

# Beef Heart for Infusion

## Intended Use

Beef Heart for Infusion is used in preparing microbiological culture media.

## Summary and Explanation

Beef Heart for Infusion is prepared from fresh beef heart tissue and dried to a powdered form. Beef Heart for Infusion is processed from large quantities of raw material, retaining all the nutritive and growth-stimulating properties of the fresh tissues. One hundred grams of Beef Heart for Infusion are the equivalent of 500 g of fresh heart tissue. Beef Heart for Infusion supplies the nutritional requirements for growth of microorganisms in Heart Infusion media.

One of the first media used for the cultivation of bacteria was a liquid medium containing an infusion of meat. Huntton<sup>1</sup> used fresh beef heart and Bacto Peptone to prepare a “hormone” broth to retain growth-promoting substances. Highly pathogenic organisms, such as meningococci and pneumococci, could be grown on infusion medium without enrichments.<sup>1</sup>

Beef Heart for Infusion is a component of Heart Infusion media. Heart Infusion media are used in the mass production of microorganisms for vaccine production and are specified in standard methods for other multiple applications.<sup>2-7</sup>

## User Quality Control

### Identity Specifications

#### Difco™ Beef Heart for Infusion

Dehydrated Appearance: Tan to medium brown, fine, homogeneous.

Solution: 5.0% solution, not completely soluble in purified water. Solution, after filtration, is light to medium amber, clear to slightly opalescent, may have a precipitate.

Reaction of 5.0% Solution at 25°C: pH 7.5-7.8

### Cultural Response

#### Difco™ Beef Heart for Infusion

Prepare a 5% solution of Beef Heart for Infusion. Infuse for one hour at 50 ± 2°C. Heat to boiling for 3-5 minutes and filter. Add 2% Proteose Peptone No. 3, 0.5% sodium chloride and 0.005% dextrose to the filtrate. Adjust pH to 7.5-7.8. Boil and filter before autoclaving. Inoculate and incubate tubes at 35 ± 2°C for 18-48 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY
<i>Escherichia coli</i>	25922	10 <sup>2</sup> -10 <sup>3</sup>	Good
<i>Klebsiella pneumoniae</i>	13883	10 <sup>2</sup> -10 <sup>3</sup>	Good
<i>Staphylococcus aureus</i>	25923	10 <sup>2</sup> -10 <sup>3</sup>	Good
<i>Streptococcus pyogenes</i>	19615	10 <sup>2</sup> -10 <sup>3</sup>	Good

## Principles of the Procedure

Beef Heart for Infusion provides nitrogen, amino acids and vitamins in microbiological culture media.

## Typical Analysis

Refer to Product Tables in the Reference Guide section of this manual.

## Directions for Preparation from Dehydrated Product

Infusions can be prepared using 50 g of Beef Heart for Infusion per liter of purified water. For best results, infuse at 50° C for 1 hour. Heat the infusion to boiling for a few minutes to coagulate some of the proteins and filter. Add peptone and remaining ingredients of the medium to the filtrate. Adjust the pH to 7.5-7.8. Boil the medium and filter before autoclaving. Consult appropriate references for further directions on preparation of specific products.

## Procedure

See appropriate references for specific procedures using Beef Heart for Infusion.<sup>2-4</sup>

## Expected Results

Refer to appropriate references and procedures for results.

## References

- Huntton. 1918. J. Infect. Dis. 23:168.
- Ruoff. 1995. In Murray, Baron, Pfaller, Tenover and Tenover (ed.), Manual of clinical microbiology, 6th ed. American Society for Microbiology, Washington, D.C.
- U.S. Food and Drug Administration. 2001. Bacteriological analytical manual, online. AOAC International, Gaithersburg, Md.
- Horwitz (ed.). 2007. Official methods of analysis of AOAC International, 18th ed., online. AOAC International, Gaithersburg, Md.
- U.S. Environmental Protection Agency. 2000. Improved enumeration methods for the recreational water quality indicators: Enterococci and *Escherichia coli*. EPA-821/R-97/004. Office of Water, USEPA, Washington, D.C.
- Eaton, Rice and Baird (ed.). 2005. Standard methods for the examination of water and wastewater, 21st ed., online. American Public Health Association, Washington, D.C.
- U.S. Department of Agriculture. Microbiology laboratory guidebook, online. Food Safety and Inspection Service, USDA, Washington, D.C.

## Availability

### Difco™ Beef Heart for Infusion

AOAC BAM EPA SMWW USDA

Cat. No. 213210 Dehydrated – 500 g