INSTRUCTIONS FOR USE

GC MEDIUM BASE
BIOVITEX, VCN, VCNT, HAEMOPHILUS, SUPPLEMENTS
Dehydrated culture medium and supplements

Neisseria gonorrhoeae
on Modified Thayer Martin Medium

Biovitex/Restoring Fluid
Vial contents for 500 mL of medium

Diphosphopyridine nucleotide	1.250 mg
Cocarboxylase	0.500 mg
p-Aminobenzoic acid	0.065 mg
Thiamine HCl	0.015 mg
Vitamin B_{12}	0.050 mg
L-Glutamine	50.000 mg
L-Cystine	5.500 mg
L-Cysteine HCl	129.500 mg
Adenine	5.000 mg
Guanine HCl	0.150 mg
Ferric nitrate	0.100 mg
Glucose	500.000 mg

1 - INTENDED USE

In vitro diagnostic. General purpose medium, used with various enrichments and selective supplements, for the isolation and cultivation of *Neisseria gonorrhoeae*, *Haemophilus* spp. and other fastidious microorganisms, from clinical specimens.

2 - COMPOSITIONS

GC Medium Base
Typical formula after reconstitution with 1 L of water*

Peptocomplex	15 g
Starch	1 g
Dipotassium hydrogen phosphate	4 g
Potassium dihydrogen phosphate	1 g
Sodium chloride	5 g
Agar	12 g

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

VCN Antimicrobic Supplement
Vial contents for 500 mL of medium

Vancomycin	1.50 mg
Colistin	3.75 mg
Nystatin	6250 IU

VCNT Antimicrobic Supplement
Vial contents for 500 mL of medium

Vancomycin	1.50 mg
Colistin	3.75 mg
Nystatin	6250 IU
Trimethoprim	2.50 mg

Haemophilus Antimicrobic Supplement
Vial contents for 500 mL of medium

Bacitracin	10,000 IU
Vancomycin	2.5 mg
Clindamycin	0.5 mg

3 - PRINCIPLE OF THE METHOD AND EXPLANATION OF THE PROCEDURE

In 1945, Johnston[1] described a medium that could successfully produce colonies of *N. gonorrhoeae* in 24 hours. This medium was later modified by Carpenter and Morton[2] using GC Medium Base with the addition of haemoglobin and a yeast concentrate (chocolate agar). The medium was further improved by replacing yeast concentrate with a chemically defined supplement, formulated specifically to facilitate the growth of gonococci.[3] In 1964 Thayer and Martin[4] proposed a selective medium for the cultivation of *N.gonorrhoeae* and *N. meningitidis*, incorporating haemoglobin, yeast supplement B, polymyxin B and ristocetin into GC Agar. Thayer and Martin improved in 1966[5] the formulation substituting the original antibiotics with vancomycin, colistin and nystatin (VCN). In 1970 Martin and Lester[6] modified the new Thayer Martin Medium by increasing agar and glucose content and by incorporating an additional antibiotic, trimethoprim lactate; this improved medium is called Modified Thayer-Martin (MTM) medium. Martin and Lewis[7] in 1977 further improved the selectivity of MTM by increasing the vancomycin concentration from 3.0 µg/mL to 4.0 µg/mL to achieve greater inhibition of gram-positive bacteria and replacing nystatin with anisomycin (VCA/ VCAT) to achieve greater inhibition of yeasts; this medium is known as Martin-Lewis Agar.

In 1969 Hovig and Aandahl[8] formulated a selective medium for the isolation of *Haemophilus* spp. from respiratory tract, incorporating bacitracin into chocolate agar. In 1973 Chapin and Doern[9] described a chocolatized medium with bacitracin, vancomycin and clindamycin for the selective recovery of *H. influenzae* from specimens contaminated with upper respiratory tract microbial flora.

GC Medium Base is therefore the basal medium of choice to be supplemented with enrichments and selective compounds for the isolation and cultivation of *Neisseria* spp., *Haemophilus* spp. and other fastidious pathogenic microorganisms from clinical specimens.

