

**CNA Agar Plate with sheep blood****(M400)**

Recommended for selective isolation of pathogenic gram positive cocci from clinical and non clinical specimens.

**Composition**

| <b>Ingredients</b>      | <b>g/ L</b> |
|-------------------------|-------------|
| Biopeptone -----        | 20.000      |
| Tryptose -----          | 3.000       |
| Corn starch -----       | 1.000       |
| Sodium chloride -----   | 5.000       |
| Colistin sulphate ----- | 0.010       |
| Nalidixic acid -----    | 0.015       |
| Agar -----              | 15.000      |
| Sheep Blood -----       | 60-70ml     |

**Description**

CNA Agar is a nutritionally rich formula containing sheep blood, which provides more nutrients and capability of displaying haemolytic reactions. Columbia Blood Agar Base is utilized as a base for preparation of media containing blood and in selective media preparations where various combinations of antimicrobial agents are used as additives. Ellner et al formulated the medium and found that the combination of peptones used gave more rapid and abundant growth of Streptococci, Staphylococci, Neisseria and Haemophilus with better-defined haemolytic reactions. Columbia C.N.A. Agar Base is prepared with the same formula as Columbia Agar Base with the addition of 10 mg/litre of colistin and 15 mg/litre of nalidixic acid to inhibit the growth of gram-negative bacteria and to support the growth of Staphylococci, haemolytic Streptococci and Enterococci when supplemented with blood.

Sheep blood allows detection of haemolytic reactions and supplies X-factor necessary for the growth of many bacterial species.

It should be noted that this medium has relatively high carbohydrate content and, therefore, beta-hemolytic streptococci may produce a greenish hemolytic reaction that may be mistaken for alpha haemolysis. The addition of the antimicrobial agents, colistin (or polymyxin B) and nalidixic acid, renders the medium selective for gram-positive microorganisms.

Colistin and nalidixic acid disrupt the cell membrane of gram-negative organisms, whereas nalidixic acid blocks DNA replication in susceptible gram-negative bacteria.

C.N.A. Agar with addition of blood gives selective isolation of gram-positive cocci, Staphylococci and Streptococci, particularly when gram-negative bacilli are present and tend to overgrow on conventional blood agar plates

**Specimen Collection and Handling**

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

**Warning and Precautions**

In Vitro diagnostic use only. For professional use only. Follow good microbiological lab practices while handling specimens and culture.

**Limitations**

1. Individual organisms differ in their growth requirement and may show variable growth patterns.
2. Each lot of the medium has been tested for the organisms specified on the COA.

**Performance and Evaluation**

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

**Quality control****Physical/Chemical control**

Color : Red                      pH: 7.10-7.50

**Cultural Response**

Cultural characteristics observed after an incubation at 35-37°C for 24-48 hours.

**Microbiological activity**

| Organisms                          | Inoculum<br>CFU/ml | Growth      | Haemolysis                |
|------------------------------------|--------------------|-------------|---------------------------|
| Streptococcus pyogenes ATCC 19615  | 50-100             | Good growth | Beta haemolytic reaction  |
| Streptococcus pneumoniae ATCC 6305 | 50-100             | Good growth | Alpha haemolytic reaction |
| Staphylococcus aureus ATCC 25923   | 50-100             | Good growth | Beta haemolytic reaction  |
| Escherichia coli ATCC 25922        | $\geq 10^3$        | Inhibited   | -                         |

**Storage and Shelf Life**

Store between 2-8°C. Use before expiry date on the label. Product performance is best if used within stated expiry period.

**Disposal**

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques.

**Reference**

1. Ellner et al, 1966, Am. J. Clin. Path., 45:502.
2. Murray P. R., Baron J. H., Pfaller M. A., Jorgensen J. H. and Tenover F. C., (Ed.), 2003, Manual of Clinical Microbiology, 8th Ed., American Society for Microbiology, Washington, D.C.
3. Estevez, 1984, Lab. Med., 15:258.
4. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
5. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock, D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.