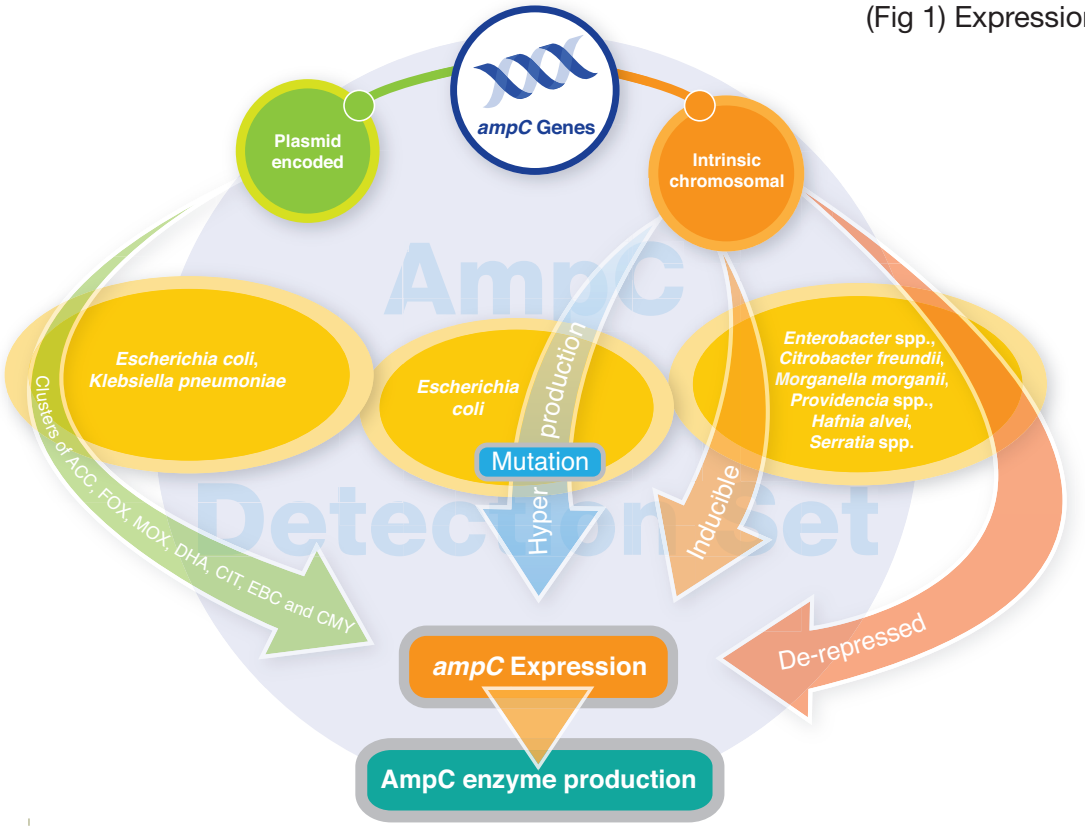
- Definitive identification of AmpC producers
- Detects all AmpC types
- Helps guide appropriate carbapenem usage
- Minimises reporting of false cephalosporin susceptibility

Mast continues to lead the market in the classification, identification and detection of ESBL and AmpC producing pathogens with the development of the AmpC Detection Set.

What is AmpC?

AmpC beta-lactamases are bacterial enzymes that hydrolyse 3rd generation extended spectrum cephalosporins and cephamycins engendering resistance to these categories of antibiotic.

(Fig 1) Expression of *ampC*



Importance of AmpC detection

Diagnostically, all types of AmpC producers are equally significant and may lead to therapy failure in critically ill patients.

The onslaught of AmpC resistance represents a major challenge for clinicians as it renders 3rd generation cephalosporins increasingly ineffective.

Of particular concern are the limited treatment options for Gram negative resistant bacteria leading to antibiotic selection pressure and consequent risk of the emergence of carbapenem resistance.

Confirmation of AmpC production supports susceptibility information, permitting carbapenems to be reserved for complicated infections. This may allow selection of a targeted narrow spectrum antibiotic rather than those with broad spectrum activity, minimising the risk of selecting for, or promoting the development of resistance.

When to suspect AmpC

AmpC can be suspected in *E.coli* and *Klebsiella* spp. when resistance to cephalosporins, including cefoxitin, is detected.

Suspect isolates may generate an unexpected result for ESBL confirmatory tests due to the induction of AmpC activity caused by ESBL inhibitors.

AmpC can be suspected in strains that have an intrinsic chromosomal *ampC* gene, where the initial susceptibility screen may not indicate resistance.

