



COMPASS Ecc Agar

INTENDED USE

COMPASS Ecc Agar is a selective chromogenic medium used for the simultaneous and specific enumeration of all *Escherichia coli* and coliforms in food products and animal feeding stuffs (incubation at 37°C). It can also be used at 44°C to distinguish and enumerate *Escherichia coli* from other thermotolerant coliforms.

HISTORY

Coliform classification is traditionally based on their capacity to ferment lactose producing acid. Lactose fermentation successively involves two enzymes: initially a permease responsible for entry of the sugar into the bacterium and subsequently a β -galactosidase which cleaves glucose from galactose allowing the fermentation to proceed. In 1962, Le Minor and Ben Hamida demonstrated the advantages of the β -galactosidase test over lactose fermentation for the identification of enterobacteria. Strains which are slow fermenters or lactose negative are found in all species of coliforms. Traditional media ignore β -galactosidase positives biotypes which are permease negative, even though they are of equal hygienic importance. In 1989, Leclerc and Mossel proposed the presence of β -galactosidase as a classification criterion for coliforms. Utilization of a synthetic chromogenic substrate, insensitive to variations in lactose permeation, permits detection of this enzyme by means of a color reaction.

Buehler *et al.*, in 1949, were the first to discover the presence of β -D-glucuronidase in *Escherichia coli*. Since then, studies have shown that 94 % to 97 % of all *Escherichia coli* possess β -D-glucuronidase and that this enzyme is rarely encountered in other species : small numbers of *Citrobacter*, *Enterobacter*, *Klebsiella*, *Salmonella*, *Shigella* and *Yersinia*.

PRINCIPLES

- The simultaneous presence of these two substrates enables the detection of the two specific enzyme activities: β -galactosidase and β -glucuronidase. Coliforms are distinguished by the production of β -galactosidase (β -gal).

Microorganisms	Typical phenotype	Colony color
<i>Escherichia coli</i>	GUD ⁺ / β -gal ⁺	Blue to purple
Non <i>Escherichia coli</i> coliforms	GUD ⁻ / β -gal ⁺	Pink
Other Gram-negative bacteria	GUD ⁻ / β -gal ⁻	white

PREPARATION

- Suspend 40,8 g of dehydrated medium (BK202) in 1 liter of distilled or deionized water.
- Slowly bring to boiling, stirring with constant agitation until complete dissolution.
- Dispense in tubes or flasks.
- Sterilize in an autoclave at 121°C for 15 minutes.

NOTE 1:

Incomplete agar melting during preparation will invariably lead to significant inconsistency in the gel strength of the solidified agar, after sterilization and cooling.

INSTRUCTIONS FOR USE

- Cool and maintain the medium at 44-47°C.
- Transfer 1 mL of the product to analyze and its tenfold dilutions to sterile Petri dishes.
- Pour in 15 mL of medium.
- Mix well.
- Let solidify on a cold surface.
- Incubate at (37 ± 1)°C for 22 to 26 hours to enumerate all *Escherichia coli* and coliforms.
Incubate at (44 ± 1)°C for 22 to 26 hours to enumerate all *Escherichia coli* and thermotolerant coliforms.

NOTE 2:

If a high level of competitive flora is suspected in the food product, it may be necessary to add a second layer of medium to facilitate reading.

RESULTS

Coliforms produce pink colonies.

Escherichia coli are characterized by the formation of blue to purple colonies that may be surrounded by a pink halo.

TYPICAL COMPOSITION

(can be adjusted to obtain optimal performance)

For 1 liter of medium :

- | | |
|------------------------------|---------|
| - Polypeptone | 18.40 g |
| - Buffered system | 5.80 g |
| - Growth promoters | 3.55 g |
| - Chromogenic mix | 0.44 g |
| - Selective agents..... | 1.61 g |
| - Bacteriological agar | 11.00 g |

pH of ready-to-use medium at 25°C : 6.9 ± 0.2.