Peptocomplex provides carbon, nitrogen and trace elements for bacterial growth, sodium chloride maintains the osmotic balance, dibasic and monobasic potassium phosphates buffer prevents pH changes due to amine production, corn starch is included to absorb toxic by-products contained in the specimen and is an energy source for bacterial growth.[10]

With GC Medium Base it is possible to prepare a variety of enriched and selective media including: chocolate agar enriched, chocolate agar with antibiotics (Haemophilus selective medium), Thayer Martin medium and Modified Thayer Martin medium; the formulas of the mentioned media are summarized in the table below.

Chocolate agar enriched (CAE) is intended for cultivation and isolation of fastidious microorganisms such as *Haemophilus* spp. and *Neisseria spp.* from a variety of sterile and non-sterile clinical specimens. For normally non-sterile human sites it is advised to use chocolate agar enriched together with a selective medium. Heated horse blood provides hemin (X factor) required for growth of *Haemophilus* and enhancing growth of *Neisseria*. The medium is supplemented with Biovitex that supplies V factor (NAD) for

Haemophilus growth and vitamins, amino acids, coenzymes, dextrose, ferric ions and other factors which improve the growth of pathogenic *Neisseria*.

Thayer Martin Medium (TM) and Modified Thayer Martin Medium (MTM) are selective and enriched media intended for the isolation of *Neisseria gonorrhoeae* from non sterile human sites contaminated by mixed flora of bacteria and/or fungi. Vancomycin inhibits Gram positive bacterial contamination, nystatin is an anti-fungal agent, colistin inhibits Gram negative microbial flora and almost all saprophytic *Neisseria* spp., trimethoprim suppresses *Proteus* swarming.

Haemophilus selective medium with bacitracin, vancomycin and clindamycin (HSM) has the same formula of chocolate agar enriched and is supplemented with antibiotics. It is intended for isolation of *Haemophilus* spp. from the upper respiratory tract and other non-sterile clinical specimens. Bacitracin suppresses the growth of most strains of streptococci, staphylococci, micrococci and *Neisseria*. Vancomycin is active against Gram positive bacteria, clindamycin suppresses the growth of aerobic Gram positive cocci, including some members of the *Staphylococcus* and *Streptococcus* genera.

	CAE	HSM	TM	MTM
GC Medium Base	1000 mL	1000 mL	1000 mL	1000 mL
Heated horse blood	50 mL	70 mL		
2% Haemoglobin solution/ heated sheep blood			500 mL* / 50 ml	500 mL* / 50 ml
Biovitex-Restoring Fluid (chemically defined enrichment)	10 mL	10 mL	10 mL	10 mL
Glucose				1,5 g
VCN Supplement (vancomycin, colistin, nistatin)			10 mL	
VCNT Supplement (vancomycin, colistin, nistatin, trimethoprim)				10 mL
Haemophilus Antimicrobic Supplement (bacitracin/vancomycin/clindamycin)		20,000 IU/5 mg/1mg		

CAE: chocolate agar enriched; HSM: Haemophilus selective medium (chocolate agar enriched supplemented with antibiotics); TM: Thayer Martin medium, MTM: Modified Thayer Martin medium; *combine with 1/2 volume of autoclaved GC Medium Base double concentration (see directions for media preparation).

4- DIRECTIONS FOR MEDIA PREPARATION

Suspend 38 g in 1000 mL of cold purified water; bring to boil stirring constantly and sterilize by autoclaving at 121°C for 15 minutes. Cool to 47-50°C and add the required enrichment and selective supplement according to the medium to be prepared.

Chocolate agar enriched (CAE)

To the sterilised medium cooled to 47-50°C, aseptically add 5-10% of defibrinated horse blood and heat in a water bath at 80°C for 15 minutes. Cool to 47-50°C and add, to 500 mL of medium, the content of one vial of Biovitex reconstituted with 5 mL of Restoring Fluid (ref. n° 4240009). Mix well and distribute into sterile tubes or plates as desired. Final pH 7.2 ± 0.2

Neisseria selective media (TM and MTM)

