

# NBB Agar Base, Modified

## Intended Use

NBB Agar, Modified is a selective medium used for the detection of contaminating/spoilage microorganisms in beer.

## Summary and Explanation

Developed in Germany, the NBB medium (Nachweismedium für bierschädliche Bakterien) by Back and Dachs was modified by Nishikawa and Kohgo to provide a less inhibitory medium for beer spoilage bacteria.<sup>1-3</sup>

## Principles of the Procedure

This medium contains a wide variety of nutrients including peptone, yeast extract, beef extract, dextrose and maltose. The composition of nutrients provides for the growth of common spoilage organisms. The modified formula contains potassium acetate (replacing sodium acetate in the original NBB formula), which was reported to be less inhibitory to the growth of spoilage bacteria.<sup>3</sup>

## User Quality Control

### Identity Specifications

#### BBL™ NBB Agar Base, Modified

Dehydrated Appearance:	Fine, homogeneous, free of extraneous material.
Solution:	6.63% solution, soluble in purified water upon boiling. Solution is medium, rose to red, clear to moderately hazy.
Prepared Appearance:	Medium, rose to red, clear to moderately hazy.
Reaction of 6.63% Solution at 25°C:	pH 5.8 ± 0.2

### Cultural Response

#### BBL™ NBB Agar Base, Modified

Prepare the medium per label directions. Inoculate with fresh cultures and incubate anaerobically at 30-35°C for 4 days.

ORGANISM	ATCC™	RECOVERY	ACID PRODUCTION
<i>Lactobacillus brevis</i>	8291	Good	Weak acid (trace yellow) to acid (yellow)
<i>Pediococcus acidilactici</i>	8042	Good	Weak acid (trace yellow) to acid (yellow)
<i>Pediococcus damnosus</i>	29358	Good	Weak acid (trace yellow) to acid (yellow)

## Formula

### BBL™ NBB Agar Base, Modified

Approximate Formula* Per Liter	
Pancreatic Digest of Casein	5.0 g
Yeast Extract	5.0 g
Beef Extract	2.0 g
Polysorbate 80	0.5 g
Potassium Acetate	6.0 g
Disodium Phosphate	2.0 g
L-Cysteine HCl	0.2 g
Chlorphenol Red	0.07 g
Dextrose	15.0 g
Maltose	15.0 g
L-Malic Acid	0.5 g
Agar	15.0 g

\*Adjusted and/or supplemented as required to meet performance criteria.

## Directions for Preparation from Dehydrated Product

- Suspend 66.3 g of the powder in 500 mL of purified water and 500 mL of degassed beer. Mix thoroughly.
- Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
- Dispense and autoclave at 121°C for 15 minutes.
- Test samples of finished product for performance using stable, typical control cultures.

## Procedure<sup>4</sup>

Using the spread plate technique, inoculate plates of NBB Agar, Modified with samples from beer production processes. Incubate plates anaerobically at 30 ± 1°C for 7-14 days.<sup>4</sup>

## Expected Results

After incubation, observe plates for the presence of isolated acid-producing colonies. Prepare Gram-stained smears and test for catalase production. Gram-positive, catalase-negative cocci or rods may tentatively be considered lactic acid bacteria.<sup>4</sup>

## References

- Back. 1980. Brauwelt 1562.
- Dachs. 1981. Brauwelt 1778.
- Nishikawa and Kohgo. 1985. Master Brew. Am. Assoc. Technol. Q. 22:61.
- Hall, Ledenbach and Flowers. 2001. In Downes and Ito (ed.), Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.

## Availability

### BBL™ NBB Agar Base, Modified

COMPF

Cat. No. 298140 Dehydrated – 500 g

# NIH Thioglycollate Broth

(See *Thioglycollate Media*)