Technical Information

SS Agar (Salmonella Shigella Agar)

Product Code: DM 1108

Application: SS Agar (Salmonella Shigella Agar) is a differential selective media used for the isolation of *Salmonella* and some *Shigella* species from pathological specimens, suspected foodstuffs etc.

Composition**

Ingredients	Gms / Litre
Beef extract	5.000
Peptic digest of animal tissue	5.000
Lactose	10.000
Bile salts mixture	8.500
Sodium citrate	10.000
Sodium thiosulphate	8.500
Ferric citrate	1.000
Brilliant green	0.00033
Neutral red	0.025
Agar	15.000
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

SS Agar medium is recommended both as differential and selective medium for the isolation of *Salmonella* and *Shigella* species from pathological specimens and suspected foodstuffs and for microbial limit test [1-6]. SS Agar is a moderately selective medium in which gram-positive bacteria are inhibited by bile salts, brilliant green and sodium citrate.

Peptic digest of animal tissue, beef extract provide essential growth nutrients. Lactose is the fermentable carbohydrate. Brilliant green, bile salts and thiosulphate selectively inhibit gram-positive and coliform organisms. Sodium thiosulphate is reduced by certain species of enteric organisms to sulphite and H_2S gas and this reductive enzyme process is attributed by thiosulphate reductase. Production of H_2S gas is detected as an insoluble black precipitate of ferrous sulphide, formed upon reaction of H_2S with ferric ions or ferric citrate, indicated in the centre of the colonies.

The high selectivity of Salmonella Shigella Agar require the use of large amount of specificimen directly from faeces, rectal swabs or other materials suspected of containing pathogenic enteric bacilli. A few lactose-fermenting normal intestinal flora, On fermentation of lactose produce acid which is indicated by change of colour from yellow to red by the pH indicator-neutral red. Lactose non-fermenting organisms grow as translucent colourless colonies with or without black centres. Growth of *Salmonella* species is not inhibited and appears as colourless colonies with black centres resulting from H_2S production. *Shigella* species also grow as colourless colonies which do not produce H_2S.

Therefore it is recommended to inoculate plates of less inhibitory media, such as Hektoen Enteric Agar (DM1467) or Deoxycholate Citrate Agar (DM1065) parallel to SS Agar for easier isolation of *Shigella* species [7].

Methodology

Suspend 63.02 grams of powder media in 1000 ml distilled water. Shake well & boil with frequent agitation to dissolve the medium completely. DO NOT AUTOCLAVE OR OVERHEAT. Overheating may destroy selectivity of the medium. Cool to about 50°C. Mix and pour into sterile Petri plates.

Quality Control

Physical Appearance
Light yellow to pink homogeneous free flowing powder

Gelling
Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium
Reddish orange coloured clear to slightly opalescent gel forms in Petri plates

Reaction
Reaction of 6.3% w/v aqueous solution at 25°C. pH : 7.0±0.2
pH range 6.80-7.20
Cultural Response/Characteristics
DM 1108: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colour of colony
Escherichia coli ATCC 25922	50-100	fair	20-30%	Pink with bile precipitate
Enterobacter aerogenes ATCC 13048	50-100	fair	20-30%	Pink cream
Enterococcus faecalis ATCC 29212	50-100	None-poor	<=10%	colourless
Proteus mirabilis ATCC 25933	50-100	Fair-good	30-40%	Colourless may have black centre
Salmonella Choleraesuis ATCC 12011	50-100	Good-luxuriant	>50%	Colourless with black centre
Salmonella Typhi ATCC 6539	50-100	Good-luxuriant	>=50%	Colourless with black centre
Salmonella Typhimurium ATCC 14028	50-100	Good-luxuriant	>=50%	Colourless with black centre
Salmonella Enteritidis ATCC 13076	50-100	Good-luxuriant	>=50%	Colourless with black centre
Shigella flexneri ATCC 12022	50-100	good	40-50%	Colourless

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.
Prepared Media: 2-8^0 in sealable plastic bags for 2-5 days.

Further Reading

1. Lennette and others (Eds.), 1985, Manual of Clinical Microbiology, 4th ed., ASM, Washington, D.C.
2. Downes F. P. and Ito K., (Eds.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th Ed., APHA, Washington, D.C.
3. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.
4 .Eaton A. D., Clesceri L. S., Rice E. W., and Greenberg A. W., (Eds.), 2005, Standard Methods for the Examination of Water and Wastewater, 21st Ed., APHA, Washington, D.C.
5. Williams S., (Ed.), 2005, Official Methods of Analysis of the Association of Official Analytical Chemists, 19th Ed., AOAC, Washington, D.C.
6. The United States Pharmacopoeia, 2006, USP29/NF24, The United States Pharmacopoeial Convention. Rockville, MD. 7. MacFaddin J., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. I, Williams and Wilkins, Baltimore.

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