To the sterilised medium cooled to 47-50°C, aseptically add 5% of defibrinated sheep blood and heat in a water bath at 80°C for 15 minutes. Cool to 47-50°C and add, to 500 mL of medium, the content of one vial of Biovitex reconstituted with 5 mL of Restoring Fluid (ref. n° 4240009). Additionally, add the content of one vial of VCN Antimicrobic Supplement (ref. n° 4240007), reconstituted with 5 mL of sterile distilled water (Thayer Martin medium). Alternatively, add the content of one vial of VCNT Antimicrobic Supplement (ref. n° 4240008) reconstituted with 5 mL of sterile distilled water: Modified Thayer Martin medium. Instead of heated sheep blood, GC medium Base can be supplemented with sterile bovine haemoglobin solution: 5 g of haemoglobin (REF 4122712) in 250 mL of water sterilized by autoclaving + 250 mL of autoclaved GC Medium Base at double concentration. Mix well and distribute into sterile plates. Final pH 7.2 ± 0.2.

Haemophilus selective medium (HSM)

To the sterilised medium cooled to 47-50°C, aseptically add 5-10% of defibrinated horse blood and heat in a water bath at 80°C for 15 minutes. Cool to 47-50°C and add, to 500 mL of medium, the content of one vial of Biovitex reconstituted with 5 ml of Restoring Fluid (ref. n° 4240009) and the contents of one vial of Haemophilus Selective Supplement (cat. N° 4240010) reconstituted with 5 mL of sterile distilled water. Mix well and distribute into sterile plates. Final pH 7.2 ± 0.2

5 - PHYSICAL CHARACTERISTICS

Dehydrated medium appearance	beige, fine, homogeneous, free-flowing powder
Solution appearance	beige, limpid
Prepared plates appearance	brown, opaque
Final pH at 20-25 °C	7.2 ± 0.2

6 - MATERIALS PROVIDED - PACKAGING

Product	Type	REF	Pack
GC Medium Base	Dehydrated medium	4015202	500 g (13,1 L) CND: W0104010101; EDMA:14.01.01.01; RDM: 1868096/R
		4015204	5 kg (131 L) CND: W0104010101; EDMA:14.01.01.01; RDM 1868128/R
Biovitex-Restoring Fluid	Enrichment supplement	4240009	5 + 5 vials, each for 500 mL of medium CND :W01040101045; EDMA: 14.01.01.04 RDM: 1892682/R
VCN Antimicrobic Supplement	Selective supplement	4240007	10 vials, each for 500 mL of medium CND :W01040101045; EDMA: 14.01.01.04; RDM: 1892758/R
VCNT Antimicrobic Supplement	Selective supplement	4240008	10 vials, each for 500 mL of medium: CND:W01040101045; EDMA: 14.01.01.04; RDM: 1892759/R
Haemophilus Antimicrobic Supplement	Selective supplement	4240010	10 vials, each for 500 mL of medium CND :W01040101045; EDMA: 14.01.01.04; RDM: 1892728/R

7 - MATERIALS REQUIRED BUT NOT PROVIDED

Autoclave and water-bath, sterile loops and swabs, incubator and laboratory equipment as required, Petri dishes, tubes, Erlenmeyer flasks, CO_2 generators and jars or CO_2 incubator with humidifier, ancillary culture media and reagents for the identification of the colonies; defibrinated horse blood, defibrinated sheep blood, bovine haemoglobin (REF 4122712).

8 - SPECIMENS

Chocolate agar enriched: plates can be directly inoculated with many clinical specimens collected from various normally sterile and non-sterile human sites. Refer to the quoted literature for specimens types, related to specific infections.[11-13] Chocolate agar enriched is not suitable for direct inoculation of blood samples.

Thayer Martin (TM) and Modified Thayer Martin (MTM) Media: plates can be directly inoculated with specimens from non-sterile human sites contaminated by mixed flora of bacteria and/or fungi (e.g. urogenital tract, upper respiratory tract, pus and exudates).[11,13-14] This medium is not useful for the isolation of *Neisseria* spp. from supposedly sterile sites.[10]

Haemophilus selective medium: plates can be directly inoculated with clinical specimens collected from non-sterile human sites such as ear and respiratory tract.[15]

Collect specimens before antimicrobial therapy where possible. Good laboratory practices for collection, transport and storage of the clinical specimens should be applied; consult appropriate references for further information.[11]

9 - TEST PROCEDURE

Allow plates to come to room temperature. The agar surface should be smooth and moist, but without excessive water. Process the specimen as soon as possible after it is received in the laboratory to avoid loss of gonococci viability and overgrowth of contaminants.

