Salmonella Chromogenic Agar

Cat. 1122

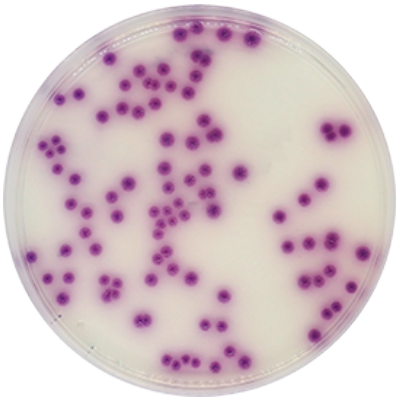
For the isolation of Salmonella spp in clinical samples and foods.

Practical information

Aplications	Categories
Selective isolation	Salmonella

Industry: Clinical / Food

CE
IVD



Principles and uses

Salmonella Chromogenic Agar is a selective chromogenic medium, used for the detection and presumptive identification of Salmonella species from clinical samples, foods and waters. This type of media have been traditionally used to differentiate species of Salmonella from the rest of the Enterobacteriaceae family, (based on their capacity to produce hydrogen sulfide and their inability to ferment lactose) buy they are not really adequate as there are more than 2.000 species of Salmonella which do not have these characteristics.

Casein peptone and beef extract provide nitrogen, vitamins, minerals and amino acids essential for growth. Chromogenic mixture, in conjunction with sodium citrate, aids in inhibiting Gram-positive organisms, Proteus and coliforms. Bacteriological agar is the solidifying agent. The addition of the supplement inhibit accompanying flora, avoiding possible false positive results.

To identify Salmonella species, this chromogenic agent is based on the combination of two chromogenic substrates that ease quick identification. Magenta colonies are a result of the hydrolysis of one of the chromogenic substrate by the Salmonella species due to the inability to utilise another chromogenic substrate. Microorganisms producing the enzyme that cleaves the second chromogenic substrate will produce blue-green colonies. Thus, non-Salmonella organisms appear blue-green or are not stained by any of the chromogenes of the medium. Supplement is added when more selectivity is desired. The supplement inhibit the accompanying flora, specially Pseudomonas, that could appear in the same colour as Salmonella colonies.

The medium can be used as a second medium for the detection of Salmonella in food and water according to ISO 6579 and ISO 19250 respectively.

Formula in g/L

Bacteriological agar	12,8	Casein peptone	5
Chromogenic mixture	5,81	Beef extract	5
Sodium citrate	8,5		

Typical formula g/L * Adjusted and/or supplemented as required to meet performance criteria.

Preparation

Suspend 37,1 grams of the medium in one liter of distilled water at 80 ºC. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. AVOID OVERHEATING. DO NOT AUTOCLAVE. Cool to 45-50 ºC and, if desired, aseptically add two vials of Salmonella Chromogenic Agar Supplement (Cat. 6043). Pour into Petri dishes.

Instructions for use

» For clinical diagnosis, the type of sample is fecal and from rectal tract.

- Inoculate the sample on the surface of the Salmonella Chromogenic Agar plates, streaking to obtain isolated colonies.
- Incubate at a temperature of 35±2 ºC for 18-24 hours.
- Examine the color of the colonies.

» For other uses not covered by the CE marking:

* For detection of Salmonella spp. in food, animal feed, animal faeces, and environmental samples according to ISO 6579:

