STUART TRANSPORT MEDIUM

Dehydrated culture medium

1 - INTENDED USE

Medium for collecting, transporting and preserving specimens for microbiological analysis.

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

Sodium glycerophosphate	10.000 g
Sodium thioglycollate	1.000 g
Calcium chloride	0.100 g
Agar	3.400 g
Methylene blue	0.002 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

Stuart Transport Medium is prepared in accordance with Ringertz's modification[1] of the medium described by Stuart.[2]
It is a chemically defined, semi-solid, non-nutritive, reductive medium used for the transport and preservation of specimens for microbiological analysis. The medium is particularly suitable for routine transport of gonococcal and other fastidious organisms (e.g., Shigella, *Bordetella*, other respiratory tract pathogens and anaerobes)[3]. The medium maintains viable microorganisms within 24 hours of storage without their significant multiplication.[3]
Sodium thioglycolate, by lowering the redox potential of the medium, allows better preservation of anaerobic bacteria; sodium glycerophosphate and calcium chloride act as a buffer system; methylene blue is an oxidation indicator.

4- DIRECTIONS FOR MEDIUM PREPARATION

Suspend 14.4 g in 1000 mL of cold purified water. Bring to the boil under agitation, dispense into screw-cap tubes, filling them almost completely, so that the height of the medium is about 7 cm. Autoclave with the cap loose for 10 minutes at 121°C; after sterilisation close the tubes tightly and cool rapidly in upright position.

5 - PHYSICAL CHARACTERISTICS

Dehydrated medium appearance	grey-blue, fine, homogeneous, free-flowing powder
Solution and prepared tubes appearance	colourless, slightly opalescent; light blue on top of tubes.
Final pH at 20-25 °C	7.3 ± 0.2

6 - MATERIALS PROVIDED - PACKAGING

Product	Type	REF	Pack
Stuart Transport Medium	Dehydrated medium	4020912	500 g (34.7 L)

7 - MATERIALS REQUIRED BUT NOT PROVIDED

Autoclave, water-bath, sterile swabs, Erlenmeyer flasks, screw-cap tubes.

8 - SPECIMENS

Stuart Transport Medium is suitable for the transport and storage of specimens for the isolation of aerobic and anaerobic microorganisms. Good laboratory practices for collection, transport and storage of specimens should be applied.

9 - TEST PROCEDURE

- Insert the swab into the medium to one-third of the medium depth.
- Cut or break the swab stick if longer than the tube.
- Screw the cap firmly.
- Transport to the laboratory as soon as possible or preferably within 6 hours (maximum up to 24 hours).
- Transfer to appropriate isolation media depending on specimen source.
- Incubate plated media using proper microbiological procedures for cultivation of the suspected pathogens.

10 - READING AND INTERPRETATION

The presence of microorganisms is indicated by the appearance of colonies of varying morphology and size on the isolation media. The characteristics of the growths are closely related to the type or types of cultivated microorganisms.

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, it is responsibility of the end-user to perform Quality Control testing 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.pyogenes ATCC 19615	20-25°C / 24h / A	good recovery after subculture to Blood Agar
N.gonorrhoeae ATCC 19424	20-25°C / 24h / CO_2	good recovery after subculture to Chocolate Agar

ATCC is a trademark of American Type Culture Collection

12 - PERFORMANCES CHARACTERISTICS

Prior to release for sale a representative sample of all lots of dehydrated Stuart Transport Medium is tested for organisms' recovery by comparing the results with a previously approved Reference Batch.

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Recovery is tested by incubating at 20-25°C for 18-24 hours the inoculated Amies tubes with the following strains: *S.aureus* ATCC 25923, *N.gonorrhoeae* ATCC 19424, *S.pyogenes* ATCC 19615, *H.influenzae* ATCC 10211. The inoculated tubes are sub-cultured on appropriate plating media by a semi-quantitative ecometric technique and incubated at 35-37°C for 18-24 hours with the appropriate atmosphere (aerobic, CO_2). The bacterial recovery on plating media is observed and recorded. All inoculated Stuart Transport Medium tubes, maintained at 20-25°C for 18-24 hours, originate a good growth on sub-cultured plated media.

13 - LIMITATIONS OF THE METHOD

- After 24 hours there is a gradual diminution of viable cells.[3]
- Tubes of Stuart Transport medium will undergo a slight degree of oxidation at mouth of tube; this oxidation is indicated by a blue colour at the upper periphery of the medium. However, if tube exhibits a distinct blue colour throughout the medium, discard.
- Anaerobiosis of the medium may be restored by reliquefying the medium prior to its use.
- Sodium glycerophosphate is a buffer; however, some organisms metabolize it with resultant promotion of bacterial growth.[4]
- According to the data of Barry et al.[5], survival of anaerobes is best if the sample is collected with a cotton swab rather than on calcium alginate swabs.
- The survival of bacteria in a transport medium depends on many factors, including the type and concentration of bacteria in the sample and the temperature during the transport. Optimal growth and typical morphology can only be predicted following direct inoculation of the specimen and the use of an adequate isolation medium. Stuart Transport medium, however, provides an adequate level of microbial survival in specimens that cannot be immediately forwarded to the laboratory.

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.
- 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 plates 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 shelf life of the finished products, according to the type (tubes/bottles) and the storage method (temperature and packaging).

16 - REFERENCES

1. Ringertz O.A modified Stuart Medium for the transport of gonococcal specimens. Acta Pathol. Microbiol.Scand 1960; 48:105
2. Stuart RD, Toshach Sheila R, Patsula TM. The problem of transport of specimens for the culture of gonococci. Acta Pathol Microbiol Scand 1954; 74: 371-374.
3. MacFaddin JF. Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria. Baltimore: Williams & Wilkins; 1985.
4. Cary SG, Blair EB. New transport medium for shipment of clinical specimens. J Bacteriol 1964; 88:96-98
5. Barry AL, Fay GH, Sauer RL, (1972) Efficiency of a transport medium for the recovery of aerobic and anaerobic bacteria in various transport media. Appl Microbiol 1972; 24(1): 31.

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	2022/05

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

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