Roll the swab over one quadrant of the surface then streak the specimen over the other quadrants of the plate to obtain well isolated colonies, ensuring that sections 1 and 4 do not overlap.

Alternatively, since swabs for gonococcal culture may contain only small numbers of organisms, roll swab directly on the medium in a large "Z" pattern to sufficiently transfer the specimen; cross-streak the "Z" pattern with a sterile loop.

Chocolate agar enriched: incubate at 35-37°C in aerobic conditions with 5 -10% CO_2, and record the results after 18-24 and 48 hours.

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. Consult the procedures outlined in the references for further information.[12,15]

Thayer Martin and Modified Thayer Martin media: incubate at 35-36.5°C in a moist atmosphere supplemented with 3-7% CO_2; cultures should be examined daily for growth and held for a maximum of 72 hours.

Haemophilus selective medium: incubate at 35-37°C in a moist atmosphere in the presence of 5 -10% CO_2 and record the results after 24 and 44-48 hours, to obtain satisfactory growth of *H.influenzae* and most other *Haemophilus* species. When specimens for *H.aegyptius* and *H.ducreyi* are cultured, incubation may be necessary for up to 5 days.[15] Further, when *H.ducreyi* is suspected in the specimen, plates should be incubated at 30-33°C in 5% CO_2 in a high-moisture environment.[15]

10 - READING AND INTERPRETATION

After incubation, observe the bacterial growth and record the specific morphological, chromatic characteristics of the colonies.

Chocolate agar enriched

Colonies of *Haemophilus influenzae* have a diameter of about 1-2 mm, are colourless, transparent, moist and tend to be translucent, with a characteristic "mousy" odour.

Colonies of *N.gonorhoeae* are of variable diameter (0,5 - 2 mm), moderately convex, raised, finely granular, glistening, with entire or lobate margins.

For other fastidious microorganisms, refer to appropriate references and procedures for results reading and interpretation.[12,15]

Thayer Martin and Modified Thayer Martin media

N.gonorrhoeae colonies are variable in size, usually small (0,5-2 mm), moderately convex, raised, granular, glistening, moist, with entire to lobate margins, usually greyish-white to translucent; almost all strains become mucoid after 48 hours.

A Gram staining must be performed on suspected *Neisseria* colonies to confirm the presence of uniform Gram negative diplococci.

Performance of oxidase test is mandatory for colonies suspected to belong to *Neisseria* that shall be positive for *N.gonorrhoeae*.

Haemophilus selective medium

Colonies of *Haemophilus influenzae* have a diameter of about 1-2 mm, are colourless, transparent, moist and tend to be translucent, with a characteristic "mousy" odour. Colonies of *H.aegyptius* reach a colony size of 0.5 mm after 48 hours of incubation; colonies are low, convex, translucent with a smooth entire surface. Colonies of *H.parainfluenzae* are typically off-white to yellow and, like *H.influenzae*, 1 to 2 mm in diameter. The colony appearance is extremely varied. Colonies of *H.haemolyticus* are translucent, smooth, and convex. Colonies of *H.ducreyi* are small, flat, grey, and smooth.

11 - USER QUALITY CONTROL

All manufactured lots of the products 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.

TEST STRAINS			INCUBATION (T°/ t / ATM)	EXPECTED RESULTS
Chocolate agar enriched				
H.influenzae	ATCC	10221	35-37°C / 18-24H / CO_2	good growth
N.gonorrhoaes	ATCC	43069	35-37°C / 18-24H / CO_2	good growth
Thayer Martin and Modified Thayer Martin Media				
N.gonorrhoeae	ATCC	43069	35-36,5°C / 24-48H / CO_2	good growth
P.mirabilis	ATCC	43071	35-36,5°C / 24-48H / CO_2	inhibited
E.coli	ATCC	25922	35-36,5°C / 24-48H / CO_2	inhibited
N.sicca	ATCC	9913	35-36,5°C / 24-48H / CO_2	growth partially inhibited
S.epidermidis	ATCC	12228	35-36,5°C / 24-48H / CO_2	inhibited
C.albicans	ATCC	60193	35-36,5°C / 24-48H / CO_2	growth partially inhibited
Haemophilus selective medium				
H.influenzae	ATCC	10221	35-37°C / 24-48H / CO_2	good growth
S.pyogenes	ATCC	19615	35-37°C / 44-48H / CO_2	growth inhibited

