

MACCONKEY AGAR
(Prepared plates - Pkg. of 10)
Catalog No.: BP-014/BD-010

INTENDED USE

Savyon Diagnostics MacConkey Agar is a solid medium recommended for use in qualitative procedures for the isolation of gram-negative bacilli and for the differentiation of those organisms on the basis of lactose fermentation.

SUMMARY

In 1900, MacConkey first described a neutral red bile salt medium for the cultivation and identification of enteric organisms.¹ A detailed description of the selective and differential properties of the medium was published in 1905.² The original formulation has been modified over the years with the addition of sodium chloride, a lowered agar content, an adjusted concentration of bile salts and neutral red, and improved inhibition of swarming with *Proteus* species.

PRINCIPLE

The peptones in this medium provide nitrogenous nutrients and amino acids. Lactose is added as a carbon source for energy. Sodium chloride maintains osmotic equilibrium. This medium is selective due to the presence of crystal violet and bile salts, which are inhibitory to most gram-positive organisms. Differentiation of microorganisms is accomplished by the combination of lactose and the neutral red indicator. Coliform organisms, which ferment lactose, usually develop into red colonies surrounded by a zone of precipitated bile. Lactose nonfermenters such as *Salmonella* and *Shigella* develop into colorless, transparent colonies. The swarming of *Proteus* is inhibited on this medium; however, occasional strains will swarm to some extent.

FORMULA per Liter of Medium:

Gelatin Peptone	17.0g
Casein Peptone	1.5g
Meat Peptone	1.5g
Lactose	10.0g
Sodium Chloride	5.0g
Crystal Violet	0.001g
Neutral Red	0.030.0g
Bile Salts	1.5g
Agar	13.5g

Final pH: 7.1 ± 0.2 at 25°C.

RECOMMENDED PROCEDURE:

1. Inoculate and streak the specimen as soon as possible after it is received in the laboratory.
2. If material is being cultured directly from a swab, roll the swab over a small area of the agar surface and streak for isolation.
3. A nonselective medium should also be inoculated to increase the chance of recovery when the number of gram-negative organisms is low and to provide isolation of other organisms present in this specimen.
4. Incubate plates aerobically at 35-37°C for 18-24 hours.
5. Examine plates for typical colonial morphology.

INTERPRETATION OF RESULTS

Lactose-fermenting organisms grow as pink to brick-red colonies with or without a zone of precipitated bile. Lactose-nonfermenting organisms grow as colorless or clean colonies.

QUALITY CONTROL

All lot numbers of MacConkey Agar have been tested using the following quality control organisms and have been found to be acceptable.

This quality assurance testing conforms with or exceeds NCCLS standards. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, patient results should not be reported.

Organism	ATCC	Conditions	Expected Results	
			Recovery	Colony Color
<i>Escherichia coli</i>	25922	Aerobic, 18-24 h at 35°C	Growth	Rose-red colonies
<i>Proteus mirabilis</i>	12453	Aerobic, 18-24 h at 35°C	Growth	Colorless colonies, inhibition of swarming
<i>Proteus vulgaris</i>	6380	Aerobic, 18-24 h at 35°C	Growth	Colorless colonies, inhibition of swarming
<i>Salmonella typhimurium</i>	14028	Aerobic, 18-24 h at 35°C	Growth	Colorless colonies
<i>Enterococcus faecalis</i>	29212	Aerobic, 18-24 h at 35°C	Inhibition (partial to complete)	-
<i>Staphylococcus aureus</i>	25923	Aerobic, 18-24 h at 35°C	Inhibition (partial to complete)	-

STORAGE

MacConkey Agar prepared plates should be protected from light and stored at 4°C to 8°C.

PRECAUTIONS

The colonial characteristics described give presumptive identification only of the isolated organisms. It is necessary to subculture and carry out confirmation tests for final identification.

References:

1. MacConkey, A.T. 1900. Lancet. ii:20.
2. MacConkey, A.T. 1905. J. Hyg. 5:333.
3. National Committee for Clinical Laboratory Standards. 1996. Quality Assurance for Commercially Prepared Microbiological Culture Media. 2nd ed. Approved Standard, M22-A2. NCCLS, Wayne, PA.