BD™ GC-Lect™ Agar

INTENDED USE

BD GC-Lect Agar is a selective medium providing enhanced growth and recovery of *Neisseria gonorrhoeae* and better inhibition of contaminating bacteria and fungi, including *Capnocytophaga* species in oropharyngeal specimens.

PRINCIPLES AND EXPLANATION OF THE PROCEDURE

Microbiological method.

A succession of media have been developed for the isolation of the pathogenic *Neisseria* from specimens containing mixed flora [Thayer-Martin Selective Agar, Modified Thayer-Martin (MTM) Agar, Martin-Lewis Agar].[1-3] Each provides greater inhibition of contaminating organisms than the preceding formulation but each is, to varying degrees, inhibitory to certain strains that it is designed to recover.[4,5]

BD Diagnostic Systems developed GC II Agar Base as an improved base for Chocolate Agar which is utilized in these selective media. The superior growth-promotion achieved for pathogenic *Neisseria* also enabled growth of strains of *Capnocytophaga* on the selective medium when inoculated with oropharyngeal specimens.

GC-Lect Agar was developed and patented by BD Diagnostic Systems to provide the additional inhibition of *Capnocytophaga* species and other strains resistant to the inhibitors in MTM Agar; such as vancomycin-resistant contaminants, including certain strains of *Staphylococcus epidermidis*.[6,7] This medium contains a decreased concentration of vancomycin for improved recovery of *N. gonorrhoeae* strains that are sensitive to this antibiotic. As with MTM, *N. lactamica* is not inhibited by GC-Lect Agar.

BD GC-Lect Agar contains GC II Agar base which provides nitrogenous nutrients in the form of casein and meat peptones, phosphate buffer to maintain pH and corn starch, which neutralizes toxic fatty acids that may be present in the agar. Bovine hemoglobin provides X factor (hemin). **BD IsoVitaleX™ Enrichment** is a defined supplement which provides vitamins, amino acids, co-enzymes, glucose, ferric ion and other factors which improve the growth of pathogenic *Neisseria*. To improve the selectivity, BD Diagnostic Systems developed a combination of five antimicrobial agents to inhibit gram-positive and gram-negative bacteria and fungi. These antimicrobials are not inhibitory to vancomycin-sensitive gonococci which are inhibited on standard MTM Agar.[7]

REAGENTS

BD GC-Lect Agar

Formula* Per Liter Purified Water

Pancreatic Digest of Casein	7.5 g
Selected Meat Peptone	7.5
Corn Starch	1.0
Dipotassium Phosphate	4.0
Monopotassium Phosphate	1.0
Sodium Chloride	5.0
Agar	12.0
Hemoglobin	10.0
Selective Agents	0.017
BD IsoVitaleX Enrichment	10.0 ml
pH 7.2 +/- 0.2	

*Adjusted and/or supplemented as required to meet performance criteria.

BD IsoVitaleX Enrichment contains the following growth factors (formula* per liter purified water):

Vitamin B_{12}	0.01 g	Thiamine Pyrophosphate	0.1 g
L-Glutamine	10.0	Ferric Nitrate	0.02
Adenine	1.0	Thiamine Hydrochloride	0.003
Guanine Hydrochloride	0.03	Cysteine Hydrochloride	25.9
p-Aminobenzoic Acid	0.013	L-Cystine	1.1
Nicotinamide Adenine Dinucleotide (NAD)	0.25	Glucose	100.0

*Adjusted and/or supplemented as required to meet performance criteria.

PRECAUTIONS

IVD . For professional use only.

Do not use plates if they show evidence of microbial contamination, discoloration, drying, cracking or other signs of deterioration.

Consult **GENERAL INSTRUCTIONS FOR USE** document for aseptic handling procedures, biohazards, and disposal of used product.

STORAGE AND SHELF LIFE

On receipt, store plates in the dark at 2 to 8° C, in their original sleeve wrapping until just prior to use. Avoid freezing and overheating. The plates may be inoculated up to the expiration date (see package label) and incubated for the recommended incubation times.

Plates from opened stacks of 10 plates can be used for one week when stored in a clean area at 2 to 8° C.

USER QUALITY CONTROL

Inoculate representative samples with the following strains (for details, see **GENERAL INSTRUCTIONS FOR USE** document). Incubate at 35 to 37° C for 24 to 48 hours in an aerobic atmosphere enriched with carbon dioxide.

Strains	Growth Results
Neisseria gonorrhoeae ATCC™ 43069	Growth
Neisseria gonorrhoeae ATCC 51109	Growth
Neisseria meningitidis ATCC 13090	Growth
Neisseria sicca ATCC 9913	Partial to complete inhibition
Escherichia coli ATCC 25922	Complete inhibition
Proteus mirabilis ATCC 43071	Partial to complete inhibition
Staphylococcus epidermidis ATCC 12228	Complete inhibition
Candida albicans ATCC 60193	Partial to complete inhibition
Capnocytophaga ochracea DSM 7272	Complete inhibition

PROCEDURE

Materials Provided

BD GC-Lect Agar (90 mm **Stacker™** plates). Microbiologically controlled.

