Brilliance™ ESBL

Detection of Extended Spectrum ß-Lactamase-producing organisms

Brilliance™ ESBL Agar is a chromogenic screening plate for the detection of Extended Spectrum ß-Lactamase-producing organisms. The medium provides presumptive identification of ESBL-producing E. coli and the Klebsiella, Enterobacter, Serratia and Citrobacter group (KESC), direct from clinical samples.

Saves Time
- Presumptive identification of ESBL-producing E. coli and the KESC group in just 24 hours, direct from sample

Convenient & Easy to Use
- Quick and easy screening test, ready to use plates with a new semi-opaque background*
- Clear differentiation of E. coli and KESC group colonies
- Direct inoculation from faecal sample, swab, isolate or suspension

Selective
- The inclusion of cefpodoxime, a well recognised marker for ESBL mediated resistance, inhibits most non-ESBL Enterobacteriaceae
- Inhibition of AmpCs, reduces incidence of false-positive results compared to traditional media, minimising confirmatory testing

Cost-effective
- Early presumptive identification of ESBLs allows appropriate treatment and infection control procedures to be adopted earlier, improving treatment outcomes and the effectiveness of infection control measures

Oxoid Brilliance ESBL Agar contains cefpodoxime, in combination with additional antibacterial agents, to inhibit non-ESBL Enterobacteriaceae and to suppress the growth of most AmpC organisms and other non-ESBL flora. The presence of an ESBL infection severely limits treatment options as the resistance mechanisms confer wider resistance than AmpCs, which may still be treated with certain beta-lactamase-stable antibiotics. In addition to this, ESBL resistance genes are encoded on freely transmissible genetic elements, greatly increasing the risk of spread to other organisms.

Differentiation of the most prevalent ESBL-producing organisms is achieved through the inclusion of two chromogens that specifically target two enzymes: KESC group express galactosidase, resulting in green colonies. E. coli however, express galactosidase and glucuronidase producing easily-distinguished blue colonies (beta-galactosidase negative E. coli will appear pink). Proteus, Morganella and Providencia do not utilise either chromogen, but are able to deaminate tryptophan, resulting in tan-coloured colonies with a brown halo.

*Patent pending
ESBLs are defined as transferable enzymes, able to hydrolyse third and fourth-generation cephalosporins but which may be inhibited by clavulanic acid. Unlike MRSA or VRE, the resistance mechanisms of ESBLs are not limited to one or even two species but rather a whole family of organisms, the Enterobacteriaceae.

Enterobacteriaceae have become one of the most important causes of nosocomial and community-acquired infections. The main therapeutic choices to treat such infections are β-lactam antibiotics (mainly broad spectrum penicillins and cephalosporins). However, ESBLs confer transmissible resistance to these compounds. The lack of treatment options combined with the transmissible nature of ESBL resistance mechanisms and the alarming rate at which they have spread results in a significant threat to global public health.

Brilliance ESBL Agar was evaluated in-house using a selection of 123 well-characterised clinical isolates provided by Dr. Maurine A. Leverstein-Van-Hall (Utrecht), Professor Youi Glupczynski (UCL Mont-Godinne) and the Oxoid in-house culture collection. The panel included CTX-M, TEM, SHV and K1-hyper-producing strains. Results indicate K1-hyper-producing (non-ESBL) strains were inhibited while all representative ESBL strains grew.

**Brilliance ESBL Agar**

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Selectivity</th>
<th>PPV</th>
<th>NPV</th>
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<tbody>
<tr>
<td>95%</td>
<td>94%</td>
<td>93%</td>
<td>94%</td>
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</tbody>
</table>

Based on growth or inhibition at 24 hours

Oxoid Brilliance ESBL Agar is for in vitro diagnostic use only, by trained microbiologists. It must not be used beyond the stated expiry date, or if the product shows any sign of deterioration.

Identifications are presumptive and should be confirmed.

**Screening Procedure**

1. Inoculate Brilliance ESBL plate directly with peaseized bead or loopful of specimen.
2. incubate plates at 37°C for 24 hr

**GROWTH**

- Blue or Pink: *E. coli*
- Green: K. pneumoniae, Serratia and Citrobacter
- Brown halo: Proteus, Morganella, Providencia
- Colourless: Salmonella, Acinetobacter or other

**NO GROWTH**

Negative plates should be re-incubated for an additional 24 hours

Please note, organisms with an atypical enzyme pattern may give anomalous reactions on Brilliance ESBL Agar.

**Brilliance ESBL Agar Ready-Poured Plates**

<table>
<thead>
<tr>
<th>Description</th>
<th>Packaging</th>
<th>Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brilliance ESBL Agar</td>
<td>10x90mm plates</td>
<td>P05302A</td>
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**Other Products in the Brilliance Screening Range**

The Oxoid product range offers the complete solution for all your ESBL screening and testing needs.

<table>
<thead>
<tr>
<th>Description</th>
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<tr>
<td>Brilliance MRSA 2 Agar (UK)</td>
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<td>P01210A</td>
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<tr>
<td>Brilliance MRSA 2 Agar (Rest of Europe)</td>
<td>10x90mm plates</td>
<td>P05310A</td>
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<tr>
<td>Brilliance VRE Agar</td>
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<td>P01175A</td>
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<tr>
<td>Brilliance CRE Agar</td>
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**Culti-Loops™**

- Positive Control Strain: *Klebsiella pneumoniae* (ESBL) ATCC® 700603 **+**
- Negative Control Strain: *E. coli* ATCC® 25922 **+**

### Biochemical Identification

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
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<tbody>
<tr>
<td>Thermo Scientific™ RapID™ One System</td>
<td>20 test panels</td>
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<tr>
<td>RapID Inoculation Fluid</td>
<td>20mL</td>
</tr>
<tr>
<td>RapID Spot Indole</td>
<td>15mL</td>
</tr>
<tr>
<td>Oxidase Sticks</td>
<td>100 sticks</td>
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For simple screening of carbapenem-resistant Enterobacteriaceae, including NDM-1

For more information about the Thermo Scientific Brilliance range of chromogenic media and other products, please visit www.thermoscientific.com/microbiology or talk to your local representative.

**References:**

1. Dr. Maurine Leverstein-van-Hall Clinical Microbiologist, University Medical Centre Utrecht (UMCU)/National Institute for Public Health and Environment (RIVM), Netherlands
2. Professor Youi Glupczynski, University Clinic of the Catholic University of Louvain (UCL) Mont-Godinne, Belgium
3. Data on file at Oxoid

thermoscientific.com/microbiology

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