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 GC Medium Base supplemented with VCNT, REF 4240008 and Biovitex REF 4240009 and chocolatized sheep blood are tested for productivity and selectivity by comparing the results with a previously approved Reference Batch. Productivity is tested by semi-quantitative ecometric technique with 2 gonococcal strains: *N.gonorrhoeae* ATCC 43069*, N.gonorrhoeae* ATCC 19424. After incubation at 35-36,5°C for 24-48 hours, with 3-7% of CO_2 the amount of growth is evaluated and recorded. All strains show a good growth with typical morphology. The selectivity is evaluated with modified Miles-Misra surface drop method by inoculating the plates with decimal dilutions in saline from 10^{-1} to 10^{-4} of a 0.5 McFarland suspension of the non-target organisms *N.sicca* ATCC 9913, *S.epidermidis* ATCC 12228*, E.coli* ATCC 25922*, P.mirabilis* ATCC 43071*, C.albicans* ATCC 60193. After incubation at 35-36,5°C for 24-48 hours, with 3-7% of CO_2, the growth of non-target strains *S.epidermidis, E.coli, P.mirabilis* is inhibited at the dilution 10^{-1} and the growth of *N.sicca* and *C.albicans* is partially inhibited.

13 - LIMITATIONS OF THE METHOD

GC Medium Base used for the preparation of chocolate agar enriched

- The growth on chocolate agar enriched depends on the metabolic requirements of each microorganism; it is possible that some strains are unable to grow on the medium.
- Depending on the specimens analyzed and the microorganisms being tested for, it is recommended to use also additional selective media such as Thayer Martin for the isolation of gonococcus and Haemophilus selective agar for the isolation of *H.influenzae*.
- For the growth of *N.gonorrhoeae* it is necessary that the surface of the plates is moist; if it appears dry, humidify with a few drops of sterile distilled water. Place damp gauze or paper towels in the CO_2 container before incubation or use an incubator with humidifier.[10]
- The gonococci are one of the most fragile Gram negative bacteria. It is recommended that any suspected *Neisseria* containing specimen should be inoculated onto primary isolation medium immediately on collection to avoid any loss in viability and/or overgrowth of contaminants; if this is not possible *N.gonorrhoeae* swabs are better held at 4-6° C for not more than 3 hours.[10]
- If *N.gonorrhoeae* is suspected the incubator temperature should be set at 35-36,5°C with 5% CO_2, because many strains of *N. gonorrhoeae* will not grow well at 37°C and grow poorly with 10% CO_2.[10,17]
- The number and type of fastidious species present in the specimens as infectious agents is very high. Therefore, before the chocolate agar enriched is routinely used for rarely isolated or recently described microorganisms, its suitability must be verified by the user.
- The presence of colonies on chocolate agar enriched is not an indication, by itself, of the presence of pathogenic microorganisms: user must differentiate potential pathogens requiring biochemical, immunological, molecular, or mass spectrometry testing for identification and antimicrobial testing from contaminants that represent member of normal microbiota.