Materials Not Provided

Ancillary culture media, reagents and laboratory equipment as required.

Specimen Types

This is a selective medium for pathogenic *Neisseria* species, especially for the isolation of *Neisseria gonorrhoeae* and can be used for all types of specimens. Frequent specimens include swabs form the genitourinary tract, the rectum, and the oropharynx (see also **PERFORMANCE CHARACTERISTICS AND LIMITATIONS OF THE PROCEDURE**).[8-10] This medium may also be used for the detection of *Neisseria meningitidis* from specimens containing normal flora, e.g. from nasal swabs of carriers in the epidemiological investigation of an outbreak of bacterial

meningitis. It must not be used as the only primary isolation medium for *N. meningitidis* from cerebrospinal fluid, but may be used as an additional isolation medium.

Specimen Collection and Transport
Neisseria gonorrhoeae and *N. meningitidis* are very sensitive to adverse environmental conditions. Therefore, appropriate transport media must be used for all specimens suspected to contain pathogenic *Neisseria*. Specimens must be sent to the laboratory as fast as possible and must not be older than 24 hours, even if transport media are used. The optimal transport temperature is 20 to 25° C. Do not refrigerate! [8-10]

Test Procedure
Streak the specimen on **BD GC-Lect Agar** as soon as possible after it is received in the laboratory. The streak plate is used primarily to isolate pure cultures from specimens containing mixed flora. Alternatively, if material is being cultured directly from a swab, roll the swab over a small area of the surface at the edge; then streak from this inoculated area. A nonselective chocolate agar plate (e.g. **BD Chocolate Agar (GC Agar with IsoVitaleX)** may also be inoculated with all specimens supposed to contain *N. gonorrhoeae* to provide an indication of other pathogens involved in the infection, and must be included for the detection of *N. meningitidis* from cerebrospinal fluid. Additionally, the usual media for aerobic culture must be included if considered necessary to detect other pathogens.
Incubate the inoculated media in an aerobic environment enriched with 5 to 10% carbon dioxide for 42 to 48 hours at 35 ± 2°C or longer if necessary. Read plates after 18 to 24 and 42 to 48 hours. Note that *Neisseria gonorrhoeae* may occasionally need up to 72 hours before well visible colonies appear.

Results
Typical colonial morphology on **BD GC-Lect Agar** and **BD Chocolate Agar (GC Agar with IsoVitaleX)** is as follows:
Neisseria gonorrhoeae: Small grayish-white to colorless, may be mucoid.
Neisseria meningitidis: Medium to large, blue-gray, may be mucoid.
A presumptive identification of typical colonies may be made by performing a gram stain and an oxidase test.[9,10] Further biochemical or immunological tests must be applied for a complete identification of the isolates.

PERFORMANCE CHARACTERISTICS AND LIMITATIONS OF THE PROCEDURE
BD GC-Lect Agar is used for the isolation of *Neisseria gonorrhoeae*. The medium may also be used for the isolation of *N. meningitidis* from specimens containing normal flora, e.g. from nasal swabs of carriers in the epidemiological investigation of an outbreak of bacterial meningitis.

Specific Performance Characteristics
In a performance evaluation with 500 specimens, visible growth of *N. gonorrhoeae* occurred within 24 h in 72 of the positive cultures on **BD GC-Lect Agar**, compared with only 52 on the reference medium, MTM Agar.[7] A total of 50 positive cultures were obtained with GC-Lect Agar, compared with 49 obtained with MTM. The selectivity of **BD GC-Lect Agar** was superior with only 19 cultures producing growth of normal flora, compared with 78 cultures on MTM after 24 h of incubation. The selectivity was especially improved on **BD GC-Lect Agar** with regard to yeasts (2 versus 30 cultures) and gram-positive cocci (5 versus 31 cultures).

Limitations of the Procedure
A single medium is rarely adequate for detecting all organisms of potential significance in a specimen. Specimens cultured on selective media should, therefore, also be cultured on nonselective media to obtain additional information and help ensure recovery of potential pathogens. **BD Chocolate Agar (GC Agar with IsoVitaleX)** is an enriched medium on which pathogenic bacteria may be overgrown with undesirable or nonpathogenic bacteria. *Neisseria lactamica*, which is one of the saprophytic species, is not inhibited on GC-Lect Agar.

REFERENCES

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PACKAGING/AVAILABILITY

BD GC-Lect Agar

Cat. No. 254554	Ready-to-use Plated Media, cpu 20
Cat. No. 254555	Ready-to-use Plated Media, cpu 120

FURTHER INFORMATION

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