Universal Beer Agar (UB Agar)

M415

Universal Beer Agar (UB Agar) is recommended for culturing microorganisms of significance in the brewing industry.

Composition**

Ingredients	Gms / Litre
Peptonized milk	15.000
Yeast extract	6.100
Dextrose	16.100
Tomato juice	12.200
Dipotassium phosphate	0.310
Monopotassium phosphate	0.310
Magnesium sulphate	0.120
Sodium chloride	0.006
Ferrous sulphate	0.006
Manganese sulphate	0.006
Agar	12.000
Final pH (at 25°C)	6.3±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 62.158 grams 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 15 lbs pressure (121°C) for 10 minutes. If required, add 1 mcg/ml of Cycloheximide to sterile medium prior to dispensing.

Principle And Interpretation

Kozulis and Page (1) developed Universal Beer Agar Medium, a basal medium to which beer is added. This medium, used for detecting microbial contamination, has conditions found in typical brewery products and thus helps in growth of most variants of lactic acid bacteria.

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.

Due to the presence of beer in these media, it is selective for growth of microorganisms that have adapted themselves to the existent conditions in the brewery. The presence of hop constituents and alcohol inhibits growth of many airborne microorganisms not adapted to this environment (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 equilibrium

The presence of spoilage microorganisms in pitching yeast may be detected from diluted samples by direct surface plating or by pour plate techniques. Incubate the plates aerobically and anaerobically.

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 1.2% Agar gel.

Colour and Clarity of prepared medium

Medium amber coloured clear to slightly opalescent gel forms in Petri plates.

Reaction
Reaction of 6.22% w/v aqueous solution at 25°C. pH : 6.3±0.2

pH
6.10-6.50

Cultural Response
M415: Cultural characteristics observed after an incubation at 35-37°C for 40-48 hours with added cycloheximide.

Organism	Inoculum (CFU)	Growth	Recovery
Acinetobacter calcoaceticus ATCC 23055	50-100	good-luxuriant	>=50%
Lactobacillus acidophilus ATCC 4356	50-100	good-luxuriant	>=50%
Lactobacillus fermentum ATCC 9338	50-100	good-luxuriant	>=50%
Proteus vulgaris ATCC 13315	50-100	fair-good	30-40%
Pediococcus acidilacti ATCC 8081	50-100	Good-luxuriant	>=50%
Lactobacillus johnsonii ATCC 11506	50-100	Good-luxuriant	>=50%

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. 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.

Revision : 1 / 2011