



CLED / Mac Conkey

Bi-plate for the isolation, enumeration and identification of pathogenic bacteria from urine specimens.

DESCRIPTION

CLED / Mac Conkey is a ready-to-use plate containing two distinct media used for microbiological urine analysis.

CLED Agar supports the growth of all urinary potential pathogens providing good colony differentiation.

Mac Conkey Agar is a selective medium giving excellent differentiation between lactose-fermenting and lactose-nonfermenting gram-negative enteric bacilli. This medium meets United States Pharmacopoeia (USP), European Pharmacopoeia (EP) and Japanese Pharmacopoeia (JP) performance specifications, where applicable.

TYPICAL FORMULA

CLED Agar	(g/l)	Mac Conkey Agar	(g/l)
Enzymatic Digest of Gelatin	4.0	Pancreatic Digest of Gelatin	17.0
Enzymatic Digest of Casein	4.0	Enzymatic Digest of Casein	1.5
Beef Extract	3.0	Enzymatic Digest of Animal Tissue	1.5
Lactose	10.0	Lactose	10.0
L-Cystine	0.128	Bile Salts Mixture	1.5
Bromothymol Blue	0.02	Sodium Chloride	5.0
Agar	15.0	Neutral Red	0.03
Final pH 7.3 ± 0.2 at 25°C		Crystal Violet	0.001
		Agar	15.0
		Final pH 7.1 ± 0.2 at 25°C	

METHOD PRINCIPLE

Enzymatic digest of gelatin, enzymatic digest of casein, beef extract and enzymatic digest of animal tissue provide amino acids, nitrogen, carbon, vitamins and minerals required for organisms growth. Lactose is the fermentable carbohydrate. Agar is the solidifying agent. Lack of electrolytes suppresses the swarming of *Proteus* and *Shigella* species.

In CLED Agar, bromothymol blue is the pH indicator changing color from green to yellow when lactose fermentation lowers the pH. L-cystine is a growth supplement for cystine-dependent organisms.

In Mac Conkey Agar, bile salts and crystal violet are the selective agents, inhibiting Gram-positive organisms and allowing Gram-negative bacteria to grow. Sodium Chloride maintains the osmotic balance of the medium. Neutral red is the pH indicator.

TEST PROCEDURE

Urine must be directly streaked over the agar surface no later than 2 h after collection or must be kept at 2-8°C (not longer than 24 h) to avoid microbial overgrowth. Use a calibrated loop (0.01 or 0.001 ml) to inoculate an undiluted, well-mixed urine sample in each of the two media on the plate. Incubate aerobically at 35 ± 2°C for 18-48 h.

RESULTS INTERPRETATION

After incubation count the number of colonies on the plate. Each colony correspond to 100 or 1000 CFU/ml of urine, using a 0.01 ml or 0.001 ml loop, respectively. Observe the color and the morphology of the colonies for presumptive identification according to the ID table. Further tests should be performed for confirmation.

ID Table.

Microorganism	Typical colony color and morphology on CLED Agar	Typical colony color and morphology on Mac Conkey Agar
<i>Escherichia coli</i>	Yellow, opaque	Pink with bile precipitate
<i>Klebsiella</i> spp, <i>Enterobacter</i> spp	Yellow to whitish-blue, mucoid	Pink, mucoid
<i>Proteus</i> spp	Translucent blue	Colorless to beige
<i>Salmonella</i> spp	Flat blue	Colorless
<i>Pseudomonas aeruginosa</i>	Green, matt surface and rough periphery	Colorless to pink, irregular
Enterococci	Yellow, about 0.5 mm in diameter	Partial to complete inhibition
<i>Staphylococcus aureus</i>	Deep yellow	Partial to complete inhibition
Coagulase negative staphylococci	Pale yellow	Partial to complete inhibition

APPEARANCE

CLED Agar: slightly opalescent, green to blue-green.

Mac Conkey Agar: slightly opalescent, pinkish-red.

STORAGE

Store at 10-25°C away from light. Do not use the product beyond its expiry date on the label or if product shows any evidence of contamination or any sign of deterioration.

SHELF LIFE

6 months.

QUALITY CONTROL

Slides are inoculated with the microbial strains indicated in the QC table.

Inoculum for productivity: 50-100 CFU

Inoculum for selectivity: 10⁴-10⁶ CFU

Incubation conditions: 35 ± 2°C for 18-24 hours.

QC Table.

Microorganism		Growth on CLED Agar	Growth on Mac Conkey Agar
<i>Escherichia coli</i>	ATCC® 25922	Good, yellow colonies	Good, pink colonies with bile ppt
<i>Klebsiella pneumoniae</i>	ATCC® 13883	Good, yellow to whitish-blue colonies	Good, pink colonies
<i>Proteus mirabilis</i>	ATCC® 12453	Good, blue colonies, no swarming	Good, colorless colonies, no swarming
<i>Salmonella Typhimurium</i>	ATCC® 14028	Good, blue colonies	Good, colorless colonies
<i>Pseudomonas aeruginosa</i>	ATCC® 27853	Good, green colonies	Good, colorless to pink
<i>Enterococcus faecalis</i>	ATCC® 29212	Good, yellow colonies	Partially to completely inhibited
<i>Staphylococcus aureus</i>	ATCC® 25923	Good, small yellow colonies	Partially to completely inhibited

WARNING AND PRECAUTIONS

The product does not contain hazardous substances in concentrations exceeding the limits set by current legislation and therefore is not classified as dangerous. It is nevertheless recommended to consult the safety data sheet for its correct use. The product must be used by properly trained operators only.

DISPOSAL OF WASTE

Disposal of waste must be carried out according to national and local regulation in force.








BIBLIOGRAPHY

- Sandys G.H. (1960) A new method for preventing swarming of *Proteus* spp with a description of a new medium suitable for use in routine laboratory practice. J. Med. Lab. Technol. 17:224.
- Mackey J.P. and G.H. Sandys (1966) Diagnosis of urinary tract infections. Br. Med. J. 1:1173.
- United States Pharmacopeial Convention (2008). The United States Pharmacopeia, 31/the National formulary 26, Supp. 1, 8-1-08, online. United States Pharmacopeial Convention, Inc., Rockville, Md.
- European Directorate for the Quality of Medicines and Healthcare. 2008. The European pharmacopoeia, 6th ed., Supp. 1, 4-1-08, online. European Directorate for the Quality of Medicines and Healthcare, Council of Europe, Strasbourg, France.
- Japanese Ministry of Health, Labour and Welfare. 2006. The Japanese pharmacopoeia, 15th ed., online. Japanese Ministry of Health, Labour and Welfare.

PRESENTATION

		Contents	Ref.
CLED / Mac Conkey	90 mm ready-to-use plates	20 plates	18502

TABLE OF SYMBOLS

LOT Batch code	IVD <i>In vitro</i> Diagnostic Medical Device	 Manufacturer	 Use by	 Fragile, handle with care
REF Catalogue number	 Temperature limitation	 Contains sufficient for <n> tests	 Caution, consult Instruction For Use	 Do not reuse

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