# HEART INFUSION BROTH

**Dehydrated culture medium**

## 1 - INTENDED USE

General purpose liquid medium for the cultivation of fastidious and non-fastidious microorganisms, including aerobic and anaerobic bacteria and fungi from a variety of specimens.

## 2 - COMPOSITION - TYPICAL FORMULA * (AFTER RECONSTITUTION WITH 1 L OF WATER)

| | |
|---|---|
| Beef heart infusion solids | 10.0 g |
| Tryptose | 10.0 g |
| Sodium chloride | 5.0 g |

*The formula may be adjusted and/or supplemented to meet the required performances criteria.

## 3 - PRINCIPLE OF THE METHOD AND EXPLANATION OF THE PROCEDURE

Heart Infusion Broth is a general-purpose nutrient medium for the cultivation of a large variety of microorganisms, including nutritional fastidious, such as streptococci, meningococci and pneumococci.
Several modifications of heart infusion media have been described.[1] Supplemented with 6.5% sodium chloride, the medium may be used for differentiation of enterococci from streptococci.[2] By adding 0.1-0.2% of agar to the Heart Infusion Broth, its viscosity is increased, thus promoting the growth of anaerobes in the lower layers of the medium. The addition of carbohydrates or other ingredients results in media used for a variety of purposes.
Heart Infusion Broth can be used for the mass cultivation of microorganisms, and is thus suitable for the preparation of vaccines.
Beef heart infusion and tryptose provide nitrogen, carbon, minerals and amino acids for the microbial growth. Sodium chloride is a source of electrolytes and maintains the osmotic equilibrium.

## 4- DIRECTIONS FOR MEDIUM PREPARATION

Suspend 25 g in 1000 mL of cold purified water. Mix thoroughly and warm slightly if necessary to completely dissolve the powder, distribute and sterilize by autoclaving at 121°C for 15 minutes.

## 5 - PHYSICAL CHARACTERISTICS

| | |
|---|---|
| Dehydrated medium appearance | beige, fine, homogeneous, free-flowing powder |
| Solution appearance | yellow, limpid |
| Final pH at 20-25 °C | 7.4 ± 0.2 |

## 6 - MATERIALS PROVIDED – PACKAGING

| Product | Type | REF | Pack |
|---|---|---|---|
| Heart Infusion Broth | Dehydrated medium | 4015402<br>4015404 | 500 g (20)<br>5 kg (200 L) |

## 7 - MATERIALS REQUIRED BUT NOT PROVIDED

Autoclave, water-bath, sterile loops, swabs and pipettes, incubator and laboratory equipment as required, Erlenmeyer flasks, ancillary culture media and reagents for the identification of the colonies.

## 8 - SPECIMENS

Heart Infusion Broth can be used for the sub-culture of colonies grown on primary isolation media. It can also be inoculated with a variety of samples following the procedures described in the literature. Good laboratory practices for collection, transport and storage of specimens should be applied.

## 9 - TEST PROCEDURE

With a bacteriological needle or loop inoculate the liquid medium in a test tube or bottle with a colony grown on a plating medium or with one or two drops of the specimen, if liquid, using a sterile pipette. Swab specimens may be inserted into broth after inoculation of plated media. The user is responsible for choosing the appropriate incubation time, temperature and atmosphere depending on the processed specimen, the requirements of organisms to be recovered and the local applicable protocols.

## 10 - READING AND INTERPRETATION

The presence of microorganisms is indicated by a varying degree of turbidity, specks and flocculation in the medium. The un-inoculated control remains clear and without turbidity after incubation. The characteristics of growth is closely related to the type or types of microorganisms grown.

## 11 - USER QUALITY CONTROL

All manufactured lots of the product are released for sale after the Quality Control has been performed to check the compliance with the specifications. However, the end user can perform its own Quality Control in accordance with the local applicable regulations, in compliance with accreditation requirements and the experience of the Laboratory. Here below are listed some test strains useful for the quality control.

| CONTROL STRAINS | INCUBATION T°/ T / ATM | EXPECTED RESULTS |
|---|---|---|
| *S. aureus* ATCC 25923 | 35-37°C / 18-24H / A | good growth |
| *E. coli* ATCC 25922 | 35-37°C / 18-24H / A | good growth |

A: aerobic incubation; ATCC is a trademark of American Type Culture Collection

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## 12 - PERFORMANCES CHARACTERISTICS

