Technical Information

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

Product Code: DM 2384

Application: - 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

Principle & 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). This medium also used 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 supply carbon, nitrogen, vitamins, amino acids and essential nutrients. Dextrose (glucose), maltose and fructose act as a 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

Methodology

Suspend 29.45 grams of dehydrated powder media in 500 ml distilled water containing 5 ml Polysorbate 80. Mix thoroughly & heat if necessary to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45°C. Aseptically add rehydrated contents of 1 vial of Lactic Supplement (MS2055). Shake well before dispense as desired.

Quality Control

Appearance
Cream to beige homogeneous free flowing powder

Colour and Clarity
Dark amber coloured clear solution in tubes.

Reaction
Reaction of 5.89% w/v aqueous solution at 25°C. pH : 5.4±0.2

pH Range
5.20-5.60

Cultural Response
DM2384: Cultural characteristics observed under anaerobic condition, with added Lactic Supplement (MS2055), after an incubation at 25-30°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth
Cultural Response		
Lactobacillus acidophilus ATCC 11506	50-100	good-luxuriant
Lactobacillus plantarum ATCC 8014	50-100	good-luxuriant
Lactobacillus fermentans ATCC 9338	50-100	good-luxuriant
Lactobacillus brevis ATCC 367	50-100	good-luxuriant
Lactobacillus buchneri ATCC 11307	50-100	good-luxuriant
Pedicoccus acidilactis ATCC 8042	50-100	good-luxuriant
Escherichia coli ATCC 25922	>=10^3	inhibited
Saccharomyces cerevisiae ATCC 9763	>=10^3	inhibited

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.
Prepared Media: 2-8° in sealable plastic bags for 2-5 days.

Further Reading

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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