

Columbia Blood Agar Base (i23046)

Columbia Agar Base, with or without the addition of 5% (or 10%) sheep blood, is a highly nutritious, general-purpose medium for the isolation and cultivation of non-fastidious and fastidious microorganisms from a variety of clinical and nonclinical materials.

Industry: Pharmaceutical / Clinical / Veterinary / Food

Principles & Uses

The Columbia Agar Base serves as a versatile medium, acting as a foundation for various formulations with special supplements for selective cultivation.

The base, designed by Ellner et al., supports both fastidious and non-fastidious organisms, fostering rapid and luxuriant growth. Components like corn starch provide energy and neutralize toxic metabolites, while sheep blood aids in detecting hemolysis and supplies the heme factor. The medium's versatility extends to applications like *Corynebacterium diphtheriae* virulence testing and the selective cultivation of *Listeria*.

Caution is exercised in handling infective cultures, and the incubation conditions vary based on the targeted microorganisms. The lack of selective supplementation in this highly nutritive medium allows recovery of a wide variety of microorganisms, and microbiological identification involves considering hemolysis reactions, colony appearance, and results from other culture media.

Composition (gr/L)

Peptone, special 23 g, Corn starch 1 g, Sodium chloride 5 g, Agar 15 g.

Final pH at 25°C 7.3 ± 0.2

Preparation from dehydrated Powder

Dissolve 44 grams in 1 L of distilled water, then sterilize via autoclaving at 121°C for 15 minutes. Cool the solution to 45-50°C before incorporating heat-sensitive compounds. For Blood Agar, introduce 5% v/v sterile defibrinated sheep blood to the sterile cooled base. For Chocolate Agar, add 10% v/v sterile defibrinated sheep blood to the sterile cooled base, and heat to 80°C for 10 minutes with constant agitation.

To customize the medium's selectivity:

For *Brucella* species: Mix the rehydrated contents of 1 vial of Brucella Selective Supplement with 500 ml of sterile molten base.

For *Campylobacter* species: Combine the rehydrated contents of 1 vial of a Campylobacter Supplement (I, II, III, VI) with 500 ml of sterile molten base. Add rehydrated contents of 1 vial of Campylobacter Growth Supplement and 5-7% v/v horse or sheep blood.

For *Gardnerella* species: Blend the rehydrated contents of 1 vial of G. Vaginalis Selective Supplement with 500 ml of sterile molten base.

For *Cocci*: Mix the rehydrated contents of 1 vial of Staph-Strep Supplement or Strep Supplement or Streptococcus Selective Supplement with 500 ml of sterile molten base.

Quality Control

Dehydrated Appearance: Beige, free-flowing, homogeneous.

Prepared Appearance: Plain – Light to medium amber, slightly opalescent to opalescent with fine precipitate. With sheep blood – Cherry red, opaque, no hemolysis.

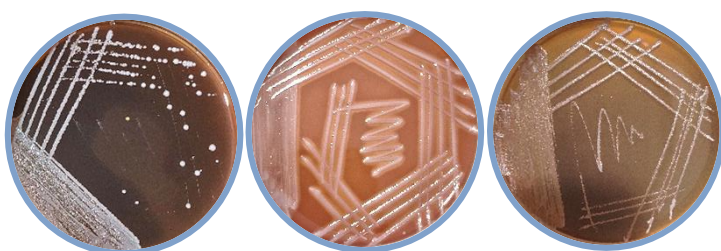
Reaction of 4.4% Solution at 25°C: pH 7.3 ± 0.2

Cultural Response

Prepare the medium per label directions without (plain) and with 5% sheep blood (SB) for Columbia Blood Agar Base and with 5% sheep blood for Columbia Blood Agar. Inoculate and incubate at 35 ± 2°C with 5 - 10% CO₂ for 18 - 48 hours.

Organism (ATCC*)	Recovery Plain	Recovery with SB	Hemolysis
<i>Escherichia coli</i> (25922)	Good	Good	Beta
<i>Staphylococcus aureus</i> (25923)	Good	Good	Beta
<i>Streptococcus pneumoniae</i> (6305)	Good	Good	Alpha
<i>Neisseria meningitidis</i> (13090)	Good	Good	Gamma (none)
<i>Streptococcus pyogenes</i> (19615)	Good	Good	Beta

*ATCC is a registered trade mark of the American Type Culture Collection.



Staphylococcus aureus (left). *Streptococcus pyogenes* (middle). *Candida albicans* (right).

Storage

Keep the container at 15-30 °C. Store prepared medium at 2-8 °C.