GC Medium Base used for the preparation of Thayer Martin and Modified Thayer Martin media

- Vancomycin sensitive strains of some auxotypes of *N.gonorrhoeae* which fail to grow on MTM, have been reported from 3% to 10% of the total isolates.[18,19] Some gonococci are susceptible to trimethoprim too.[20]
- It is recommended that both a selective and a non selective medium be used when isolating pathogenic *Neisseria* in order to avoid the loss of vancomycin and/or trimethoprim sensitive strains.[10]
- TM and MTM are not useful for the isolation of *Neisseria* spp. from supposedly sterile sites as cerebrospinal fluid, conjunctival swab, skin biopsy, joint fluid for which non-selective media are recommended.[10]
- For the growth of *N.gonorrhoeae* it is necessary that the surface of the plates is moist; if it appears dry, humidify with a few drops of sterile distilled water. Place damp gauze or paper towels in the CO_2 container before incubation or use an incubator with humidifier.[10]
- On TM and MTM *N.gonorrhoeae* grows with smaller and more granular colonies than with non selective chocolate agar.
- Some saprophytic non-target microorganisms, resistant to antimicrobials present in the media may grow. *N.lactamica* may grow on TM and MTM with colonies smaller and less moist than gonococci, occasionally with a yellowish tint.[10]
- The gonococci are one of the most fragile Gram negative bacteria. It is recommended that any suspected *Neisseria* containing specimen should be inoculated onto primary isolation medium immediately on collection to avoid any loss in viability and/or overgrowth of contaminants; if this is not possible *N.gonorrhoeae* swabs are better held at 4-6° C for not more than 3 hours.[10]
- The incubator temperature should be set at 35-36,5°C[17] because many strains of *N.gonorrhoeae* will not grow well at 37°C. [10,17]
- Examine plates after 24 hours incubation. At 48 hours the Gram morphology may exhibit atypical forms.
- Many standard protocols[10,13,14,16] describe the use of Thayer Martin and Modified Thayer Martin media for the detection of meningococcal carriage in oropharyngeal and nasopharyngeal swabs. This application is out of Biolife GC Medium Base intended use. The end user should validate this application before routinely using those selective media for *N.meningitidis* detection in clinical specimens.

GC Medium Base used for the preparation of Haemophilus selective medium

- *E.coli* , some *Neisseria* and *Candida* species, *Klebsiella , Proteus* , and *Pseudomonas* spp., as well as other Gram negative bacteria may grow on this medium.

All media prepared with GC Medium Base

- Use dacron or calcium alginate swabs for specimen collection, avoid cotton swabs since they contain fatty acids which are inhibitory for *N.gonorrhoeae*.[10]
- Incorrect specimen collection, incubation temperature, CO_2 level, humidity and pH can adversely affect growth and viability of the microorganisms.
- Inactivation or deterioration of antibiotics into selective media can allow the growth of contaminants.
- It is recommended to measure the pH of complete media. GC Medium Base has sufficient buffering capability however sometimes it could be necessary to adjust the final pH.
- Even if the microbial colonies on the plates are differentiated on the basis of their morphological and chromatic characteristics, it is recommended that biochemical, immunological, molecular, or mass spectrometry testing be performed on isolates, from pure culture, for complete identification. If relevant, perform antimicrobial susceptibility testing.
- The dehydrated culture medium and the supplements are intended as an aid in the diagnosis of infectious diseases; the interpretation of the results must be made considering the patient's clinical history, the origin of the sample and the results of other diagnostic tests.

14 - PRECAUTIONS AND WARNINGS

- The medium base and the supplements are qualitative *in vitro* diagnostics, for professional use only; they are to be used by adequately trained and qualified laboratory personnel, observing approved biohazard precautions and aseptic techniques.
- The medium base and the supplements shall be used in association according to the described directions.

- Dehydrated media and antibiotics containing supplements must be handled with suitable protection. Before use, consult the Safety Data Sheets.
- 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 the 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.
- All laboratory specimens should be considered infectious.
- The laboratory area must be controlled to avoid contaminants such as medium powder and supplements or microbial agents.
- Sterilize all biohazard waste before disposal. Dispose the unused medium and supplements and the sterilized plates inoculated with samples or microbial strains in accordance with current local legislation.
- Do not use the culture medium and the supplements as active ingredients for pharmaceutical preparations or as production materials intended for human and animal consumption.
- The Certificates of Analysis and the Safety Data Sheets of the products 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

- **Dehydrated medium:** upon receipt, store at 10-30°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 were damaged or in case of evident deterioration of the powder (colour changes, hardening, presence of large lumps).
- **Selective and enrichment supplements**: upon receipt store at 2-8°C until the expiry date. Do not use beyond this date. Once opened and reconstituted, the vial content must be used immediately.

