

## Technical Information

### Modified Thayer Martin Medium Base (w/o Supplement)

#### Product Code: DM 1795

**Application:** - Modified Thayer Martin Medium Base is recommended for selective isolation and enumeration of *Neisseria* species especially *Neisseria gonorrhoeae*.

#### Composition\*\*

Ingredients	Gms / Litre
Peptic digest of animal tissue	23.000
Starch	1.000
Sodium chloride	5.000
Dextrose	2.500
Agar	20.000
Final pH ( at 25°C)	7.4±0.2

\*\*Formula adjusted, standardized to suit performance parameters

#### Principle & Interpretation

The laboratory diagnosis of gonorrhoea depends on the demonstration of intracellular diplococci in smears and on the isolation and identification of *Neisseria gonorrhoeae* by culture procedures. Many different complex media have been introduced for the isolation of *Gonococcus* but excellent results may be obtained by using the medium introduced by Thayer and Martin. The original formula, an enriched chocolate agar medium containing the antibiotics ristocetin and polymyxin B, was recommended for the isolation of *N.gonorrhoeae* and *N.meningitidis*. However, the medium was found to be inhibitory against other Neisseriae and also suppressed *Pseudomonas* and *Proteus* species. Thayer and Martin reported the successful use of vancomycin, colistin methane and nystatin. This combination showed growth of *N.gonorrhoeae* while inhibiting the growth of staphylococci and saprophytic Neisseriae (1).

Carpenter and Morton reported an improved medium to isolate gonococci in 24 hours (2). Later on the efficiency of GC medium supplemented with haemoglobin and yeast concentrate was demonstrated for isolating gonococci (3). Subsequently Thayer and Martin Medium was developed for the primary isolation of *N.gonorrhoeae* and *N.meningitidis* from specimens containing mixed flora collected from throat, vagina, rectum and urethra (4,5). Thayer and Martin (5) used vancomycin, colistin and nystatin. Martin and Lester (6) used an additional antibiotic trimethoprim to make the medium selective.

Modified Thayer Martin Medium Base is used for selective isolation and enumeration of pathogenic *Neisseria* species especially *N.gonorrhoeae*. In 1947, an improved medium for isolating *Gonococcus* in 24 hours was reported by Carpenter and Morton (2).

Peptic digest of animal tissue supply nutrients to the organisms in the medium while starch neutralizes the toxic fatty acids if present in the agar. Addition of lysed blood after heating supplies vitamins, amino acids, coenzymes etc. which inhibits the growth of pathogenic *Neisseria*. Vancomycin and colistin methane sulphate inhibit gram-positive and gram-negative bacteria respectively (8). Some strains of Capnocytophaga species may grow on this medium when inoculated with oropharyngeal specimens (7).

Modified Thayer Martin Medium Base added with chocolate agar and antibiotics minimizes the overgrowth of gonococci and meningococci by contaminants, suppresses the growth of saprophytic *Neisseria* species and stimulates the growth of pathogenic *Neisseria*. Humidity is essential for successful isolation of gonococci. All presumptive Neisseriae should be confirmed by carbohydrate fermentation tests and serological tests. Some strains of Neisseriae may fail to grow in presence of antibiotics.

## Methodology

Suspend 51.5 grams of dehydrated powder media in 900 ml distilled water. Mix thoroughly & heat to boiling to dissolve the medium completely. Dispense in 90 ml amounts in flasks and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45°C and aseptically add following sterile solutions:

1. 20 ml blood lysed by heating at 55-56°C for 1 hour, to 90 ml medium.
2. Antibiotic solution to a final concentration of 3 mcg vancomycin per ml medium and 7.5 mcg colistin methane sulphate per ml medium.

## Quality Control

### Appearance

Cream to yellow homogeneous free flowing powder

### Gelling

Firm, comparable with 2.0% Agar gel.

### Colour and Clarity

Basal medium: Light amber coloured clear to slightly opalescent gel. After addition of sterile lysed blood.

Supplements: Chocolate coloured opaque gel forms in Petri plates.

### Reaction

Reaction of 5.15% w/v aqueous solution at 25°C. pH : 7.4 ± 0.2

### pH Range

7.20-7.60

### Cultural Response

DM1795: Cultural characteristics observed on addition of blood with subsequent heating and antibiotic solution (3mcg Vancomycin & 1.5 mcg Colistin methane sulphate per ml of medium) after an incubation at 35-37°C for 40-48 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colour of colony
<i>Escherichia coli</i> ATCC 25922	$\geq 10^3$	inhibited	0%	-
<i>Neisseria gonorrhoeae</i> ATCC 19424	50-100	good-luxuriant	$\geq 50\%$	small, grayish- white to colourless, mucoid
<i>Neisseria meningitidis</i> ATCC 13090	50-100	good-luxuriant	$\geq 50\%$	medium to large, blue- gray, mucoid
<i>Proteus mirabilis</i> ATCC 25933	$\geq 10^3$	inhibited	0%	-

## Storage and Shelf Life

**Dried Media:** Store below 30°C in tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label.

**Prepared Media:** 2-8° in sealable plastic bags for 2-5 days.

## Further Reading

1. Finegold S. M. and Martin W. J., 1982, Bailey & Scotts Diagnostic Microbiology, 6th Ed., 102-105
2. Carpenter C. M. and Morton H. E., 1947, Proc. N.Y. State Assoc. Public Hlth. Labs. 27:58.
3. Carpenter C. M., Bucca M. A., Buck T. C., Casman E. P., Christensen C. W., Crowe E., Drew R., Hill J., Lankford C. E., Morton H. E., Peizer L. R., Shaw C. I., Thayer J. D., 1949, Am. J. Syphil. Gonorrh. Vener. Dis., 33:164.
4. Martin J. E., Billings T. E., Hackney J. F. and Thayer J. D., 1967, Public Hlth. Rep., 82:361.
5. Thayer J. and Martin J. E. Jr., 1966, Public Health Rep., 81:559.
6. Martin J. E. Jr. and Lester A., 1971, HSMHA Hlth. Service Rep., 86(1): 30.
7. Reichart C. A., Rupkey C. M., Brady W. E. and Hook E. W., 1989, J. Clin. Microbiol., 27:808



Dehydrated Culture Media  
Bases / Media Supplements

8. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. I, Williams and Wilkins, Baltimore.

### Disclaimer :

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