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MYP Agar

Mannitol-Egg-yolk-Polymyxine-Agar

Medium proposed by MOSSEL et al. (1967) for the enumeration, detection and isolation of Bacillus cereus in foodstuffs.

The German Regulations for Dietetic Foodstuffs (Verordnung über diätetische Lebensmittel (Diätverordnung)) stipulate that foodstuffs should be tested for Bacillus cereus. The medium furthermore complies with the German DIN-Norm 10198 for the investigation of milk and food and to the requirements acc. to 35 LMBG (00.00/25) and 01.00/53) for the investigation of food.

Mode of Action

This culture medium is highly adapted to the properties of Bac. cereus.

a. Bac. cereus is mannitol-negative. The mannitol content of the medium thus allows differentiation of the accompanying mannitol-positive microbial flora which are identified by a change in colour of the indicator phenol red to yellow.

b. Bac. cereus is not affected by concentrations of polymyxin which inhibit the common accompanying microbial flora (DONOVAN 1958). Addition of polymyxin is necessary, however, if the sample material is suspected to contain high-numbers of accompanying microorganisms.

c. Bac. cereus produces lecithinase. The insoluble degradation products of egg-yolk lecithin accumulate around the Cereus colonies to form a white precipitate. A lecithinase reaction occurs very early in many strains, Cereus colonies can, therefore, often be rapidly identified before accompanying polymyxin-resistant microorganisms have had a chance to fully develop.

Typical Composition (g/litre)

Peptone from casein 10.0; meat extract 1.0; D(-)mannitol 10.0; sodium chloride 10.0; phenol red 0.025; agar-agar 12.0

Also to be added (per litre of medium):

egg-yolk emulsion 100 ml; polymyxin B sulfate 100,000 IU = Bacillus cereus Selective Supplement.

Preparation

Suspend 21.5 g in 450 ml demin. water, autoclave (15 min at 121°C). Cool to about 45 to 50 °C, add 50 ml (this volume can be varied depending on the degree of turbidity desired) of sterile egg-yolk emulsion and the contents of 1 vial Bacillus cereus Selective Supplement, mix. Pour plates.

pH: 7.2 ± 0.2 at 25 °C.

The plates (incl. egg-yolk) are evenly turbid and slightly orange (red without egg-yolk).

Experimental Procedure and Evaluation

Inoculate the plates by spreading the sample on the surface of the medium.

Incubation: 18-40 hours at 32 °C.

Bac. cereus appears as rough, dry colonies with a pink to purple base which are surrounded by a ring of dense precipitate. Colonies surrounded by a yellow or a clear zone are not Bacillus cereus. Further tests should be performed to confirm the identity of Bacillus cereus (anaerobic degradation of D(+)glucose, degradation of gelatin, positive nitrate reduction) (BROWN et al. 1958).

Literature

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Ordering Information

Product	Merck Cat. No.	Pack size
MYP Agar	1.05267.0500	500 g
Bacillus cereus Selective Supplement (Polymyxin B; 50.000 IU)	1.09875.0001	16 vials
Egg-yolk emulsion sterile	1.03784.0001	10 x 100 ml

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Quality control (spiral plating method)

Test strains	Inoculum (cfu/ml)	Recovery rate (%)	Colony colour	Precipitate
Bacillus cereus ATCC 11778	10^3-10^5	≥ 70	red	+
Bacillus subtilis ATCC 6051	10^3-10^5	Not limited!	yellow	-
Escherichia coli ATCC 8739	> 10^5	≥ 0.01	-	
Pseudomonas aeruginosa ATCC 25668	> 10^5	≥ 0.01	-	
Proteus mirabilis ATCC 29906	10^3-10^5	Not limited!	red	-
Staphylococcus aureus ATCC 6538	10^3-10^5	Not limited!	yellow	+

Bacillus cereus ATCC 11778

Staphylococcus aureus ATCC 6538