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EXTENDED SPECTRUM BETA-LACTAMASE (ES β L) ID DISCS

For detection of ES β L production in *E. coli*, *Klebsiella spp.* and Enterobacteriaceae with inducible AmpC



With increased reporting of ES β L infections, it is more important than ever for early and accurate detection in the laboratory. It is now recommended to screen all Enterobacteriaceae isolates either with cefpodoxime (the best general substrate for all ES β Ls) or with both cefotaxime and ceftazidime. Isolates found resistant to any of these cephalosporins should then be tested for cephalosporin/clavulanate synergy.

There are various methods for the synergy tests, one of which is the combination discs method where the diameter of zones of inhibition around cephalosporins discs are compared with those around discs containing the same cephalosporin plus clavulanate. For species suspected of having inducible AmpC β lactamases, the use of cefepime and ceftipime synergy tests is recommended.

MAST[®] ES β L discs offer the following benefits

- Double disc diffusion synergy test
- Paired sets of discs
- Choice of antibiotics
- Standard cartridge format
- Low cost ES β L confirmation
- Confidence in performance
- Ability to conform to Health Protection Agency, BSAC or CLSI standards
- Convenient and easy dispensing

Contents and formulation

Code	Description
D62C	3 x Cefotaxime 30 3 x Cefotaxime 30/Clavulanic Acid 10
D63C	3 x Cefepime 30 3 x Cefepime 30/Clavulanic Acid 10
D64C	3 x Ceftazidime 30 3 x Ceftazidime 30/Clavulanic Acid 10
D66C	3 x Cefpodoxime 10 3 x Cefpodoxime 10/Clavulanic Acid 1
D67C	1 x Ceftazidime 30 1 x Ceftazidime 30/Clavulanic Acid 10 1 x Cefotaxime 30 1 x Cefotaxime 30/Clavulanic Acid 10 1 x Cefpodoxime 10 1 x Cefpodoxime 10/Clavulanic Acid 1
D52C	1 x Ceftazidime 30 1 x Ceftazidime 30/Clavulanic Acid 10 1 x Cefotaxime 30 1 x Cefotaxime 30/Clavulanic Acid 10 1 x Cefpodoxime 30 1 x Cefpodoxime 30/Clavulanic Acid 10
D68C	AmpC and ESβL 4 disc detection set. (see separate literature)

Storage and shelf life

Store at 2-8°C in the containers provided until the expiry date shown on the pack label. Allow to equilibrate to room temperature before opening.

Procedure

- Using a pure, fresh culture of the test organism, prepare a suspension equivalent in density to a McFarland 0.5 opacity standard.
- Using a sterile swab, spread the suspension uniformly across the surface of a susceptibility test agar plate (e.g. MAST Mueller Hinton Agar DM170D). Alternatively a 1:100 dilution of the 0.5 McFarland suspension on MAST Isotonic Sensitivity Test Agar (DM604D) corresponding to the British Society for Antimicrobial Chemotherapy (BSAC) may also be used.
- Using a sterile needle or forceps, place one of each type of disc (combination disc with clavulanic acid and corresponding antibiotic only disc) onto the inoculated medium, ensuring sufficient space between the discs to allow formation of clearly defined zones of inhibition. Up to 3 pairs of MAST ESβL ID Discs can be placed, evenly spaced, on a single 9cm Petri dish. The MAST DISCMASTER2 SYSTEM Dispenser (MDD62) can be used for convenience.
- Incubate at 35-37°C for 18 to 24 hours.
- Measure and record the diameter of any zones of inhibition that are observed.

Interpretation of results

Compare the zone of inhibition for the single antibiotic disc to that of the antibiotic plus clavulanic acid combination disc according to the rules of the appropriate Instructions for Use

Quality control

The table below illustrates a range of performance control strains for routine use. Please see individual product Instructions For Use (IFU).

Test Organism
<i>Escherichia coli</i> NCTC 13351
<i>Escherichia coli</i> NCTC 13352
<i>Escherichia coli</i> NCTC 13353
<i>Klebsiella pneumoniae</i> ATCC® 700603™
<i>Escherichia coli</i> ATCC® 25922™

User quality control: Quality control must be performed with at least one organism to demonstrate a positive reaction and at least one organism to demonstrate a negative reaction. Zones of inhibition obtained using combination disc plus clavulanic acid and corresponding cephalosporin only disc against control ESβL-negative *E. coli* (e.g. ATCC® 25922™), should be equal or show no greater difference in diameter than ±2mm. Any greater difference implies malfunction or deterioration. Do not use the product if the reactions with the control organisms are incorrect.

ATCC® is a registered trademark of American Type Culture Collection.

NCTC is a trademark of National Collection of Type Cultures

Limitations

To optimise ESBL detection it is recommended that these discs are used in combination with other MAST ESβL ID Discs.

To avoid potentially erroneous results, only use a combination disc plus clavulanic acid with the corresponding antibiotic only disc from the same pack/batch. **Do not test cartridges from different batches or packs**

References

Bibliography is available on request.