Prior to release for sale a representative sample of all lots of dehydrated Heart Infusion Broth, is tested for productivity by comparing the results with a previously approved Reference Batch (RB).
Productivity is tested by dilution to extinction method, by inoculating 1 mL of appropriate decimal dilutions of organisms in test tubes and incubating at 37°C or at for 24 hours and recording the highest dilution showing growth in Reference Batch ($Gr_{RB}$) and in Test Batch ($Gr_{TB}$).
Productivity is tested with the following strains: *S. aureus* ATCC 25923, *S. pyogenes* ATCC 19615, *S. pneumoniae* ATCC 6303, *E. faecalis* ATCC 19433, *M. luteus* ATCC 9341, *S. marcescens* ATCC 8100. The productivity index $Gr_{RB}$-$Gr_{TB}$ for each test strain shall be ≤ 1.

## 13 - LIMITATIONS OF THE METHOD

- The nutritional requirements of microorganisms can be different, it is therefore possible that some microbial strains do not grow or grow scantily.
- Sub-cultures onto suitable solid media are necessary for purification of the culture and to perform identification tests.

## 14 - PRECAUTIONS AND WARNINGS

- This product is for microbiological control and for professional use only; it is to be used by adequately trained and qualified laboratory personnel, observing approved biohazard precautions and aseptic techniques.
- Dehydrated media must be handled with suitable protection. Before use, consult the Safety Data Sheet.
- This culture medium contains raw materials of animal origin. The *ante* and *post mortem* controls of the animals and those during the production and distribution cycle of the raw materials, cannot completely guarantee that this product doesn't contain any transmissible pathogen. Therefore, it is recommended that the culture medium be treated as potentially infectious, and handled observing the usual specific precautions: do not ingest, inhale, or allow to come into contact with skin, eyes, mucous membranes. Download the TSE Statement from the website www.biolifeitaliana.it, describing the measures implemented by Biolife Italiana for the risk reduction linked to infectious animal diseases.
- Apply Good Manufacturing Practice in the preparation process of tubed or bottled media.
- All laboratory specimens should be considered infectious.
- The laboratory area must be controlled to avoid contaminants such as culture medium or microbial agents.
- Sterilize all biohazard waste before disposal. Dispose the unused medium and the sterilized medium inoculated with samples or microbial strains in accordance with current local legislation.
- Do not use the culture medium as active ingredient for pharmaceutical preparations or as production material intended for human and animal consumption.
- The Certificates of Analysis and the Safety Data Sheet of the product are available on the website www.biolifeitaliana.it.
- The information provided in this document has been defined to the best of our knowledge and ability and represents a guideline for the proper use of the product but without obligation or liability. In all cases existing local laws, regulations and standard procedures must be observed for the examination of samples collected from human and animal organic districts, for environmental samples and for products intended for human or animal consumption. Our information does not relieve our customers from their responsibility for checking the suitability of our product for the intended purpose.

## 15 - STORAGE CONDITIONS AND SHELF LIFE

Upon receipt, store at +10°C /+30°C away from direct light in a dry place. If properly stored, it may be used up to the expiration date. Do not use beyond this date. Avoid opening the bottle in humid places. After use, the container must be tightly closed. Discard the product if the container and/or the cap are damaged, or if the container is not well closed, or in case of evident deterioration of the powder (colour changes, hardening, large lumps).
The user is responsible for the manufacturing and quality control processes of prepared media and for the validation of the period of validity of the finished products, according to the type (tubes/bottles), and the storage method applied (temperature and packaging).

## 16 - REFERENCES

1. Atlas R. Parks LC. Handbook of Microbiological Media. 2nd edition. CRC Press,1997
2. MacFaddin JF. Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria. Baltimore: Williams & Wilkins; 1985

**TABLE OF APPLICABLE SYMBOLS**

| | | | | |
|---|---|---|---|---|
| REF or REF<br>Catalogue number | LOT Batch code | Manufacturer | Store in a dry place | Use by |
| Temperature limitation | Contents sufficient for <n> tests | Consult Instructions for Use | Keep away from direct light | |

**REVISION HISTORY**

| Version | Description of changes | Date |
|---|---|---|
| Revision 1 | Updated layout and content | 2022/08 |

Note: minor typographical, grammatical, and formatting changes are not included in the revision history.

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