17226 Universal Beer Agar NutriSelect® plus

For culturing microorganisms of significance in the brewing industry.

Composition:

Ingredients	Grams/Litre
Yeast extract	6.1
Peptonized milk	15.0
Tomato juice	12.2
Dipotassium phosphate	0.31
Dextrose	16.1
Monopotassium phosphate	0.31
Magnesium sulfate	0.12
Sodium chloride	0.006
Ferrous sulfate	0.006
Manganese sulfate	0.006
Agar	20.0

Final pH 6.3 +/- 0.2 at 25°C

Store dehydrated powder below 30°C in a tightly closed container and the prepared medium at 2-8°C.

Appearance(color): Faint Yellow to yellow to brown, Free flowing powder
Gelling: Firm, comparable with 1.2% Agar gel.
Color and Clarity: Medium amber coloured clear to slightly opalescent gel forms in Petri plates.

Directions:
Suspend 62.16 g in 750 ml of distilled water. Heat to boiling to dissolve the medium completely. Add 250 ml beer, without degassing, to the hot medium and mix gently. Dispense as desired and sterilize by autoclaving at 121°C for 10 minutes. If required, add 1 ug/ml (Cat. No. 01810) of Cycloheximide to sterile medium prior to dispensing.

Principle and Interpretation:
Universal Beer Agar is presented as a basal medium to which beer alone or beer and cycloheximide may be added for the detection and culture of microbial contaminants in beer.The medium is based on the formula developed by Kozulis and Page (1), who recommended that beer must be incorporated in the medium in order to increase selectivity by stimulating the growth of beer spoilage organisms. Universal Beer Agar supports the growth *of Lactobacilli , Pediococci , Acetobacter , Lymomonas* species and wild yeast strains which may be found infecting the pitching yeast, the cooled wort or during fermentation or storage of the finished beer.
Supplementing this medium with beer has produced a selective environment for organisms that are adapted to existent conditions in the brewery. The presence of hop constituents and alcohol eliminates many airborne contaminants not originating in pitching yeasts, wort or beer; thus minimising false positive results(2).
Yeast extract is a source of trace elements, vitamins and amino acids. Peptonized milk contains lactose as an energy source. Tomato juice is a source of carbon, protein and nutrients. Dextrose provides additional carbon. Dipotassium and monopotassium phosphates provide buffering capability. Magnesium sulphate, ferrous sulphate and manganese sulphate are sources of ions that simulate metabolism. Sodium chloride maintains the osmotic balance.

The presence of microbial spoilage organisms in pitching yeast, the cooled wort or beer in storage may be detected and enumerated using Universal Beer Agar. Either direct surface plating or pour plate techniques with serial dilutions of the sample can be employed. Plates are incubated both aerobically and anaerobically.

Cultural characteristics observed after an incubation of 40-48 hours at 35-37°C with added cycloheximide.

Organisms (ATCC/WDCM)	Inoculum (CFU)	Growth	Recovery
Acinetobacter calcoaceticus (23055/ -)	50-100	++/+++	≥50%
Lactobacillus acidophilus (4356/-)	50-100	++/+++	≥50%
Lactobacillus fermentum (9338/-)	50-100	++/+++	≥50%
Proteus vulgaris (13315/-)	50-100	+/++	30-40%
Pediococcus acidilacti (8081/-)	50-100	++/+++	≥50%
Lactobacillus johnsonii (11506/-)	50-100	++/+++	≥50%

References:

1. Kozulis J.A. and Page H.E., 1968, Proc. Am. Soc. Brew. Chem., 52:58
2. MacFaddin J., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.