ARENA BioScien

Block 5, Street 9 inside The Ismailia free zone. Ismailia- Egypt
Post Code-41511
Tel.-Fax: +202 21813500/ +202 21813600
Mob.: +2 01211550941/ +2 01119225860
E-mail: sales@arenabioscientific.com
Website: www.arenabioscien.com

Sulfur Indole Motility (SIM) Medium

Semisolid medium used for the differentiation between microorganisms based on hydrogen sulfide production, indole production, and motility.

REF: BS.1/SM01.100.0100	100 Gram	REF: BS.1/SM01.250.0250	250 Gram
REF: BS.1/SM01.500.0500	500 Gram		

CLINICAL SIGNIFICANCE

Sulfur Indole Motility (SIM) Medium is a semisolid medium that has been used widely in the determination of hydrogen sulfide production, indole formation, and motility which are useful diagnostic tests in the identification of enteric bacilli, especially *Salmonella* spp. and *Shigella* spp. SIM Medium combines these three differential characteristics in a single medium. Motility testing is an important test in the characterization of microbial pathogens.

METHOD PRINCIPLE

SIM medium contains tryptone and peptone as sources of amino acids and nitrogenous compounds. Agar acts as a solidifying agent.
The medium contains ferrous ammonium sulfate and sodium thiosulfate, which together work as indicators for the detection of hydrogen sulfide produced. Hydrogen sulfide production is detected when ferrous sulfide, a black precipitate, is produced because of ferrous ammonium sulfate reacting with H_2S gas. Sulfur reduction to H_2S is an anaerobic activity and can be accomplished by bacteria in two different ways, depending on the enzymes present. Sulfur can be reduced to H_2S (hydrogen sulfide) either by catabolism of the amino acid cysteine by the enzyme cysteine desulfurase or by reduction of thiosulfate in anaerobic respiration. If hydrogen sulfide is produced, a black color forms in the medium, an indicative of the positive reaction. No black color formation on the medium is indicative of negative test results implying that the organism is not capable of reducing the sulfur on the medium.
Indole production is detected by the addition of Kovac's reagent after the incubation period.
Bacterial motility is evident by a diffused zone of growth extending out from the line of inoculation. The non-motile bacteria will only grow in the area where they are inoculated.

MEDIA COMPOSITION

Item	Formula per liter of medium
Tryptone	20 gm
Peptone	6.1 gm
Ferrous ammonium sulphate	0.2 gm
Sodium thiosulfate	0.2 gm
Agar	3.5 gm

PRECAUTIONS AND WARNINGS

Media to be handled by entitled and professionally educated person. Do not ingest or inhale.
Good Laboratories practices using appropriate precautions should be followed in:

- Wearing personnel protective equipment (overall, gloves, glasses,).
- Do not pipette by mouth.
- In case of contact with eyes or skin; rinse immediately with plenty of soap and water. In case of severe injuries; seek medical advice immediately.
- Respect country requirement for waste disposal.
  S56: dispose of this material and its container at hazardous or special waste collection point.
  S57: use appropriate container to avoid environmental contamination.
  S61: avoid release in environment.

For further information, refer to the SIM Medium material safety data sheet.

STORAGE AND STABILITY

BioScien SIM Medium should be stored between 10-30°C in a firmly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to avoid lump development due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in a 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.

Final pH 7.3 ± 0.2 at 25°C

PREPARATION

Suspend 30 grams in 1-liter distilled water. Heat to boiling to dissolve the medium completely. Distribute in test tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Allow the tubes to cool in a vertical position.

Deterioration

The color of ***BioScien*** SIM Medium is cream to beige homogeneous free flowing powder. Prepared Media is light amber in color. If there are any physical changes for powder or signs of deterioration (shrinking, cracking, or discoloration), and contaminations for hydrated media, discard the medium.

SPECIMEN

Clinical and non-clinical specimens.

EQUIPMENT REQUIRED NOT PROVIDED

- Test tubes
- Incubator
- Autoclave

PERFORMANCE CHARACTERISTICS

Interpretation of the results

Hydrogen Sulfide (S):

- Positive result – Blackening along the line of inoculation
- Negative result – No blackening of the medium

Indole (I):

- Positive result – Red colored ring formed in the upper layer of the medium
- Negative result - No red colored ring formation

Motility (M):

- Positive result – Diffused growth outward for the line of inoculation or turbidity throughout the medium
- Negative result – Growth along the line of inoculation

Microorganism	Result
Escherichia coli *ATCC* 25922	M (+), I (+), S (-)
Salmonella Typhimurium *ATCC* 14028	M (+), I (-), S (+)
Klebsiella pneumoniae *ATCC* 13883	M (-), I (-), S (-)
Shigella flexneri ATCC 12022	M (-), I (-), S (-)
Salmonella Paratyphi A ATCC 9150	M (+), I (-), S (-)
Salmonella Paratyphi B ATCC 8739	M (+), I (-), S (+)

QUALITY CONTROL

To ensure adequate quality control, it is recommended that positive and negative control included in each run. If control still out of range please contact ***BioScien*** technical support.

REFERENCES

1. Ewing W. H., 1986, Edwards and Ewings Identification of Enterobacteriaceae, 4th Ed., Elsevier Science Publishing Co., Inc. New York.
2. 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.
3. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore.
4. Sosa L., 1943, Rev. Inst. Bacteriol., 11:286
5. Sulkin, S.E. and J.C. Willet. 1940. J. Lab. Clin. Med. 25:649.
6. Blazevic, D.J. 1968. Appl. Microbiol. 16:668.
7. Green, R.A., E.F. Blum, C.T. DeCoro, R.B. Fairchild, M.T. Kaplan, J.L. Landau, and T.R. Sharp. 1951. J. Bacteriol. 62:347.

SYMBOLS IN PRODUCT LABELLING			
IVD	For in-vitro diagnostic use	Σ	Number of <n> test in the pack
LOT	Batch Code/Lot number		Caution
REF	Catalogue Number		Do not use if package is damaged
	Temperature Limitation		Consult Instruction for use
	Expiration Date		
	Manufactured by		

EC REP **Medical Device Safety Service**
MDSS GmbH
Schiffgr aben 41
30175 Hannover, Germany

CE