

## ESBL CHROMOGENIC AGAR

**CATN°:2062**

Chromogenic medium for overnight detection of Gram-negative bacteria producing Extended Spectrum Beta-Lactamase

### FORMULA IN g/l

Peptone	14.00	Chromogenic Mixture	3.00
Growth Factors	15.00	Bacteriological Agar	16.00

**Final pH 7.2 ± 0.2 at 25°C**

### PREPARATION

Suspend 48.0 grams of medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Sterilize in autoclave at 121°C for 15 minutes. Cool to 50° and aseptically add two vials of ESBL supplement Cat. 6042 previously reconstituted with 5 ml of sterile distilled water. Mix well and dispense into plates. The prepared medium should be stored at 8-15°C. The color of the prepared medium is amber, slightly opalescent.

The dehydrated medium should be homogeneous, free-flowing and beige in color. If there are any physical changes, discard the medium.

### ESBL Supplement (Cat. 6042)

(1 vial for 500 ml of the medium)

Antibiotic Mixture..... 36 mg

### USES

ESBL (Extended Spectrum β-Lactamases) is a Chromogenic medium for the detection of Gram-negative bacteria producing Extended Spectrum Beta-Lactamase.

ESBL (Extended Spectrum β-Lactamases) are enzymes capable of hydrolyzing penicillins, broad-spectrum cephalosporins and monobactams, ESBLs are often located on plasmids that are transferable from strain to strain and between bacterial species. ESBL-producing Enterobacteriaceae were first identified in Germany in 1983, and now they are widely recognized as clinically relevant causes of infections in community. During the 1990s were mostly found in *Klebsiella* species. However *E.coli* ESBL-producing has also been widely detected and both have a significant importance in hospital acquired infections. Community-acquired urinary tract infection (CA-UTI) is the most common infection caused by extended-spectrum β-lactamase (ESBL)-producing Enterobacteriaceae and it is a big concern in management of patients and hospital costs. The development and spread of ESBL among Gram-negative bacteria and possible horizontal transfer calls for concern, especially in view of treatment failure, high treatment cost, and consequent discomfort to patients. There for the early detection of ESBL-producing bacteria carriers is essential to minimize their impact and spread.

Peptones and growth factors provide nitrogen, vitamins, minerals and aminoacids essential for growth. Chromogenic mixture allows the identification of ESBL producing microorganisms. The supplement inhibits the growth of all the non ESBL-producing bacteria.

## CHARACTERISTICS OF ESBL COLONIES

Microorganisms	Colony color
<i>Escherichia coli</i>	Pink
<i>Enterobacter aerogenes</i>	Dark Blue
<i>Klebsiella pneumoniae</i>	Dark Blue

## MICROBIOLOGICAL TEST

The following results were obtained in the performance of the medium from type cultures after incubation at a temperature of 35 ± 2°C and observed after 18-24 hours.

Microorganisms	Growth	Colony colour
<i>Escherichia coli</i> ATCC 2469	Good	Pink
<i>Escherichia coli</i> ATCC 25922	Inhibited	-
<i>Klebsiella pneumoniae</i> ATCC 13883	Inhibited	-
<i>Proteus mirabilis</i> ATCC 25933	Inhibited	-
<i>Staphylococcus aureus</i> ATCC 25923	Inhibited	-
<i>Enterococcus faecalis</i> ATCC 19433	Partially inhibited	Light Blue

**\* Its important to notice that, as it happens in other chromogenic media, bacteria with atypical ESBL enzyme may produce anomalous reactions in this medium**

## BIBLIOGRAPHY

Ryan S. Arnold, MD, Kerri A. Thom, MD, MS, [...], and Daniel J. Morgan, MD Emergence of *Klebsiella pneumoniae Carbapenemase* (KPC)-Producing Bacteria

Paterson DL, Bonomo RA. Extended-spectrum beta-lactamases: a clinical update. *Clinical Microbiology Reviews*. 2005;18:657–686. [PMC free article] [PubMed]

Osterblad M, Kirveskari J, Koskela S, et al. First isolations of KPC-2-carrying ST258 *Klebsiella pneumoniae* strains in Finland, June and August 2009. *Euro Surveill*. 2009;14(40):19349. [PubMed]

Martín-Gil J, Villa FM, Ramos-Sánchez MC, Martín-Gil FJ. "Studies on beta-lactam antibiotics - Differential thermal-analysis of Cephalosporins". *J. Thermal Anal Cal*, 1984, 29 (6): 1351-1357.

Sebastian Droguett Perez (Dr.2)(2004)\* Rossi S. (Ed.) (2004). Australian Medicines Handbook 2004. Adelaide: Australian Medicines Handbook. ISBN 0-9578521-4-2. (\* Rossi S (Ed.) (2004).



## STORAGE

Once opened keep powdered medium closed to avoid hydration.

