

Technical Data

Lactic Acid Bacteria Selective Broth Base (Raka Ray No. 3 M1384 Broth Base)

Lactic Acid Bacteria Selective Broth Base is recommended for selective isolation of lactic acid bacteria encountered in beer and brewing process.

Composition**		
Ingredients	Gms / Litre	
Casein enzymic hydrolysate	20.000	
Yeast extract	5.000	
Liver extract	1.000	
Maltose	10.000	
Fructose	5.000	
Dextrose	5.000	
Betaine hydrochloride	2.000	
Diammonium citrate	2.000	
L-Aspartic acid	2.500	
Magnesium sulphate	0.980	
Manganese sulphate	0.420	
Dipotassium phosphate	2.000	
N-acetyl glucosamine	0.500	
Potassium glutamate	2.500	
Final pH (at 25°C)	5.4 ± 0.2	
**Formula adjusted, standardized to suit performance parameters		

Directions

Suspend 29.45 grams in 500 ml distilled water containing 5 ml Polysorbate 80. Heat if necessary to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45°C and aseptically add rehydrated contents of 1 vial of Lactic Supplement (FD055). Mix well and dispense as desired.

Principle And Interpretation

Lactic Acid Bacteria Selective Medium was formulated by Saha, Sondag and Middlekauff to monitor the brewing process and analyze it for a wide range of bacteria (1). These media are also recommended by the American Society of Brewing Chemists (ASBC) and the European Brewing Convention (EBC) (2, 3). Lactic Acid Bacteria Selective Medium was found to be

superior to several other media for the cultivation of Lactobacilli and Pediococci (4, 5, 6).

Lactic Acid Bacteria Selective Broth Base also suppressed the growth of non-lactic acid facultative bacteria that are often associated with lactic beer spoilage (9).

Yeast extract, casein enzymic hydrolysate and liver extract serve as sources of carbon, nitrogen, vitamins, amino acids and essential nutrients. Dextrose (glucose), maltose and fructose serve as sources of carbon and energy. Fructose is an essential carbohydrate for the growth for *Lactobacillus fructivorans* (4). Maltose helps to detect glucose non-fermenting lactobacilli (7). Polysorbate 80, maltose, yeast extract and N-acetyl glucosamine stimulates growth of lactobacilli (8). Various salts provide trace elements. Cycloheximide and phenyl ethanol (as FD) serves to inhibit yeast and gram-negative organisms respectively

Quality Control

Appearance Cream to beige homogeneous free flowing powder Colour and Clarity of prepared medium Dark amber coloured clear solution in tubes. Reaction Reaction of 5.89% w/v aqueous solution at 25°C. pH : 5.4±0.2

pН

5.20-5.60

Cultural Response

M1384: Cultural characteristics observed under anaerobic condition, with added Lactic Supplement (FD055), after an incubation at 25-30°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth
Cultural Response		
Lactobacillus acidophilus	50-100	good-luxuriant
ATCC 11506		
Lactobacillus plantarum	50-100	good-luxuriant
ATCC 8014		
Lactobacillus fermentans	50-100	good-luxuriant
ATCC 9338		
Lactobacillus brevis ATCC	50-100	good-luxuriant
367		
Lactobacillus buchneri	50-100	good-luxuriant
ATCC 11307		
Pedicoccus acidilactis ATCO	250-100	good-luxuriant
8042		
Escherichia coli ATCC	>=103	inhibited
25922		
Saccharomyces cerevisiae	>=103	inhibited
ATCC 9763		

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. Saha R. B., Sondag R. J. and Middlekauff J. E., 1974, An improved medium for the selective culturing of lactic acid bacteria, Proceedings of the American Society of Brewing Chemists, 9th Congress, p. 9-10.

2. Methods of Analysis of ASBC, 1976, 7th Edi., The Society, St. Paul Mn USA

3. European Brewing Congress, EBC Analytica Microbiologica, 1981, J. Inst. Brewing 87:303-321.

- 4. VanKeer C., Van Melkebeke L., Vertriest W, Hoozee G. and Van Schoonenberghe E., 1983, J. Inst. Brewing, 89:360-363.
- 5. Hsu W. P., and Taporowsky J. A., 1977, Breweries Digest, 52: 48.
- 6. Hug H., Schlienger E. and Pfenniger H., 1978, Braveri- Rundschau, 89.145

7. Lawrence D. R. and Leedham P. A., 1979, J. Inst. Brewing, 85. 119.

8. Mauld B. and Seidel H., 1971, Breauwissenchaft, 24.105

9. Report of the Technical Subcommittee, 1976, Microbiological Controls, J. Am. Soc. Brewing Chemists 34:93-94.

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