Dermasel Selective Supplement

PRODUCT INFORMATION

C001-1g - Cycloheximide, Powder, 1g

C001-5g - Cycloheximide, Powder, 5g

C028-5g - Chloramphenicol, Powder, 5g

C028-25g - Chloramphenicol, Powder, 25g

C028-100g - Chloramphenicol, Powder, 100g

C028-500g - Chloramphenicol, Powder, 500g

DESCRIPTION

Wilkins-Chalgren Anaerobe Agar with G-N Anaerobe Selective Supplement is for the selective isolation of Gram-negative anaerobes.

BACKGROUND

Cycloheximide is widely used in biomedical research to inhibit protein synthesis in eukaryotic cells studied in vitro (i.e. outside of organisms). Its effects are rapidly reversed by simply removing it from the culture medium.

Chloramphenicol is a bacteriostatic antimicrobial. It is considered a prototypical broad-spectrum antibiotic, alongside the tetracyclines. Chloramphenicol is effective against a wide variety of Gram-positive and Gram-negative bacteria, including most anaerobic organisms.

Mechanism of action

Cycloheximide is an inhibitor of protein biosynthesis in eukaryotic organisms, produced by the bacterium Streptomyces griseus. Cycloheximide exerts its effect by interfering with the translocation step in protein synthesis (movement of two tRNA molecules and mRNA in relation to the ribosome) thus blocking translational elongation.

Chloramphenicol is bacteriostatic. It is a protein synthesis inhibitor, causing inhibition of peptidyl transferase activity of the bacterial ribosome, binding to A2451 and A2452 residues in the 23S rRNA of the 50S ribosomal subunit, preventing peptide bond formation. While chloramphenicol and the macrolide class of antibiotics both interact with ribosomes, chloramphenicol is not a macrolide. It directly interferes with substrate binding; macrolides sterically block the progression of the growing peptide.

APPLICATION IN DERMASEL AGAR BASE

Dermasel Agar is used for the primary isolation and identification of dermatophyte fungi from hair, nails or skin scrapings.

Emmons suggested that media for growth of dermatophytes should have a pH of 6.8-7.0 rather than pH 5.6 as is often recommended. A near neutral pH is better for the growth of some fungi and the acid pH used to suppress bacterial contaminants can be replaced by antibiotics.

The addition to the medium of Dermasel Selective Supplement to give a level of cycloheximide 0.4 g/l and chloramphenicol 0.05 g/l renders the medium selective for dermatophytes, inhibiting the growth of saprophytic fungi, yeasts and bacterial skin flora.

The chloramphenicol and cycloheximide supplement reduces the potential risk to health from these antibiotics. To include them in the powder mix could allow them to be scattered as dust whilst weighing the medium. It also ensures a fixed, accurate dose of antibiotic that has been protected from degradation on storage.

The addition of cycloheximide and an anti-bacterial agent has been reported to improve considerably the isolation of dermatophytes, especially when the inoculum, such as horse hair was heavily contaminated. The presence of staphylococci, which may grow in the absence of the antibiotic has been shown to prevent the in-vitro growth of *Trichophyton rubrum*.

The presence of cycloheximide in the medium inhibits the growth of *Trichosporon cutaneum*, *Candida parasilosis, Candida krusei, Aspergillus, Penicillium, Fusarium* and *Cephalosporium* species which have been associated with diseased nails.

The incorporation of griseofulvin at a level of 20 µg/ml into one of paired tubes of selective media has been recommended as an additional aid in the diagnosis of dermatophytosis. The absence of growth, on the medium containing griseofulvin provides presumptive identification of a dermatophyte fungus.

Dermatophyte fungi cultured on Dermasel Agar show characteristic colonial morphology with typical pigmentation. Macroconidia and microconidia are typical for the species when studied microscopically.

Content concentrations

Typical Formula*	mg/litre
Dermasel Agar Base	
Mycological peptone	10
Glucose	20
Agar	14.5
Final pH 6.9 ± 0.2 @ 25°C	
Dermasel Selective Supplement	
Cycloheximide	400
Chloramphenicol	50
* Adjusted as required to meet performance standards	

Table 1 - Typical Formula for Dermasel Agar Base and Dermasel Selective Supplement

METHOD

Preparation

Suspend appreciate amount of Dermasel Agar Base in distilled water and heat gently to dissolve completely. Add the contents of Dermasel Selective Supplement, reconstituted with 3 ml of ethanol, to each 500ml of medium to give a level of cycloheximide 0.4 g/l and chloramphenicol 0.05 g/l. Mix gently and sterilise by autoclaving at 121°C for 10 minutes. Avoid overheating at any time.

Protocol

Dermasel Agar may be prepared as slopes in test tubes with loose caps to ensure adequate aeration, or in vented Petri dishes.

Small, pin head sized samples of the test material are stabbed into the surface of the agar. A number of samples may be inoculated on to the same surface.

The medium is incubated at 22-30°C and examined at regular intervals for two to four weeks

Quality control

Positive control:

Trichophyton rubrum ATCC® 28191: White mycelium, buff spores

Candida albicans ATCC® 10231: Good growth;cream coloured colonies

Negative control:

Aspergillus brasiliensis ATCC® 16404: Inhibited or no growth

Escherichia coli ATCC® 25922: No growth

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