

Technical Data Sheet

SIM Medium

Ordering number: 1.05470.0500

Semi-solid test culture medium used for the identification of Enterobacteriaceae by sulfide formation, indole production and motility.

The medium complies with the recommendations of APHA (1992) for food examination.

Mode of Action

The formulation of the semi-solid SIM (Sulfide, Indole, Motility) Medium allows the detection of sulfide production, indole formation and motility from Enterobacteriaceae. The medium contains ferrous ammonium sulfate and sodium thiosulfate, which together serve as indicators for hydrogen sulfide production. Hydrogen sulfide production is detected by black precipitates. Indole is detected after addition of Kovacs Reagent which leads quickly to a red ring formation on the top of the medium. The low agar content enables to the detection of bacterial motility. Motile organisms are swarming from the puncture line and produce turbidity or cloudiness throughout the medium. Non-motile organisms grow only along the puncture line and leave the surrounding medium clear.

Typical Composition (g/L)

SIM Medium	
Peptone from casein	20.0
Peptone from meat	6.6
Ammonium iron(II)citrate	0.2
Sodium thiosulfate	0.2
Agar-agar**	3.0

**Agar-agar is equivalent to other different terms of agar.

Preparation

Suspend 30 g/litre, dispense into tubes to give a depth of about 4 cm, autoclave (15 min at 121 °C), allow to solidify in a vertical position.

pH: 7.3 ± 0.2 at 25 °C.

The prepared medium is clear and yellowish-brown.

Experimental Procedure and Evaluation

Introduce a pure culture of the microorganism to be tested into the agar by puncture.

Incubation: 18-24 hours at 35 °C aerobically.

Motility is indicated by a diffuse turbidity of the culture medium surrounding the puncture line. In case of immotility, growth takes place solely along the puncture line. H₂S formation is shown by a blackening in those areas of the medium in which microbial growth has occurred.

After checking the tubes for motility and H₂S production, the indole test is performed. The medium is covered with a layer of KOVÁCS Indole Reagent. Production of indole causes the reagent layer to become purple in colour.

Microorganisms	H ₂ S	Indole	Motility
Escherichia	-	+	±
Enterobacter	-	-	+
Citrobacter	+	-	+
Klebsiella	-	-	-
Salmonella	+	-	+
Shigella	-	±	-
Proteus vulgaris	+	+	+
Proteus mirabilis	+	-	+
Morganella	-	+	+
Rettgerella	-	+	+
Arizona	+	-	+
Hafnia	-	-	+
Serratia	-	-	+
Providencia	-	+	+
Edwardsiella	+	+	+
Yersinia enterocolitica	-	- (+)	-

Storage

Store at +15 °C to +25 °C, dry and tightly closed. Do not use clumped or discolored medium. Protect from UV light (including sun light). For *in vitro* use only.



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Quality Control

Control strains	Growth 18-24h, 35°C, aerobic	Blackening	Indole formation	Motility
Escherichia coli ATCC 25922 (WDCM 00013)	Good to very good	-	+	+
Escherichia coli ATCC 4351	Good to very good	-	+	+
Klebsiella pneumoniae ATCC 13883 (WDCM 00097)	Good to very good	-	-	-
Enterobacter cloacae ATCC 13047 (WDCM 00083)	Good to very good	-	-	+
Salmonella typhimurium ATCC 14028 (WDCM 00031)	Good to very good	+	-	+
Proteus hauseri ATCC 13315	Good to very good	+	+	+

Please refer to the actual batch related Certificate of Analysis.



Escherichia coli ATCC 25922



Salmonella typhimurium ATCC 14028



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Literature

American Public Health Association: Compendium of methods for the microbiological examination of foods. - 3rd ed. (1992).

COSTIN, I.D.: Die biochemische Identifizierung der Enterobacteriaceae. Kritische Bemerkungen zur Prinzipien und Methoden. - **Zbl. Bakt. I. Ref.**, **219**; 81-151 (1961).

COSTIN, I.D.: Orientierende Identifizierung obligat- und fakultativ-aerober, anspruchsloser, gramnegativer Stäbchen von medizinischem Interesse. - **Med. Labor.**, **30**; 197-217 (1977).

Ordering Information

Product	Cat. No.	Pack size
SIM Medium	1.05470.0500	500 g
Bactident® Indole (dropper bottle)	1.11350.0001	1 x 30 ml
KOVÁCS Indole Reagent	1.09293.0100	100 ml

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