



Clostridium Broth Base

M1315

Clostridium Broth Base is recommended for identification of spores of *Clostridium tyrobutyricum*, which is usually responsible for late blowing in cheese.

Composition**

Ingredients	Gms / Litre
Casein peptone	15.000
Meat extract	10.000
Yeast extract	5.000
Sodium acetate	5.000
L-Cysteine	0.500
Final pH (at 25°C)	6.0±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 35.5 grams in 1000 ml distilled water. Heat if necessary to dissolve the medium completely. Add 10 ml of 50% sodium lactate. Mix well and dispense into tubes. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Principle And Interpretation

Ripening of cheese under controlled conditions of temperature and humidity determine the final flavour and body characteristics of the product. Microbial spoilage in cheese is generally limited because of the combined effect of acid and salt and is less likely in the lower moisture cheese. Spores of *Clostridium tyrobutyricum* in the milk used for the manufacture of Emmentaler, Edam and Gouda can survive the heat treatment used for cheese milk and cause late gas formation (blowing defect) and related off-flavours during ripening (1). Even low spore densities of this anaerobe in milk used for cheese production can bring about this phenomenon, if the growth conditions are suitable. Clostridium Broth Base is recommended for the identification of spores of *C. tyrobutyricum*.

C. tyrobutyricum ferments lactate and acetate to butyrate, CO₂ and H₂ (2, 3). As against *C. butyricum*, *C. tyrobutyricum* grows in media with lower acidic pH (4, 5). Low pH value of the media helps in inhibiting other microbial flora thereby favoring growth of *C. tyrobutyrium*. Casein peptone, meat extract and yeast extract provide the essential nutrients mainly the nitrogen compounds whereas L-cysteine promotes the growth of Clostridial species by maintaining a low oxygen tension in the medium.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Colour and Clarity of prepared medium

Yellowish brown coloured, clear solution without any precipitate

Reaction

Reaction of 3.55% w/v aqueous solution at 25°C. pH : 6.0±0.2

pH

5.80-6.20

Cultural Response

M1315: Cultural characteristics observed under anaerobic condition, after an incubation at 35-37°C for upto 7 days

Organism	Inoculum (CFU)	Growth	Gas
Cultural Response			
<i>Clostridium perfringens</i> ATCC 10543	50-100	luxuriant	positive reaction
<i>Clostridium tyrobutyricum</i> ATCC 25755	50-100	luxuriant	positive reaction

<i>Escherichia coli</i> ATCC 25922	50-100	good	variable reaction
<i>Pseudomonas aeruginosa</i> ATCC 27853	$\geq 10^3$	inhibited	
<i>Staphylococcus aureus</i> ATCC 25923	50-100	good	negative reaction

Storage and Shelf Life

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

Reference

1. Vanderzant C. and Splittstoesser D. F., (Eds.), 1992, Compendium of Methods of for the Microbiological Examination of Foods, 3rd Ed., APHA, Washington, D.C.
2. Goudkov A. V. and Sharp, M. E., 1966, J. Dairy Res., 33: 139-149.
3. Bryant M. P. and Burkey L. A., 1956, J. Bacteriol., 71: 43-46.
4. Kutzner H. J., 1963, Infektionskr. Hyg. Abt. 1, 191: 441-450.
5. Balows A. et al, 1992, The Prokaryotes, A Handbook of the Biology of Bacteria : Ecophysiology, Isolation , Identification Applications, 2nd Ed. Vol. II. p. 1800-1866.

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