16 - REFERENCES

1. Johnston. J. J Vener Dis Infor 1945; *26*:239.
2. 2 Carpenter, C.M., and H.E. Morton. 1947. An improved medium for isolation of the gonococcus in 24 hours. Proc. N.Y. State Assoc. Public Health Labs. *27*:58-60.
3. *3 Martin, J.E., Jr., T.E. Billings, J.F. Hackney, and J.D. Thayer. 1967. Public Health Rep. 82:361.*
4. Thayer JD, E. Martin Jr E. A selective medium for cultivation of N. gonorrhoeae and N. meningitidis. Pub. Health Rep. 1964; 79:49.
5. Thayer JD, E. Martin Jr E. Improved medium selective for cultivation of N. gonorrhoeae and N. meningitidis. Pub. Health Rep. 1966; 81:559-562.
6. Martin JE Jr, Lester A. Transgrow, a maedium for transport and growth of N. gonorrhoeae and N. Meningitides. HSMHA Helth Service Rep. 1971: 86:30
7. Martin and Lewis. 1977, Public Health Rep. 35:53.
8. Hovig B, Aandahl EH. A selective method for the isolation of Haemophilus in material from the respiratory tract. Acta Pathol Microb Scand 1969; 77:676-84
9. Chapin KC, Doern GV. Selective Media for Recovery of Haemophilus influenzae From Specimens Contaminated With Upper Respiratory Tract Microbial Flora.J Clin Microbiol 1983;17(6):1163-5.
10. MacFaddin JF. Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria. Baltimore: Williams & Wilkins; 1985.
11. Baron EJ, Specimen Collection, Transport and Processing: Bacteriology. *In* Jorgensen JH, Carrol KC, Funke G et al. editors. Manual of clinical microbiology,11th ed. Washington,DC: American Society for Microbiology; 2015. p.270.
12. Vandepitte J, Verhaegen J, P. Rohner P, Piot P, Heuck CC. Basic laboratory procedures in clinical bacteriology. 2nd edition Geneve: World Health Organization Geneva; 2003.
13. Public Health England: Standards for microbiology investigations (UK SMI)- Bacteriology : UK SMI B2:2017, UK SMI B9:2015, UK SMI B14:2016; UK SMI B28:2017; B51:2014
14. Elias J, Frosh M, Vogel U. Neisseria. *In* Jorgensen JH, Carrol KC, Funke G et al. editors. Manual of clinical microbiology,11th ed. Washington,DC: American Society for Microbiology; 2015. p.635.
15. Ledeboer NA, Doern GV. Haemophilus. In Jorgensen JH, Carrol KC, Funke G et al. editors. Manual of clinical microbiology,11th ed. Washington, DC: American Society for Microbiology; 2015. p.667.
16. Public Health England- UK Standards for microbiology investigations (UK SMI): searchable index. 9 January 2019.
17. CDC: Morbidity and Mortality Weekly Report (MMWR).Screening Tests To Detect Chlamydia trachomatis and Neisseria gonorrhoeae. Infections Recommendations and Reports. October 18, 2002 / Vol. 51 / No. RR-15
18. Talbot V. et al. Vancomycin sensitive penicillinase producing Neisseria gonorrhoea. Br.J Ven Dis. 1983; 59:277
19. Mirret S, Reller B, Knapp JS. Neisseria gonorrhoeae Strains inhibited by vancomycin in selective media and correlation with auxotype.J Clin Microbiol 1981; 14: 94
20. Lai-King Ng, Martin IE.The laboratory diagnosis of Neisseria gonorrhoeae Can J Infect Dis Med Microbiol. 2005; 16(1): 15–25.

TABLE OF APPLICABLE SYMBOLS

REF o REF Catalogue number	LOT Batch code	IVD *In vitro* Diagnostic Medical Device	Manufacturer	Use by
Temperature limitation	Contents sufficient for <n> tests	Consult Instructions for Use	Keep away from direct light	Store in a dry place

REVISION HISTORY

Version	Description of changes	Date
Revision 1	Updated layout and content	2020/05

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