



## Columbia Broth Base

M145

### Intended Use:

Recommended used as a general purpose medium and also for the cultivation of fastidious organisms from clinical specimens.

### Composition\*\*

Ingredients	Gms / Litre
Peptone special	10.000
Biopeptone	10.000
HI powder	3.000
L-Cysteine hydrochloride	0.100
Dextrose (Glucose)	2.500
Sodium chloride	5.000
Magnesium sulphate	0.100
Ferrous sulphate	0.020
Sodium carbonate	0.600
Tris (hydroxymethyl) aminomethane	0.830
Tris (hydroxymethyl) aminomethane hydrochloride	2.860
Final pH ( at 25°C)	7.5±0.2

\*\*Formula adjusted, standardized to suit performance parameters

### Directions

Suspend 35.01 grams in 1000 ml purified / distilled water. Heat to boiling to dissolve the medium completely. If desired, SPS (Sodium polyanethol sulphonate) may be added in a final concentration of 0.01%. Dispense into tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C.

### Principle And Interpretation

Morello and Ellner in 1969 devised a liquid medium for the recovery of microorganisms from blood cultures (1). This medium was devised from Columbia Blood Agar Base previously formulated by Ellner et al (2). While studying they found that Columbia Broth was superior to a commonly used general-purpose broth for faster growth of *Staphylococcus aureus*, *Escherichia coli*, viridans Streptococci and *Enterococcus* groups. In the formulation the increased concentration of cystine is provided for improved recovery of both aerobic and anaerobic microorganisms from blood specimens. Columbia Broth Base supplemented with SPS (Sodium Polyanethol Sulphonate), a polyanionic anticoagulant inhibits complement and lysozyme activity, interferes with phagocytosis and inactivates aminoglycosides (3). The presence of CO<sub>2</sub> is stimulatory for many organisms. It is an excellent blood culture medium (4). It differs from the agar base in that the cornstarch is omitted to reduce opalescence (1) and salts have been included.

Medium contains peptone special, biopeptone and HI powder to support luxurious growth of the organisms. Dextrose is added as a carbon and energy source. The medium is buffered with tris buffer. The addition of salts was found to be beneficial for the recovery of organisms. L-Cysteine HCL is the reducing agent. Magnesium & iron are added to facilitate organism growth.

Tube media should be inoculated with 1 to 2 drops of the liquid specimen using a sterile pipette. Swab specimens may be inserted into the broth after inoculation of the plated media. Liquid media should be reduced by placing the tubes with caps loosened under anaerobic conditions for 18-24 hours prior to inoculation for anaerobic incubation. Alternatively, it can be reduced immediately before use by boiling with caps loosened and cooling to room temperature with tightened caps, before inoculation. Growth in tubes is indicated by presence of turbidity compared to an uninoculated control. If growth appears, cultures should be subcultured onto appropriate media. Addition of SPS is inhibitory to *Neisseria* species, and thus 1.2% gelatin addition may counteract the inhibitory effect.

### Type of specimen

Clinical samples - Blood

## Specimen Collection and Handling

For clinical samples follow appropriate techniques for handling specimens as per established guidelines (4,5). After use, contaminated materials must be sterilized by autoclaving before discarding.

### Warning and Precautions :

In Vitro diagnostic Use only. Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling clinical specimens. Safety guidelines may be referred in individual safety data sheets.

### Limitations :

1. Further biochemical and serological tests must be carried out for further identification.

### Odqenql mbd mc Du kt shnm

Odqenql mbd ne sgd ldchtl hr dwodbsdc vgd m trdc r odq sgd chqdbshnm nm sgd k adk vhsghwsgdx odqhnc vgd m rsnqdc sqdbnlldmcdc sldlodq stqd-

## Quality Control

### Appearance

Cream to yellow homogeneous free flowing powder

### Colour and Clarity of prepared medium

Light amber coloured, clear to slightly opalescent solution, may have a fine precipitate.

### Reaction

Reaction of 3.5% w/v aqueous solution at 25°C. pH : 7.5±0.2

### pH

7.30-7.70

### Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 18-48 hours

Organism	Inoculum (CFU)	Growth
<i>Clostridium perfringens</i> ATCC 12924	50-100	good-luxuriant
<i>Neisseria meningitidis</i> ATCC 13090	50-100	good-luxuriant
<i>Staphylococcus aureus</i> ATCC 25923	50-100	good-luxuriant
<i>Streptococcus mitis</i> ATCC 9811	50-100	good-luxuriant
<i>Streptococcus pyogenes</i> ATCC 19615	50-100	good-luxuriant

## Reference

1. Morello J. A. and Ellner P. D., 1969, Appl. Microbiol. 17:68.
2. Ellner P. D., Stoessel C. J., Drakeford E. and Vasi F., 1966, Am. J. Clin. Pathol., 45:502
3. Reller, Murray and MacLowry, 1982, Cumitech 1A, Blood cultures II, Coord. Ed., ASM, Washington D.C.
4. Isenberg, (Ed.), 1992, Clinical Microbiology Procedures Handbook, Vo I. American Society for Microbiology, Washington, D.C.

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