SULFIDE INDOLE MOTILITY MEDIUM (SIM)

- For in vitro use only - Catalogue No. TS58

Our SIM Medium is used for the differentiation of enteric organisms based on their ability to produce indole and hydrogen sulfide and exhibit motility.

SIM is a semi-solid medium designed to aid in the differentiation of *Enterobacteriaceae* especially *Salmonella* and *Shigella* based on their ability to produce hydrogen sulfide, to split indole from tryptophan, and to exhibit motility. The presence of sodium thiosulfate and ferric ammonium sulfate allows for hydrogen sulfide detection. Sodium thiosulfate acts as the substrate for enzymatic reduction and the resultant colorless hydrogen sulfide gas reacts with ferric ammonium sulfate to produce ferrous sulfide, an insoluble black precipitate that blackens the medium. Indole production determination is possible since pancreatic digest of casein is rich in the amino acid tryptophan. Tryptophan is an amino acid that can be oxidized by some bacteria to form three major end products: indole, pyruvic acid, and ammonia. Detection of indole indicates tryptophan degradation and can be accomplished by the addition of certain aldehydes to form colored end products. The active ingredient in Kovacs Reagent, p-dimethylaminobenzaldehyde, reacts with indole to form a pinkish-red end product that is highly visible. Motility detection is possible due to the semi-sold nature of the medium. Motile organisms can grow and radiate from the central stab line.

Formula per Litre of Medium

Pancreatic Digest of Casein	20.0 g
Peptic Digest of Animal Tissue	6.1 g
Ferrous Ammonium Sulfate	0.2 g
Sodium Thiosulfate	0.2 g
Agar	3.5 g

pH 7.3 ± 0.2

Recommended Procedure

1. Allow medium to adjust to room temperature prior to inoculation.
2. Take a well-isolated colony from a pure culture plate and pick the centre using a straight inoculating needle.
3. Inoculate by stabbing the middle of the tube ⅔ the depth of the medium.
4. Incubate tubes aerobically at 35°C.
5. Examine tubes and interpret results after 18 to 24 hours of incubation.
6. For the indole test, add 4 drops of Kovac's Reagent (Cat No. RK75) and read results within 1 minute. The reagent should remain at the medium surface.

Interpretation of Results

<u>H_2S Production:</u>
Positive (+): Blackening along stab line
Negative (-): No blackening

<u>Indole Production:</u>
Positive (+): Red color change after Kovac's
Negative (-): No color change after Kovac's (reagent remains yellow)

<u>Motility:</u>
Positive (+): Diffuse growth outward
Negative (-): Growth only along the stab line

- *Do not take inoculum from liquid or broth suspensions and this may delay results*
- *Non-motile mucoid Klebsiella strains may give false positive motility reactions this is due to mucoid strains spilling between the medium and tube giving a cloudy appearance which is often misinterpreted as motility*

Quality Control

After checking the medium for correct pH, colour, depth, and sterility, the following organisms are used to determine the performance of the completed medium.

Organism	Expected Results		
	H_2S	Ind	Mot
Escherichia coli ATCC 25922	–	+	+
Salmonella typhimurium ATCC 14028	+	–	+
Shigella flexneri ATCC 12022	–	–	–

Storage and Shelf Life

Our SIM Medium should be protected from light and stored in an upright position at 4 to 8°C. Under these conditions the medium has a shelf life of 26 weeks from the date of manufacture.

Ordering Information

Cat#	Description	Format
TS58	SIM Medium [13x100-mm s/c Tube]	10/pkg

References

1. Ewing WH, Davis BR. Media and tests for differentiation of *Enterobacteriaceae*. Atlanta: CDC, 1970.
2. Reller LB, Mirrett S. Motility-indole-lysine medium for presumptive identification of enteric pathogens of *Enterobacteriaceae.* J Clin Microbiol 1975; 2:247-52.
3. MacFaddin JF. Media for isolation-cultivation-maintenance of medical bacteria, Vol I. Baltimore: Williams & Wilkins, 1985.
4. MacFaddin JF. Biochemical Tests for Identification of Medical Bacteria. 3rd ed. Lippincott Williams and Wilkins. Philadelphia, 2000.

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