QUALITY CONTROL

- Dehydrated medium: cream powder, free-flowing and homogeneous.
- Prepared medium: amber agar, lightly opalescent.
- Typical culture response after 24 hours of incubation at 37°C :

Microorganisms		Growth (Productivity ratio : P_R)	Characteristics
* <i>Escherichia coli</i>	ATCC® 25922	$P_R \geq 50\%$	Blue to purple colonies
* <i>Escherichia coli</i>	ATCC 8739	$P_R \geq 50\%$	Blue to purple colonies
<i>Enterobacter aerogenes</i>	ATCC 13048	$P_R \geq 50\%$	Pink colonies
<i>Citrobacter freundii</i>	ATCC 43864	$P_R \geq 50\%$	Pink colonies
<i>Pseudomonas aeruginosa</i>	ATCC 27853	Score 0	White colonies
<i>Enterococcus faecalis</i>	ATCC 29212	inhibited	
<i>Staphylococcus aureus</i>	ATCC 25923	inhibited	

* Quality control is also carried out at 44°C for 24 hours: Typical culture response

STORAGE / SHELF LIFE

Dehydrated medium: 2-8°C, shielded from light.

- The expiration date is indicated on the label.

Prepared medium (benchmark value*) :

- Media in vials or tubes: 1 month at 2-8°C, **shielded from light**.

PACKAGING

Code

Dehydrated medium :

- 500 g bottle

BK202HA

PHOTO SUPPORT

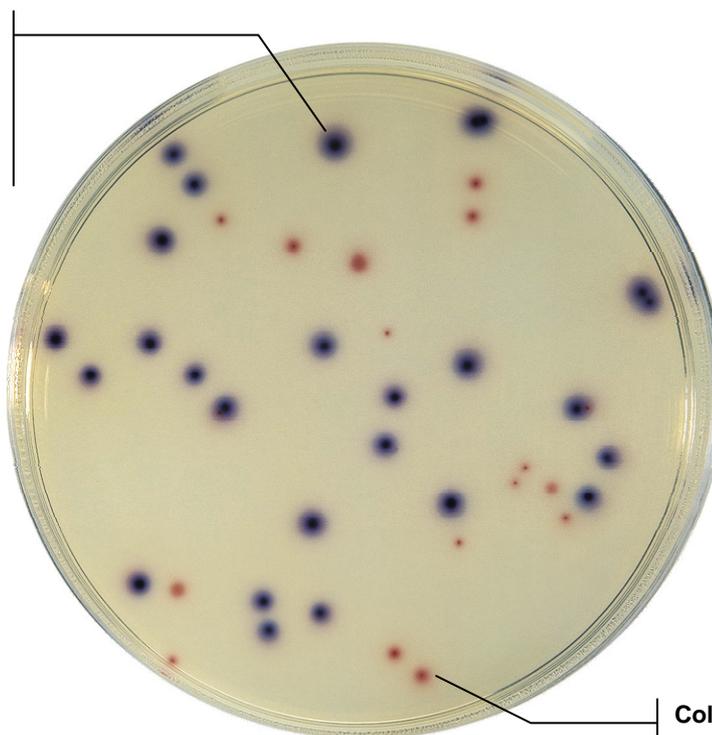


Product reference: BK202HA

Media used for: The simultaneous and specific enumeration of all *Escherichia coli* and coliforms

Escherichia coli

Characteristic blue to purple colony that may be surrounded by a pink halo



Coliform

Characteristic pink colony.

COMPASS *Ecc* Agar

Ref : BK202HA

Incubation 24 hours at 37°C

Characteristic *Escherichia coli* colonies (blue to purple colonies: β -galactosidase and β -glucuronidase activities) and coliforms (pink colonies: production of β -galactosidase).

BIBLIOGRAPHY

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*Benchmark value refers to the expected shelf life when prepared under standard laboratory conditions following manufacturer's instructions. It is provided as a guide only and no warranty, implied or otherwise is associated with this information.

The information provided on the package takes precedence over the formulations or instructions described in this document.
The information and specifications contained in this technical data sheet date from 2010-07-19.
They are susceptible to modification at any time, without warning.
Code document : BK202/A/2010-07 : 1.