



## NUTRIENT BROTH 13 g/L

### Dehydrated culture medium

**1 - INTENDED USE**

General purpose medium for the cultivation of a wide variety of non-fastidious microorganisms.

**2 - COMPOSITION - TYPICAL FORMULA \***

(AFTER RECONSTITUTION WITH 1 L OF WATER)

Beef extract	1.0 g
Yeast extract	2.0 g
Peptone	5.0 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**

There are several proposed formulations of Nutrient Broth in the literature. The Atlas and Parks review<sup>1</sup> lists more than 10 of them. Biolife includes 4 formulations in its product portfolio: the classic formulation (Nutrient Broth REF 401815) with 3 g/L beef extract and 5 g/L meat peptone, Nutrient Broth n°2 (REF 401812) intended for the preparation of Preston Broth, Nutrient Broth AOAC (REF 401816) used for the determination of the phenol coefficient of disinfectants and finally Nutrient Broth 13 g/L (REF 401818). Depending on their operational needs, the end users will be able to choose the formulation they consider most appropriate.

Nutrient Broth 13 g/L is a general-purpose medium with superior fertility characteristics to Nutrient Broth. It corresponds in formulation to the preparations of Loeffler and other microbiologists of the European school. Compared to the Nutrient Broth (401815) typical of North American microbiologists, this liquid medium also contains yeast extract and has superior fertility characteristics. This medium may be enriched with other ingredients such as blood, serum, sugars, etc., for specific purposes.

Beef extract, peptone and yeast extract provide essential nitrogen- and carbon-based nutrients, vitamins and trace elements for the growth of most non-fastidious microorganisms. Sodium chloride is a source of electrolytes and maintains osmotic balance.

**4 - DIRECTIONS FOR MEDIUM PREPARATION**

Suspend 13 g in 1000 mL of cold purified water. Mix well and heat to dissolve if necessary. Distribute and sterilize by autoclaving at 121°C for 15 minutes.

**5 - PHYSICAL CHARACTERISTICS**

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

**6 - MATERIALS PROVIDED - PACKAGING**

Product	Type	REF	Pack
Nutrient Broth 13 g/L	Dehydrated medium	4018182	500 g (38.5 L)

**7 - MATERIALS REQUIRED BUT NOT PROVIDED**

Autoclave, water-bath, incubator, laboratory equipment as required, sterile loops, swabs, tubes, Erlenmeyer flasks, ancillary culture media and reagents.

**8 - SPECIMENS**

Generally Nutrient Broth 13 g/L is used for the sub-culture of microorganisms isolated on other culture media and is not used for the direct inoculation of samples.

**9- TEST PROCEDURE**

With a bacteriological needle or loop inoculate the liquid medium in a test tube or bottle with a colony grown on another isolation medium. Incubate at the temperature and for the time required by laboratory procedures. Usually, an incubation temperature of 35 ± 2° C for 18-24 h is adequate for cultivation of common aerobes and facultative anaerobes.

**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
<i>E. coli</i> ATCC 25922	37°C / 24H / A	good growth
<i>E. faecalis</i> ATCC 19433	37°C / 24H / A	good growth

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





### 12 - PERFORMANCE CHARACTERISTICS

Prior to release for sale a representative sample of all lots of dehydrated Nutrient Broth 13 g/L is tested for productivity by comparing the results with a previously approved Reference Batch.

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° for 24 hours and recording the highest dilution showing growth in Reference Batch ( $G_{r_{RB}}$ ) and in Test Batch ( $G_{r_{TB}}$ ). Productivity is tested with the following strains: *E. coli* ATCC 25922, *K. pneumoniae* ATCC 27736, *E. aerogenes* ATCC 13048, *E. faecalis* ATCC 19433, *S. pyogenes* ATCC 12384, *S. epidermidis* ATCC 12228. The productivity index  $G_{r_{RB}}-G_{r_{TB}}$  for each test strain shall be  $\leq 1$ .

### 13 - LIMITATIONS OF THE METHOD

- Nutrient Broth 13 g/L is not suitable for the cultivation of fastidious microorganisms and for the cultivation of anaerobes.
- 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](http://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 production process of prepared 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](http://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 shelf life of the finished products, according to the type and the storage method (temperature and packaging). According to MacFaddin the self-prepared nutrient broth media in tubes/flasks may be stored at 2-8°C for 6 months.<sup>2</sup>

### 16 - REFERENCES

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

### TABLE OF APPLICABLE SYMBOLS

 REF or REF 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	2022/11

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

