

Asparagine Broth (i23269)

For the presumptive identification and enumeration (MPN) of *Pseudomonas aeruginosa*.

Principles & Uses

Asparagine Broth serves as a potent enrichment medium for *Pseudomonas aeruginosa*, an opportunistic human pathogen thriving in low-nutrient water environments. This bacterium is a common contaminant in natural water sources, and its abundance in potable water can lead to taste, odor, and turbidity concerns. The mineral-based composition of Asparagine Broth includes asparagine as the primary nitrogen source, with glycerol as the carbon source. Potassium salts act as a buffer system, and magnesium sulfate plays a dual role by providing essential magnesium ions for enzymatic reactions, including DNA replication, and acting as a buffer.

Pseudomonas aeruginosa exhibits hydrolytic activity, breaking down asparagine into aspartic acid. This unique metabolic feature allows for its enumeration and identification in the presence of fluorescent pigmentation. Commercially available natural mineral and spring waters are typically free of *Pseudomonas aeruginosa* during initial distribution. The broth's effectiveness is evident in its ability to support growth and facilitate detection through a presumptive test, followed by confirmation using MPN tubes and subculturing into Acetamide Broth for further analysis.

Composition (gr/L)

DL-Asparagine 2 g, Dipotassium Phosphate 1 g, Monopotassium Phosphate 10 g, Magnesium Sulphate 0.5 g.

Final pH at 25°C 7.0 ± 0.2

Preparation from dehydrated Powder

Suspend 13.5 grams of the medium in 1 liter of distilled water. Add 8 ml of glycerol. Mix well and dissolve by heating with frequent agitation. Adjust final pH at 25°C to 7.0 ± 0.2. Autoclave at 121°C for 15 minutes. To

obtain a double-strength broth, dissolve 27 grams of the medium and add 16 ml of glycerol.

Quality Control

Dehydrated Appearance: Free flowing, homogeneous, white.

Prepared Appearance: Colorless, clear to slightly hazy.

Reaction of 1.35% Solution at 25°C: pH 7.0 ± 0.2

Cultural Response

Cultural response was observed after inoculation and incubation at 35 ± 2°C for 48 hours.

Organism (ATCC*)	Recovery
<i>Escherichia coli</i> (25922)	Partial Inhibition
<i>Staphylococcus aureus</i> (25923)	Partial Inhibition
<i>Pseudomonas aeruginosa</i> (9027)	Good
<i>Pseudomonas aeruginosa</i> (27853)	Good

*ATCC is a registered trade mark of the American Type Culture Collection.

Storage

Keep the container at 15-30 °C. Store prepared medium at 2-8 °C.