

NZCYM Broth • NZYM Broth • NZY Broth with Thymine

Intended Use

NZCYM Broth, NZYM Broth and NZY Broth with Thymine are used for cultivating recombinant strains of *Escherichia coli*.

Summary and Explanation

NZCYM Broth was developed by Blattner et al. as an enriched medium for cultivating recombinant strains of *E. coli* and propagating λ bacteriophage.¹ *E. coli* grows rapidly in rich media, such as the NZ media, which provide amino acids, vitamins and other metabolites the cell would otherwise have to synthesize.²

User Quality Control

Identity Specifications

Difco™ NZCYM Broth

Dehydrated Appearance:	Light beige, free-flowing, homogeneous.
Solution:	2.2% solution, soluble in purified water. Solution is light to medium amber, clear.
Prepared Appearance:	Light to medium amber, clear.
Reaction of 2.2% Solution at 25°C:	pH 7.0 ± 0.2

Difco™ NZYM Broth

Dehydrated Appearance:	Light beige, free-flowing, homogeneous.
Solution:	2.1% solution, soluble in purified water. Solution is light to medium amber, clear.
Prepared Appearance:	Light to medium amber, clear.
Reaction of 2.1% Solution at 25°C:	pH 7.0 ± 0.2

BBL™ NZY Broth with Thymine

Dehydrated Appearance:	Fine, homogeneous and free of extraneous material (may contain minute to small dark particles).
Solution:	2.1% solution, soluble in purified water. Solution is light to medium, yellow to tan, clear to slightly hazy.
Prepared Appearance:	Light to medium, yellow to tan, clear to slightly hazy.
Reaction of 2.1% Solution at 25°C:	pH 7.0 ± 0.2

Cultural Response

Difco™ NZCYM Broth or NZYM Broth or BBL™ NZY Broth with Thymine

Prepare the medium per label directions. Inoculate and incubate at 35 ± 2°C for 18-24 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY
<i>Escherichia coli</i> (C600)	23724	10 ² -3 × 10 ²	Good
<i>Escherichia coli</i> (K802)*	33526	10 ² -3 × 10 ²	Good

*For testing NZY Broth with Thymine.

The three variations of NZ media allow the user to select a formulation appropriate to the need.

Principles of the Procedure

Casein digest, yeast extract, casamino acids and thymine provide the necessary nutrients and cofactors required for excellent growth of recombinant strains of *E. coli*. Due to its higher degree of digestion, casamino acids is an excellent source of free amino acids. Sodium chloride is included in the medium to provide a suitable osmotic environment. Magnesium sulfate/chloride is a source of magnesium ions required in a variety of enzymatic reactions, including DNA replication. Thymine is a growth factor supplement included for those genetic strains of *E. coli* that are unable to synthesize the chemical.

Formulae

Difco™ NZCYM Broth

Approximate Formula* Per Liter	
Pancreatic Digest of Casein	10.0 g
Casamino Acids	1.0 g
Yeast Extract	5.0 g
Sodium Chloride	5.0 g
Magnesium Sulfate (anhydrous)	0.98 g

Difco™ NZYM Broth

Approximate Formula* Per Liter	
Pancreatic Digest of Casein	10.0 g
Yeast Extract	5.0 g
Sodium Chloride	5.0 g
Magnesium Sulfate (anhydrous)	0.98 g

BBL™ NZY Broth with Thymine

Approximate Formula* Per Liter	
Enzymatic Digest of Casein	10.0 g
Yeast Extract	5.0 g
Sodium Chloride	5.0 g
Magnesium Chloride (anhydrous)	0.94 g
Thymine	0.1 g

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

Directions for Preparation from Dehydrated Product

1. Dissolve the powder in 1 L of purified water:
Difco™ NZCYM Broth – 22 g;
Difco™ NZYM Broth – 21 g;
BBL™ NZY Broth with Thymine – 21.1 g.
2. Autoclave at 121°C for 15 minutes.
3. Test samples of the finished product for performance using stable, typical control cultures.

Procedure

Consult an appropriate reference for recommended test procedures.³

Expected Results

Growth should be evident in the form of turbidity.

References

1. Blattner, Williams, Blechl, Denniston-Thompson, Faber, Furlong, Grunwald, Kiefer, Moore, Schumm, Sheldon and Smithies. 1977. *Science* 196:161.
2. Ausubel, Brent, Kingston, Moore, Seidman, Smith and Struhl(ed.). 1994. *Current protocols in molecular biology*, vol. 1. Current Protocols, New York, N.Y.
3. Sambrook and Russell. 2001. *Molecular cloning: a laboratory manual*, 3rd ed. Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y.

Availability

Difco™ NZCYM Broth

Cat. No. 240410 Dehydrated – 500 g

Difco™ NZYM Broth

Cat. No. 241510 Dehydrated – 500 g

BBL™ NZY Broth with Thymine

Cat. No. 299313 Dehydrated – 500 g