

STA Selective Supplement

PRODUCT INFORMATION

S008-25g - Streptomycin Sulfate, Powder, 25g

S008-100g - Streptomycin Sulfate, Powder, 100g

D003-5g - Dihydrostreptomycin Sulfate, Powder, 5g

D003-25g - Dihydrostreptomycin Sulfate, Powder, 25g

D003-100g - Dihydrostreptomycin Sulfate, Powder, 100g

DESCRIPTION

STAA agar base with STA selective supplement is a medium for the isolation of *Brochothrix thermosphacta* from food samples.

BACKGROUND

Streptomycin is an antibiotic drug, the first of a class of drugs called aminoglycosides to be discovered, and was the first antibiotic remedy for tuberculosis. It is derived from the actinobacterium *Streptomyces griseus*.

Thallos acetate is a salt of thallium and acetate. It is used in microbiology as a selective growth medium. It is poisonous and should be handled with care.

Mechanism of action

Streptomycin is a protein synthesis inhibitor. It binds to the small 16S rRNA of the 30S subunit of the bacterial ribosome, interfering with the binding of formyl-methionyl-tRNA to the 30S subunit. This leads to codon misreading, eventual inhibition of protein synthesis and ultimately death of microbial cells through mechanisms that are still not understood.

APPLICATION IN STAA AGAR BASE

STAA agar base with STA selective supplement complies with the method described by the Nordic Committee on Food Analysis (NMKL)

Brochothrix thermosphacta is a Gram-positive, non-motile, facultatively anaerobic rod-shaped micro-organism which occurs singly, in short chains or in

long filamentous-like chains. It constitutes a significant proportion of the spoilage flora of meat and meat products stored aerobically or vacuum packed at chill temperatures, and is occasionally the dominant organism. It is, therefore, responsible for some of the off-odours which signal the onset of spoilage in vacuum packed meat products.

Although *Brochothrix thermosphacta* is not considered to be pathogenic, it is an economically important meat-spoilage organism because it grows in a wide variety of meats and meat products and produces malodorous metabolic end products which make affected meat unpalatable.

STA Medium is modified from the original formulation by removal of the toxic selective agent cycloheximide as recommended by the NMKL. According to this method the medium is applicable for meat, meat products and some fish products.

Streptomycin sulphate inhibits some Gram-positive organisms and most Gram-negatives at higher concentrations, whilst *Brochothrix thermosphacta* remains resistant. Thallos acetate inhibits most yeasts as well as many aerobic and facultatively anaerobic bacteria.

Content concentrations

| Typical Formula* | mg/litre |
|--|----------|
| STAA Agar Base | |
| Peptone | 20 |
| Yeast extract | 2 |
| Dipotassium hydrogen phosphate | 1 |
| Magnesium sulphate | 1 |
| Agar | 13 |
| Final pH 7.0 ± 0.2 @ 25°C | |
| STA Selective Supplement | |
| Streptomycin sulphate | 500 |
| Thallos acetate | 50 |
| * Adjusted as required to meet performance standards | |

Table 1 typical formula for STAA agar base and STA selective supplement

METHOD

Preparation

Suspend appropriate amount of STAA agar base in distilled water and bring gently to the boil to dissolve completely. Add 7.5 g of glycerol and sterilise by au-

to claving at 121° C for 15 minutes. Cool to 50°C and aseptically add appropriate amount of STA selective supplement reconstituted as directed. Mix well and distribute into sterile Petri dishes.

Protocol

1. Homogenise the test sample in sterile 0.1% peptone water or maximum recovery diluent and prepare appropriate dilutions.
2. Transfer 0.1 ml volumes to the agar plate and spread across the surface. Incubate at 22°C for 48 hours aerobically.
3. Typical colonies of *Brochothrix thermosphacta* will grow as straw coloured colonies, 0.5-1.0mm in diameter.
4. *Pseudomonads* able to grow on STAA media may be differentiated from *Brochothrix thermosphacta* by performing an oxidase test. *Pseudomonads* are oxidase positive.

Quality control

Positive control:

Brochothrix thermosphacta ATCC® 11509: Good growth
straw colonies

Negative control:

Staphylococcus aureus ATCC® 25923: No growth

REFERENCES

1. Sneath, P.H.A and D. Jones (1986) Genus *Brochothrix*. In: Bergey's Manual of Systematic Bacteriology, Vol.2, pp.1249-1253. Sneath, P.H.A., Mair, N.S. et al. (eds.). Williams & Wilkins, Baltimore.
2. Gardner, G.A. (1966) J. Appl. Bacteriol. 29 (3), 455-460.
3. Nordic Committee on Food Analysis: *Brochothrix thermosphacta*. Determination in Meat and Meat Products, No.141, 1991.