- Preenrichment in non-selective liquid medium:
Inoculate the Buffered Peptone Water (Cat. 1402) with the sample or dilutions, and incubate at 34-38 ºC for 18±2 h.
- Enrichment in/on selective media:
Inoculate, with the culture obtained in the pre-enrichment stage, the Rappaport Soy Broth (Vassiliadis)(Cat. 1174) or the Modified Semisolid Rappaport Vassiliadis medium (MSRV) (Cat. 1376), and the MKKTN Broth(Cat. 1173).
The Rappaport Soy Broth and the Modified Semisolid Rappaport medium are incubated at 41,5 ºC for 24±3 h, and the MKKTN Broth at 34-38 ºC for 24±3 h.
- Plating out on selective solid media:
From the selective enriched cultures, inoculate two selective isolation agar; XLD agar (Cat. 1274) and any other selective medium complementary to XLD agar (Salmonella Chromogenic Agar (Cat. 1122), Brilliant Green Agar (Cat. 1143), Bismuth Sulfite Agar (Cat. 1011), DCLS Agar(Cat. 1045), Desoxycholate Citrate Agar (Cat. 1067), Hektoen Enteric Agar (Cat. 1030), Salmonella Shigella Agar(Cat. 1064) and XLT4 Agar (Cat. 1159)).
Incubate the XLD plates inverted at 34-38 ºC for 24±3 h.
Incubate the second selective medium in accordance with the manufacturer's instructions.
- Confirmation:
Subculture colonies of presumptive Salmonella and confirm their identity by biochemicals and serological tests.

Note: According to Annex D of ISO 6579-1: 2017, for the detection of enterica subspecies enterica serovars Typhi and Paratiphy, Selenite Cystine Broth (Cat. 1220) shlould be added as a selective enrichment medium and Bismuth Sulfite Agar (Wilson Blair) should be selected as a second selective medium (Cat. 1011).

* For detection of Salmonella spp. in water samples according to ISO 19250:

- Preenrichment in non-selective medium:
Inoculate the Buffered Peptone Water (Cat. 1402) with the sample or dilutions, and incubate at 34-38 ºC for 18±2 h.
- Enrichment in selective media:
Inoculate, with the culture obtained in the pre-enrichment stage, the Rappaport Soy Broth (Vassiliadis)(Cat. 1174) and the MKKTN Broth (Cat. 1173).
The Rappaport Soy Broth is incubated at 41,5±1 ºC and the MKKTN Broth at 34-38 ºC, both of them for 24±3 hours.
- Plating out on selective solid media:
From the selective enriched cultures, inoculate two selective isolation agar; XLD agar (Cat. 1274) and any other selective medium complementary to XLD agar (For instance, Brilliant Green Agar (Cat. 1143) or Bismuth Sulfite Agar (Cat. 1011))
Incubate the XLD plates inverted at 34-38 ºC for 24±3 hours.
Incubate the second selective medium in accordance with the manufacturer's instructions.
- Confirmation:
Subculture colonies of presumptive Salmonella and confirm their identity by biochemicals and serological tests.

Quality control

Solubility	Appareance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)
Precipitates may appear	Fine powder	Beige	Amber, slightly opalescent	7,2±0,2

Microbiological test

Incubation conditions: (35±2 ºC / 18-24 h).

Microorganisms	Specification	Characteristic reaction
Salmonella enteritidis ATCC 13076	Good growth	Magenta colony
Proteus vulgaris ATCC 13315	Inhibited growth	Colorless colony
Salmonella typhimurium ATCC 14028	Good growth	Magenta colony
Salmonella typhi ATCC 19430	Good growth	Magenta colony
Escherichia coli ATCC 25922	Partially inhibited growth	Colorless colony
Salmonella dyarizoneae ATCC 29934	Good growth	Magenta colony

Storage

Temp. Min.:2 ºC
Temp. Max.:8 ºC

Bibliography

Journal Clinical Microbiology, Vol. 41 nº 7 p. 3229-3232. July 2003 Robert Cassar and Paul Cuschieri.
J.D. Perry, Michael Furs, Jeffrey Taylor, Et. Al. Journal Clinical Microbiology, March 1999, pag. 766-768 Vol. 37. nº 3.

Gallioto di camillo, p. Et. Al. (J. Clinil Microbiol. March 1999.
International Standard UNE-EN-ISO 6579. Food Microbiology for human consumption and Animal Feed. Horizontal Method for the detection of Salmonella spp.
ISO 19250 water quality-detection of Salmonella spp