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# COMPASS<sup>®</sup> SALMONELLA AGAR

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## DETECTION OF *SALMONELLA*

### 1 INTENDED USE

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**COMPASS<sup>®</sup> Salmonella Agar** is a selective media allowing the isolation and differentiation of bacteria belonging to the genus *Salmonella*.

It can be used as the second media in all normalized and validated methods for the detection of *Salmonella*.

**COMPASS<sup>®</sup> Salmonella Agar** is also used in the context of the rapid alternative method for the detection of *Salmonella* (**SESAME Salmonella TEST<sup>®</sup>**).

### 2 HISTORY

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At the beginning of the 1990's, several authors demonstrated that the majority of *Salmonella* strains of all species and serotypes were capable of cleaving esters of 7 to 10 carbon atom fatty acids. The esterase, particularly active on caprylate derivatives, was detected through the use of synthetic fluorogenic and chromogenic substrates. However, their hydrophobic nature prevented incorporation into agar media. As a result, droplet testing for fluorescence was applied to colonies on isolation media : Hektoen, SS, XLD, etc. In 1997, a new culture medium formulation was devised to incorporate hydrophobic chromogenic substrates into aqueous media in such a way as to obtain homogeneous and stable agar media, therefore enabling direct detection of *Salmonella* esterase on culture media. Other bacteria lacking esterase and/or possessing a  $\beta$ -glucosidase enzyme were detected with a second chromogenic substrate are thus distinguishable from *Salmonella*.

### 3 PRINCIPLES

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**COMPASS<sup>®</sup> Salmonella Agar** combines two chromogenic substrates in order to detect two enzyme activities :

- 5-bromo-6-chloro-3-indolyl-caprylate (Magenta-caprylate) allows the revelation of the esterase enzyme. Degraded by *Salmonella*, this enzyme leads to the formation of a red-violet (magenta) precipitate within the colony.
- 5-bromo-4-chloro-3-indolyl- $\beta$ -D-glucopyranoside (X-glucoside) is also used for which the cleavage product is a blue precipitate.

Simultaneous detection of both activities allows for a coloration of *Salmonella* in distinct contrast to that of other bacteria. Studies have demonstrated the enhanced specificity for *Salmonella* detection using this method, including atypical serotypes which can cause confusion on other media. The detection of *Salmonella* Typhi and Paratyphi, lactose positive *Salmonella* (*S. Seftenberg* and sub-species *arizonae* and *diarizonae*), sucrose positive and non-motile serotypes (*S. Pullorum* and *Gallinarum*) is assured with this medium.

Selective agents inhibit Gram-positive and several Gram-negative species.

The nutrient base favors the recovery and growth of *Salmonella*.

### 4 TYPICAL COMPOSITION

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The composition can be adjusted in order to obtain optimal performance.

For 1 liter of media :

- Peptone .....	10,00 g
- Sodium chloride .....	5,00 g
- Phosphate buffer .....	7,00 g
- Inhibitory agents .....	9,00 g
- Chromogenic mixture .....	1,40 g
- Bacteriological agar .....	15,00 g

pH of the ready-to-use media at 25 °C : 7,0  $\pm$  0,2.

## 5 INSTRUCTIONS FOR USE

### Detection

- Surface inoculate by streaking from a selective enrichment medium used for the detection of *Salmonella*.
- Incubate at  $37 \pm 1$  °C for  $24 \pm 3$  hours .

✓ **Inoculation :**  
Surface plating

✓ **Incubation :**  
 $24 \pm 3$  h at 37 °C

### Note :

For organizational reasons within the laboratory, it is possible to incubate the plates for up to 48 hours.

### Confirmation, **SESAME *Salmonella* TEST®** method

- Sample a fraction of the outside edge of the migration zone obtained on SESAME *Salmonella* Detection and streak onto the surface of COMPASS® *Salmonella* Agar.
- Incubate at  $37 \pm 1$  °C for  $24 \pm 3$  hours.

## 6 RESULTS

The colonies have the following appearance :

Microorganisms	Characteristic colonies
<i>Salmonella</i> spp. (including <i>Salmonella</i> Typhi, Paratyphi, lactose-positive, saccharose-positive)	Magenta
<i>Escherichia coli</i>	White
<i>Enterobacter</i> spp., <i>Klebsiella</i> spp.	Blue-green
<i>Proteus</i> spp.	Transparent to brownish
<i>Pseudomonas</i> spp. et Gram positive bacteria	Inhibited

See ANNEX 1 : PHOTO SUPPORT.

### Notes :

Rare strains of *Enterobacter* and *Pseudomonas* can express an esterase activity and produce magenta colonies. Certain strains of servovars Dublin & Atento, as well as some from the subspecies *S. houtenae*, *S. bongori* & *S. diarizonae*, can present a weak to null magenta pigmentation, resulting from the weak esterase activity that characterizes these strains.

## 7 QUALITY CONTROL

**Prepared media in plates :** amber agar.

Typical culture response after 24 hours of incubation at 37°C, qualitative method of inoculation

Microorganisms	Growth	Characteristics
<i>Salmonella</i> Typhimurium WDCM 00031	Good, score 2	Magenta colonies
<i>Salmonella</i> Enteritidis WDCM 00030	Good, score 2	Magenta colonies
<i>Enterobacter aerogenes</i> WDCM 00175	Good, score 2	Blue colonies
<i>Escherichia coli</i> WDCM 00013	Good, score 2	White colonies
<i>Pseudomonas aeruginosa</i> WDCM 00024	Inhibited, score 0	-
<i>Staphylococcus aureus</i> WDCM 00034	Inhibited, score 0	-

## 8 STORAGE / SHELF LIFE

**Pre-poured media in plates :** 2-8 °C.

The expiration date is indicated on the label.

## 9 PACKAGING

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### Pre-poured media in Petri plates (Ø 90 mm) :

20 plates ..... BM06608

## 10 BIBLIOGRAPHY

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## 11 ADDITIONAL INFORMATION

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The information provided on the labels take precedence over the formulations or instructions described in this document and are susceptible to modification at any time, without warning

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Detection of *Salmonella* spp..

### Results :

Growth obtained after 24 hours of incubation at 37 °C.