Benefits of Mast AmpC Detection Set

- **Detection of ALL mechanisms of AmpC resistance**
  Combining an AmpC inducer with both ESBL and AmpC inhibitors simultaneously promotes AmpC enzyme induction whilst selectively blocking the enzyme active site. In consequence, plasmid and intrinsic de-repressed, inducible or hyperproduced AmpCs can be detected, irrespective of how *ampC* genes are encoded or expressed (fig.1)

- **98% sensitivity, 100% specificity**
  Reliable phenotypic AmpC detection minimises the risk of erroneously reporting cephalosporin susceptibility, diminishing any potentially serious consequences

- **Easy to interpret**
  A simple calculation based on zone size comparison indicates the presence of an AmpC producer (Fig.2)

- **Flexibility for multiple applications**
  AmpC Detection Set can be used in conjunction with Mast's AmpC and ESBL Detection Set (D68C) to confirm AmpC production, or as a standalone test to screen *E.coli* and *Klebsiella* spp. isolates for plasmid acquired *ampC* genes

- **Definitive Identification of AmpC producers**
  The resultant increase in sensitivity and specificity afforded by the novel use of an inducer compound permits a definitive identification, diagnostically superior to more presumptive methods

- **Combination discs manufactured in matched pairs**
  To prevent erroneous results arising from variations in content, the UK Health Protection Agency (HPA)* recommend using only corresponding antibiotic and antibiotic/inhibitor combinations which have been jointly manufactured and QC tested
  (*HPA ARMRL, Summer 2005)

- **Available from Stock**
  In common with the current range of Mast ESBL detection discs, the AmpC Detection Set is provided as a stock product with 12 months shelf life

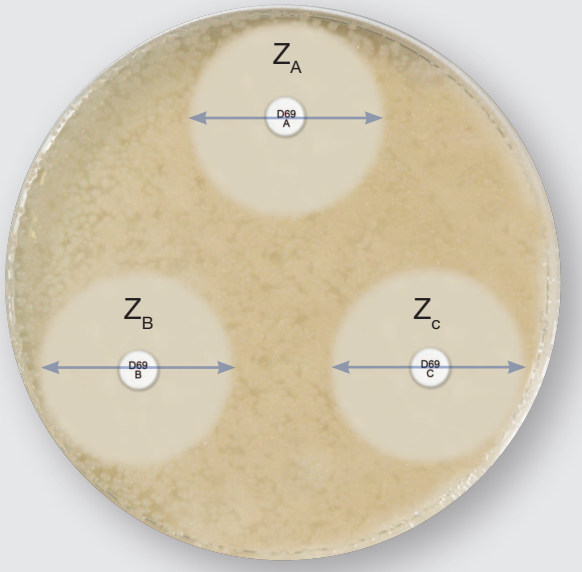
- **Compatible with Mast disc dispenser**
  Permits consistent orientation of paired discs aiding standardisation for routine testing

Interpretation

AmpC Positive

Z_C-Z_A and Z_C-Z_B ≥ 5mm

AmpC Negative



All zones differ by ≤ 3mm

A Cefpodoxime 10ug + AmpC inducer
B Cefpodoxime 10ug + AmpC inducer + ESBL inhibitor
C Cefpodoxime 10ug + AmpC inducer + ESBL inhibitor + AmpC inhibitors (Fig 2)

Ordering Information

Order Code	Product	Pack Size	Usage
D69C	AmpC Detection Set	3 x 50 discs	Confirmation of plasmid and chromosomally encoded AmpC

Additional products from Mast's ESBL detection range

Order Code	Product	Pack Size	Usage
D70C	Carbapenamase Detection Set	4 x 50 discs	Detection of MBL and KPC enzyme production
D68C	AmpC & ESBL Detection Set	4 x 50 discs	Confirmation of AmpC and /or ESBL production
D52C	Extended Spectrum β lactamase Set	6 x 50 discs	Confirmation of ESBL production in isolates **with no chromosomal de-repressed or inducible AmpC**
D67C	Extended Spectrum β lactamase Set (CPD10)	6 x 50 discs	Confirmation of ESBL production in isolates **with no chromosomal de-repressed or inducible AmpC**
D62C	Cefotaxime 30 & Cefotaxime 30/Clavulanic Acid 10	6 x 50 discs	Confirmation of ESBL production in isolates **with no chromosomal de-repressed or inducible AmpC** (* use concurrently with D64C)
D63C	Cefepime 30 & Cefepime 30/Clavulanic Acid 10	6 x 50 discs	Confirmation of ESBL production in isolates **with chromosomal AmpC**
D64C	Ceftazidime 30 & Ceftazidime 30/Clavulanic Acid 10	6 x 50 discs	Confirmation of ESBL production in isolates **with no chromosomal de-repressed or inducible AmpC** (*use concurrently with D62C)
D66C	Cefpodoxime 10 & Cefpodoxime 10/ Clavulanic Acid 1	6 x 50 discs	Confirmation of ESBL production in isolates **with no chromosomal de-repressed or inducible AmpC**

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United Kingdom
Mast Group Ltd.
Mast House
Derby Road, Bootle
Merseyside L20 1EA

Tel: + 44 (0) 151 933 7277
Fax: + 44 (0) 151 944 1332
e-mail: sales@mastgrp.com

Germany
Mast Diagnostica GmbH
Feldstrasse 20
DE-23858 Reinfeld

Tel: + 49 (0) 4533 2007 0
Fax: + 49 (0) 4533 2007 68
e-mail: mast@mast-diagnostica.de

France
Mast Diagnostic
115 Rue Jules Barni
CS91106
80011 Amiens CEDEX 1

Tél: + 33 (0) 322 80 80 67
Fax: + 33 (0) 322 80 99 22
e-mail: info@mast-diagnostic.fr

www.mastgrp.com