# Heart Infusion Agar

## Intended Use

Heart Infusion Agar is a general-purpose medium used in the cultivation of a wide range of microorganisms from a variety of clinical and nonclinical specimens.

## Summary and Explanation

Meat infusions provided one of the earliest means of culturing microorganisms, and infusion-based media are still widely used. Huntoon demonstrated that pathogenic organisms could be grown on infusion agar without supplements.[1] In plates, Heart Infusion Agar can be used for primary isolation of organisms from mixed cultures; in agar slant form, it is used primarily for organism cultivation and maintenance rather than for isolation from mixed cultures.

Heart infusion media are specified for the isolation of *Vibrio cholerae* and *Vibrio* species.[2,3] Several modifications of heart infusion media have been described.[4] The BBL™ prepared medium provided in tubed slants contains yeast extract and a reduced peptone content.

## Principles of the Procedure

Heart Infusion Agar derives its nutrients from heart muscle infusion and peptone, which supply nitrogenous and carbonaceous compounds, sulfur, vitamins and trace ingredients. Sodium chloride maintains osmotic equilibrium. Agar is the solidifying agent. The addition of 5% sheep blood provides additional growth factors and is used to determine hemolytic reactions.

## Formula

**Difco™ Heart Infusion Agar**

Approximate Formula* Per Liter

| | | |
|---|---|---|
| Beef Heart, Infusion from 500 g | 10.0 | g |
| Tryptose | 10.0 | g |
| Sodium Chloride | 5.0 | g |
| Agar | 15.0 | g |

*Adjusted and/or supplemented as required to meet performance criteria.*

## User Quality Control

### *Identity Specifications*

**Difco™ Heart Infusion Agar**

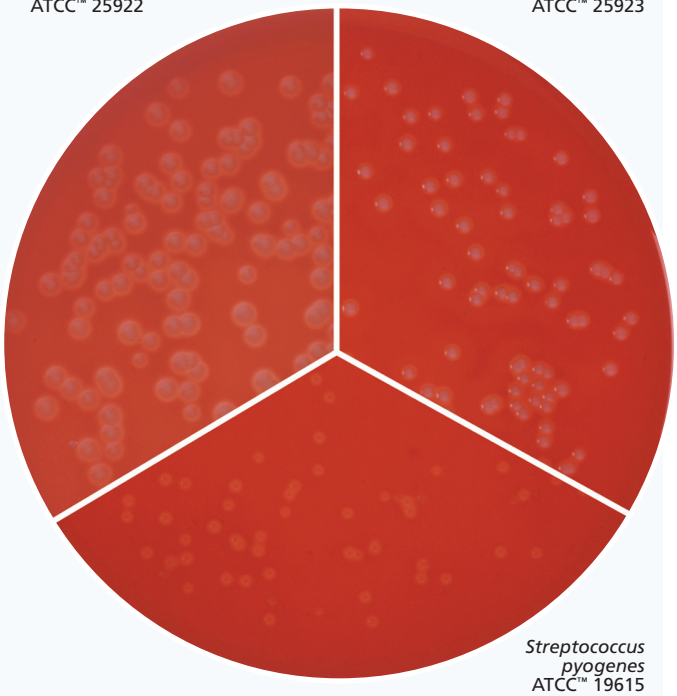
| | |
|---|---|
| Dehydrated Appearance: | Beige, free-flowing, homogeneous. |
| Solution: | 4% solution, soluble in purified water upon boiling. Solution is light to medium amber, very slightly to slightly opalescent. |
| Prepared Appearance: | Plain – Light to medium amber, slightly opalescent.<br>With 5% sheep blood – Cherry red, opaque. |
| Reaction of 4% Solution at 25°C: | pH 7.4 ± 0.2 |

### *Cultural Response*

**Difco™ Heart Infusion Agar**

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

| ORGANISM | ATCC™ | INOCULUM CFU | RECOVERY PLAIN | RECOVERY WITH 5% SB | HEMOLYSIS |
|---|---|---|---|---|---|
| *Escherichia coli* | 25922 | $10^2$-$10^3$ | Good | Good | Beta |
| *Staphylococcus aureus* | 25923 | $10^2$-$10^3$ | Good | Good | Beta |
| *Streptococcus pneumoniae* | 6305 | $10^2$-$10^3$ | Fair | Good | Alpha |
| *Streptococcus pyogenes* | 19615 | $10^2$-$10^3$ | Fair | Good | Beta |



## Directions for Preparation from Dehydrated Product

1. Suspend 40 g of the powder in 1 L of purified water. Mix thoroughly.
2. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
3. Autoclave at 121°C for 15 minutes.
4. To prepare blood agar, aseptically add 5% sterile defibrinated blood to the medium at 45-50°C. Mix well.
5. Test samples of the finished product for performance using stable, typical control cultures.

## Procedure

Use standard procedures to obtain isolated colonies from specimens.

Since many pathogens require carbon dioxide on primary isolation, plates may be incubated in an atmosphere containing approximately 3-10% $CO_2$. Incubate plates at 35 ± 2°C for 18-48 hours.

Using a sterile inoculating loop or needle, pick several isolated colonies from the primary isolation plate and streak the surface of a slant of Heart Infusion Agar. Incubate the tubes under appropriate conditions at 35°C.

## Expected Results

Refer to appropriate references and procedures for results.

## References


1. Huntoon. 1918. J. Inf. Dis. 23:169.
2. U.S. Food and Drug Administration. 2001. FDA bacteriological analytical manual, online. AOAC International, Gaithersburg, Md.
3. Downes and Ito (ed.). 2001. Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.
4. Atlas. 1997. Handbook of microbiological media, 2nd ed. CRC Press, Inc., Boca Raton, Fla.


## Availability

### Difco™ Heart Infusion Agar

BAM CCAM COMPF

| | | |
|---|---|---|
| Cat. No. | 244400 | Dehydrated – 500 g |
| | 244100 | Dehydrated – 2 kg |
| | 211839 | Dehydrated – 10 kg |

### BBL™ Heart Infusion Agar

| | | |
|---|---|---|
| Cat. No. | 297336 | Tubed Slants – Pkg. of 10 |

### BBL™ Heart Infusion Agar with 5% Sheep Blood

*Europe*

| | | |
|---|---|---|
| Cat. No. | 257026 | Prepared Plates – Pkg. of 20* |

**Store at 2-8°C.*