

## Technical Information

### Edwards Medium Base, Modified

**Product Code: DM1748**

**Application:** Edwards Medium Base is a selective medium for the rapid isolation of *Streptococcus agalactiae* and other streptococci associated with bovine mastitis.

### Composition\*\*

Ingredients	Gms / Litre
Peptic digest of animal tissue	10.000
Beef extract	10.000
Aesculin	1.000
Sodium chloride	5.000
Crystal violet	0.0013
Thallous sulphate	0.330
Agar	15.000
Final pH ( at 25°C)	7.4±0.2

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

### Principle & Interpretation

Streptococci are gram-positive facultatively anaerobic bacteria, which in a part of normal commensal flora of mouth, skin, intestine and upper respiratory tract of humans. Group B Streptococci are an important cause of systemic infections in infants and occasionally for bacterial endocarditis <sup>(1)</sup>. Bovine mastitis is a disease of cattle caused by the organisms *Streptococcus agalactiae* which belongs to the Lancefield group B Streptococci. The most common selective agents used for selective isolation of Streptococci are crystal violet and thallium salts. A selective medium containing crystal violet was used by Haxthausen to isolate skin Streptococci <sup>(2)</sup>. Subsequently it was observed that Streptococci from milk were able to grow on Gentian Violet Blood Agar whereas the other saprophytic milk bacteria were inhibited on this medium <sup>(3)</sup>. An Esculin Blood Agar containing crystal violet was used by Edwards to isolate the causative agent of bovine mastitis <sup>(4)</sup>. A similar medium containing thallous acetate was also used to isolate the causative agent of bovine mastitis <sup>(5)</sup>. Peptic digest of animal tissue and beef extract serve as sources of carbon, nitrogen and other essential nutrients. Esculin helps to differentiate esculin-positive (group D Streptococci) organisms from esculin- negative (*S. agalactiae*) organisms. Sodium chloride helps to maintain the osmotic equilibrium of the medium. Crystal violet and thallous sulphate act as the selective agents for Streptococci. Supplementation with blood provides additional nutrients and an indicator of haemolysis. Mastitis Streptococci show a, b or g type of haemolysis. Esculin differentiates esculin- positive group D Streptococci (black colonies) from esculin-negative *Streptococcus agalactiae* (blue to colourless colonies). Centrifuged test milk sample is directly inoculated on the surface of the medium plate. Esculin-negative (blue to colourless) *S. agalactiae* organisms are further subcultured for identification tests.

### Methodology

Suspend 41.33 grams of powder media in 1000 ml distilled water. Shake well & heat to dissolve the medium completely. Sterilize by autoclaving at 115°C for 20 minutes. Cool to 50°C and aseptically add 5 to 7% v/v sterile bovine or sheep blood. Mix well and pour into sterile Petri plates.

## Quality Control

### Physical Appearance

Cream to yellow homogeneous free flowing powder.

### Gelling

Firm, comparable with 1.5% Agar gel.

### Colour and Clarity of prepared medium

Basal medium: Amber coloured, clear to slightly opalescent gel. After addition of 5-7% v/v sterile defibrinated bovine or sheep blood : Cherry red coloured opaque gel forms in Petri plates.

### Reaction

Reaction of 4.13% w/v aqueous solution at 25°C. pH : 7.4±0.2

**pH range:** 7.20-7.60

### Cultural Response/Characteristics

DM1748: Cultural characteristics observed with added 5-7%v/v sterile defibrinated bovine or sheep blood after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colony of colony
<i>Enterococcus faecalis</i> ATCC 29212	50-100	good-luxuriant	≥50%	Black
<i>Escherichia coli</i> ATCC 25922	≥10 <sup>3</sup>	Inhibited	0%	
<i>Staphylococcus aureus</i> ATCC 25923	≥10 <sup>3</sup>	Inhibited	0%	
<i>Streptococcus agalactiae</i> ATCC 13813	50-100	good-luxuriant	≥50%	colourless, w/ haemolysis

## Storage and Shelf Life

**Dried Media:** Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.

**Prepared Media:** 2-8<sup>0</sup> in sealable plastic bags for 2-5 days.

## Further Reading

1. Cruickshank R., Duguid J. P., Marmion B. P., Swain R. H. A., (Eds.), 1975, Medical Microbiology, The Practice of Medical Microbiology, 12th Edition, Vol. II, Churchill Livingstone.
2. Haxsthausen H., 1927, Ann. Derm. Suph., 8.201.
3. Bryan C. S., 1932, Am. J. Public Health, 22. 749.
4. Edwards S. J., 1933, J. Comp. Path. Therap., 46:211-217
5. McKenzie D. A., 1941, Vet. Rec., 53 :473-480

## Disclaimer :

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