



Technical Data

SS Selective Agar, Improved, (Twin Pack) [Salmonella Shigella Selective Agar, Improved (Twin Pack)]

M1959

Intended Use:

Recommended for the selective detection and isolation of *Salmonella* & *Shigella* species

Ingredients	g / L
Part A	-
Proprietary	81.93
Part B	-
Proprietary	4.600
Final pH (at 25°C)	7.4±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 81.93 grams in 1000 ml purified / distilled water. Add 4.6 ml of Part B. Boil with frequent agitation to dissolve the medium completely. **DONOT AUTOCLAVE OR OVERHEAT.** Overheating may destroy selectivity of the medium. Cool to 45-50°C. Mix and pour into sterile Petri plates.

Principle And Interpretation

SS Selective Agar, Improved is recommended as selective medium for the isolation of *Salmonella* as well as *Shigella* species from clinical specimens (1,2,3). It provides significantly greater sensitivity and specificity in the detection of both the organisms. The other selective medias like HE, SS and XLD largely fail to suppress the growth of *Salmonella* interfering organism like *Citrobacter* and *Proteus* which resemble the presence of *Salmonella* (4).

It is a highly nutritious medium which provides essential growth nutrients like nitrogen and vitamins. Though the sugars xylose, lactose and sucrose provide sources of fermentable carbohydrates, xylose is mainly incorporated into the medium since it is not fermented by *Shigella* but practically by all enterics. This helps in the differentiation of *Shigella* species. Degradation of xylose, lactose and sucrose to acid causes phenol red indicator to change its colour to yellow. Addition of Cellobiose controls the growth of false positive *Salmonella* suspect (5). Lysine is included to differentiate the *Salmonella* group from the non-pathogens. *Salmonella* rapidly ferments xylose and exhausts the supply. Subsequently lysine is decarboxylated by the enzyme lysine decarboxylase to form amines with reversion to an alkaline pH that mimics the *Shigella* reaction.

Bacteria that decarboxylate lysine to cadaverine can be recognized by the appearance of a red colouration around the colonies due to an increase in pH. Sodium thiosulphate is reduced by certain species of enteric organisms to sulphite and H₂S gas and this reductive enzyme process is attributed by thiosulphate reductase. Production of H₂S gas is detected as an insoluble black precipitate of ferrous sulphide, formed upon reaction of H₂S with ferric ions or ferric citrate, indicated in the centre of the colonies. Part B addition to the medium helps in improving the selectivity of the medium. It selectively inhibits the growth of gram positive organisms. The growth of *Proteus* species is also reduced.

Type of specimen

Clinical samples - Feces ; Food samples.

Specimen Collection and Handling:

For clinical samples follow appropriate techniques for handling specimens as per established guidelines (6,7).

For food samples, follow appropriate techniques for sample collection and processing as per guidelines (8).

After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions

In Vitro diagnostic Use only. For professional use only. Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling clinical specimens. Safety guidelines may be referred in individual safety data sheets.

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Limitations

1.The medium is highly selective and may be toxic to certain *Salmonella* or *Shigella* species. Hence it is recommended to use to inoculate plates of less inhibitory media parallel to SS Agar, such as Hektoen Enteric Agar (M467) or Deoxycholate Citrate Agar (M065) for easier isolation of *Shigella* species (8).

Quality Control

Appearance

Part A: Light yellow to pink homogeneous free flowing powder. Part B: Colourless to pale yellow liquid

Gelling

Firm, comparable with 1.35% Agar gel

Colour and Clarity of prepared medium

Red coloured clear to slightly opalescent gel forms in Petri plates

Reaction

Reaction of 8.65% w/v aqueous solution of Part A and 0.46 ml of Part B at 25°C. pH : 7.4±0.2

pH

7.20-7.60

Cultural Response

Cultural characteristics observed after incubation at 35-37°C for 18-48 hours. Recovery rate is considered as 100% for bacteria growth on Soyabean Casein Digest Agar.

Organism	Inoculum (CFU)	Growth	Recovery	Colour of Colony
<i>Salmonella</i> Typhimurium ATCC 14028 (00031*)	50 -100	luxuriant	≥50%	red with black centres
<i>Escherichia coli</i> ATCC 25922 (00013*)	50 -100	fair-good	30-40%	yellow
<i>Salmonella</i> Enteritidis ATCC 13076 (00030*)	50 -100	good-luxuriant	≥50 %	red with black centres
<i>Salmonella</i> Typhi ATCC 6539	50 -100	good-luxuriant	≥50 %	red with black centres
<i>Shigella dysenteriae</i> ATCC 13313	50 -100	good-luxuriant	≥50 %	red
<i>Shigella flexneri</i> ATCC 12002	50 -100	fair-good	30 -40 %	red
<i>Shigella sonnei</i> ATCC 25931	50 -100	fair-good	30 -40 %	red
# <i>Klebsiella aerogenes</i> ATCC 13048 (00175*)	50 -100	fair	20 -30 %	yellow
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> ATCC 25923 (00034*)	≥10 ⁴	Inhibited	0%	
<i>Enterococcus faecalis</i> ATCC 29212 (00087*)	≥10 ⁴	Inhibited	0%	
<i>Proteus mirabilis</i> ATCC 25933	50-100	none-poor	≤10%	red

Key : (*) Corresponding WDCM numbers.

(#) Formerly known as *Enterobacter aerogenes*

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 20-30°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition Seal the container tightly after use. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques (6,7).

Reference

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- 4.Pollock, H.M. and B.J.Dahlgren.1974,Clinical evaluation of enteric media in the primary isolation of *Salmonella* and *Shigella*. Appl.Microbiol.27:197-201.
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- 7.Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.
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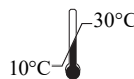
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