

Technical Data Sheet

☑ Levine Eosin Methylene-Blue (EMB) Lactose Agar acc. to Levine

Ordering number: 1.01342.0500

Levine eosin methylene-blue (EMB) lactose agar acc. to Levine is a culture medium for the isolation and differentiation of *Escherichia coli* and *Enterobacter* and for the rapid identification of *Candida albicans* according to Levine (1918, 1921).

The culture medium is a slightly selective and differential medium for the isolation, cultivation and differentiation of gram-negative enteric microorganisms from clinical specimens. It is used for the examination of materials of sanitary importance for the presence of coliforms. Clinical specimens such as urine, respiratory and wound samples that are likely to contain mixtures of organisms may be cultured on Levine EMB agar to enhance the recovery of Enterobacteriaceae, and it also allows a preliminary grouping of enteric and other gram-negative bacteria.

IVD in vitro diagnosticum - For professional use only

Mode of Action

The dyes contained in this medium inhibit the growth of many accompanying Gram-positive microorganisms. According to Weld (1952, 1953) and Vogel and Moses (1957), Levine EMB Agar can be used to identify *Candida albicans* in clinical specimens, if chlorotetracycline hydrochloride is added to inhibit the entire accompanying bacterial flora. Levine EMB Agar can also be utilized for the identification of coagulase-positive *staphylococci* which grow characteristically as colorless "pin-point" colonies and which show good agreement with the results of the coagulase test (Menolasino et al. 1960).

Typical Composition

Peptone	10 g/l
Lactose	10 g/l
K ₂ HPO ₄	2 g/l
Eosin, yellowish	0.4 g/l
Methylene Blue	0.065 g/l
Agar-Agar	13.5 g/l

Preparation

Suspend 36 g/l. Autoclave 15 min at 121 °C and pour plates.

The appearance of the plates is clear to almost clear and red-brown.

The medium always contains fine precipitate to a varying extent.

The pH value at 25 °C is in the range of 6.9-7.3.

If cultivating *Candida*, add 0,1 mg tetracycline hydrochloride/l after autoclaving and mix homogeneously. The culture medium is then blue.

Specimen

e.g. Stool.

Clinical specimen collection, handling and processing, see general instructions of use.

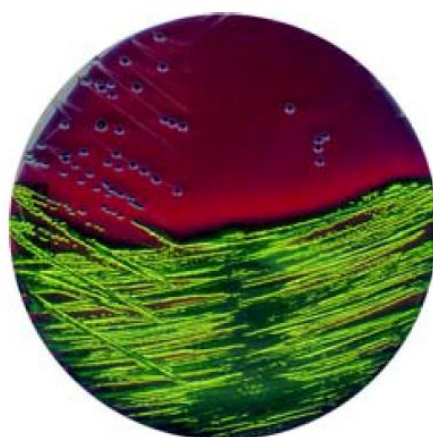
Experimental Procedure and Evaluation

Inoculate by thinly spreading the sample material on the surface of the culture medium.

Incubation: 24 h at 35 °C aerobically.

To obtain a primary culture of *Candida*, incubate the plates containing chlorotetracycline in a 10 % carbon dioxide atmosphere (e.g. with Anaerocult® C or C mini).

Appearance of Colonies	Microorganisms
Diameter 2-3 mm, greenish metallic sheen in reflected light, dark or even black centre in transmitted light	<i>Escherichia coli</i>
Diameter 4-6 mm, grey-brown centre in transmitted light, no metallic sheen	<i>Enterobacter</i>
Transparent, amber-coloured	<i>Salmonella</i> and <i>Shigella</i>
Colorless, "pin-point" colonies	Coagulase-positive <i>staphylococci</i>
"Spidery" - or "feathery"	<i>Candida albicans</i>
Yeast-like, round, smooth	Other <i>Candida</i> species. Sometimes <i>Nocardia</i>



Escherichia coli ATCC 11775



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Storage

The product can be used for sampling until the expiry date if stored upright, protected from light and properly sealed at +15 °C to +25 °C.

After first opening of the bottle the content can be used up to the expiry date when stored dry and tightly closed at +15 to +25° C.

Disposal

Please mind the respective regulations for the disposal of used culture medium (e.g. autoclave for 20 min at 121 °C, disinfect, incinerate etc.).

Quality Control

Control Strains	ATCC #	Tested with	Incubation	Expected Results
<i>Escherichia coli</i>	25922	Spiral plate method	24 h at 35 °C	Recovery ≥ 50 %, metallic lustre
<i>Escherichia coli</i>	11775	Spiral plate method	24 h at 35 °C	Recovery ≥ 50 %, metallic lustre
<i>Escherichia coli</i>	194	Spiral plate method	24 h at 35 °C	Recovery ≥ 50 %, metallic lustre
<i>Enterobacter cloacae</i>	13047	Spiral plate method	24 h at 35 °C	Recovery ≥ 50 %, no metallic lustre
<i>Shigella sonnei</i>	11060	Three-loop streak	24 h at 35 °C	Growth good to very good, no metallic lustre
<i>Salmonella typhimurium</i>	14028	Three-loop streak	24 h at 35 °C	Growth good to very good, no metallic lustre
<i>Proteus mirabilis</i>	14273	Three-loop streak	24 h at 35 °C	Growth good to very good, no metallic lustre
<i>Staphylococcus aureus</i>	25923	Three-loop streak	24 h at 35 °C	Growth none to poor

Please refer to the actual batch related Certificate of Analysis.

Literature

American Public Health Association, American Water Works Association and Water Pollution Control Federation (1998). Standard Methods for the Examination of Water and Wastewater, 20th edition, Washington.

Levine, M. (1918). Differentiation of *E. coli* and *A. aerogenes* on a simplified eosin-methylene blue agar. J. Infect. Dis. **23**: 43-47.

Levine, M. (1921). Bacteria fermenting lactose and the significance in water analysis. Bull. **62**: Iowa State College Engr. Exp. Station.

Menolasino, N.I., Grieves, B. and Payne, P. (1960). Isolation and Identification of coagulase-positive *staphylococci* on Levine's eosin-methylene blue agar. J. Lab. Clin. Med. **56**: 908-910.

United States Pharmacopeia (1995).

Vogel, R.A. and Moses, M.R. (1957). Welds method for the rapid identification of *Candida albicans* in clinical materials. Am. J. Clin. Path. **28**: 103-106.



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Weld, J.T. (1952). *Candida albicans*. Rapid identification in pure cultures with carbon dioxide on modified eosin-methylene blue medium. Arch. Dermat. Syph. **66**: 691-694.

Weld, J.T. (1953). *Candida albicans*. Rapid identification in cultures made directly from human materials. Arch. Dermat. Syph. **67**: 473-478.

Ordering Information

Product	Cat. No.	Pack size
Levine EMB Agar (Eosin Methylene-blue Lactose Agar acc. to Levine)	1.01342.0500	500 g
Anaerobic jar 2,5 l-volume	1.16387.0001	1 ea
Anaeroclip®	1.14226.0001	1 x 25
Anaerocult® C	1.16275.0001	1 x 25
Anaerocult® C mini	1.13682.0001	1 x 25
Petri-dish Rack	1.07040.0001	1 ea

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