



COMPASS cc Agar

INTENDED USE

COMPASS cc Agar is a selective medium used for the detection and enumeration of *Escherichia coli* and coliform bacteria in water using the membrane filtration method in 24 hours. The media requires no additional confirmation steps, rendering the tests for oxidase or indole production from tryptophan obsolete.

COMPASS cc Agar can also be used in the testing of disinfected water and other drinking waters containing low numbers of bacteria, as well as the control of water with a high interfering bacterial load.

HISTORY

Coliform classification has traditionally been based on bacterial ability to ferment lactose with acid production. 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. In 1989, Leclerc and Mossel proposed the presence of β -galactosidase as an alternative 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 - 97 % of all *Escherichia coli* possess β -D-glucuronidase and that this enzyme is rarely encountered in other species.

PRINCIPLES

- The simultaneous presence of 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). This enzyme reacts with the chromogenic substrate to produce a pink precipitate.
- All *Escherichia coli* possess β -galactosidase and 94 - 97 % are also positive for β -glucuronidase (GUD). The presence of the enzyme is revealed by the presence of a blue coloration.
The simultaneous action of the two enzymes gives the colonies of *Escherichia coli* a purple color.

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

- A special mixture of peptones favors excellent coliform growth.
- The buffering system chosen helps to maintain optimal pH for the enzymatic reactions.
- The selective system allows the inhibition of non-targeted competitive flora.

PREPARATION

- Aseptically filter through a membrane a known volume of the sample to test.
- Deposit the membrane on the surface of the agar, filtered side up and making sure that the membrane and agar are in close contact.
- Incubate at $(36 \pm 2)^{\circ}\text{C}$ for (24 ± 3) hours.

RESULTS

Coliforms produce pink colonies. *Escherichia coli* is characterized by the formation of purple colonies.

TYPICAL COMPOSITION

(can be adjusted to obtain optimal performance)

For 1 liter of medium :

- Peptones3.00 g
- Growth activators5.84 g
- Buffering system10.3 g
- Chromogenic components0.52 g
- Selective agents.....0.11 g
- Bacteriological agar12.00 g

pH of ready-to-use medium at 25°C : 6.8 ± 0.2 .

QUALITY CONTROL

- Prepared medium : amber agar.
- Typical culture response after 24 hours of incubation at 36°C :

Microorganisms	Growth (Productivity ratio : P_R)	Characteristics
<i>Escherichia coli</i> RIVM WR1	$66\% \leq R_2 \leq 150\%$	purple colonies
<i>Escherichia coli</i> ATCC® 25922	$66\% \leq R_2 \leq 150\%$	purple colonies
<i>Citrobacter freundii</i> CIP 57.32 T	$66\% \leq R_2 \leq 150\%$	pink colonies
<i>Staphylococcus aureus</i> CIP 53.154	inhibited	

STORAGE / SHELF LIFE

Prepared medium in Petri dishes :

- Store between $2-8^{\circ}\text{C}$, shielded from light.
- The expiration date is indicated on the label.

PACKAGING

Code

Pre-poured medium in Petri dishes (\varnothing 55 mm):

- 20 plates

BM15308

BIBLIOGRAPHY

MANAFI, M., KNEIFEL, W., and BASCOMB, S.. 1991. Fluorogenic and chromogenic substrates used in bacterial diagnostics. *Microbiological Reviews*, **55** : 335-348.

*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 2011-05-19.

They are susceptible to modification at any time, without warning.

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