WL Nutrient Agar

For the enumeration and cultivation of yeasts and bacteria in the microbiological control carried out in the brewing and other fermentation industries (GREEN and GRAY 1950, 1951; GRAY 1951).

GRAY (1951) has given a detailed description of the use of WL Nutrient Agar and WL Differential Agar in the microbiologial quality control employed in the beer-brewing industry.

Mode of Action

WL Nutrient Agar has a pH of 5.5, which is optimal for the enumeration of brewers' yeast. If bakers' or distillers' yeast is to be examined, the pH should be adjusted to 6.5 (better yields). When cultivating microorganisms from an alcoholic mash, tomato juice should be added to the medium. WL differential agar contains cycloheximide to suppress yeasts and any moulds which may be present; this medium allows reliable counting of all bacteria which may be encountered in the tests performed in brewery laboratories.

Typical Composition (g/litre)

Yeast extract 4.0; casein hydrolysate 5.0; D(+)glucose 50.0; potassium dihydrogen phosphate 0.55; potassium chloride 0.425; calcium chloride 0.125; magnesium sulfate 0.125; iron(III) chloride 0.0025; manganese sulfate 0.0025; bromocresol green 0.022; agar-agar 17.0

Preparation

Suspend 77 g/litre, if required dissolve the medium in a mixture of 400 ml clarified tomato juice and 600 ml demineralized water, adjust the pH to 6.5 if necessary, autoclave (15 min at 121 °C), pour plates.

pH: 5.5 ± 0.2 at 25 °C.

The plates are clear and blue-green.

Experimental Procedure and Evaluation

Dilute the sample material, spread 0.1 ml on WL Nutrient Agar and, if necessary, on WL differential agar.

Incubation: up to 2 weeks at 25 ° and, if applicable, at 30 °C aerobically. WL Differential Agar should be incubated both aerobically and anaerobically.

Count the number of colonies per plate and calculate the microbial count. Acetic acid bacteria, flavobacteria, thermobacteria, Proteus bacteria and other species grow on WL Differential Agar under aerobic conditions whereas lactobacilli and pediococci proliferate under anaerobic conditions.

Literature

GRAY, P.P.: Some advances in microbiological control for beer quality. - **Wallerstein Lab. Comm., 14**; 169-183 (1951).

GREEN, S.R., a. GRAY, P.P.: Paper read at Am. Soc. of Brewing Chemists Meeting; - **Wallerstein Lab. Comm., 12**; 43 (1950).

GREEN, S.R., a. GRAY, P.P.: A differential procedure applicable to bacteriological investigation in brewing. - **Wallerstein Lab. Comm., 13**; 357-366 (1950).

GREEN, S.R., a. GRAY, P.P.: A differential procedure for bacteriological studies useful in the fermentation industries. - **Wallerstein Lab. Comm., 14**; 289-295 (1951).

Ordering Information

Product	Merck Cat. No.	Pack size
WL Nutrient Agar	1.10866.0500	500 g
Anaeroclip®	1.14226.0001	1 x 25
Anaerocult® A mini	1.01611.0001	1 x 25
Anaerocult® P	1.13807.0001	1 x 25
Anaerotest®	1.15112.0001	1 x 50

Quality control

Test strains	Growth
Candida albicans ATCC 10231	good / very good
Saccharomyces cerevisiae ATCC 9763	good / very good
Lactobacillus acidophilus ATCC 4356	fair / good
Leuconostoc mesenteroides ATCC 9135	good / very good
Enterococcus faecalis ATCC 11700	good / very good
Escherichia coli ATCC 11775	good / very good
Proteus mirabilis ATCC 29906	good / very good