Lowenstein Jensen Medium Base (i23096)

Used with fresh egg and glycerol for the isolation and differentiation of *Mycobacterium* spp.

Industry: clinical

Principles & Uses

Lowenstein-Jensen Medium Base, when supplemented with whole egg and glycerol, is utilized for the cultivation and isolation of various *mycobacteria*, excluding *M. leprae*, from clinical specimens. This egg-based medium provides essential fatty acids and proteins necessary for mycobacterial metabolism. The coagulation of egg albumin during sterilization solidifies the medium for inoculation. Monopotassium phosphate acts as a buffer, and magnesium sulfate is crucial for enzymatic reactions, including DNA replication. Malachite green suppresses bacterial contamination. The addition of sodium chloride (5%) aids in differentiating rapid-growing mycobacteria from slow growers based on salt tolerance.

M. fortuitum, *M. triviale*, *M. chelonei*, and some *M. flavescens* strains grow on this medium, while other mycobacteria strains are inhibited. It can be used for the catalase test in deep-butt tubes. Additionally, the medium with antibiotics selectively isolates *mycobacteria* and inhibits contaminating flora. The incorporation of ribonucleic acid may enhance the recovery of tubercle *bacilli*. Notably, *M. bovis* does not grow on this medium if it contains glycerol.

Composition (gr/L)

L-Asparagine 3.6 g, Monopotassium Phosphate 2.4 g, Magnesium Sulfate 0.24 g, Magnesium Citrate 0.6 g, Potato Starch, soluble 30 g, Malachite Green 0.4 g.

Final pH: 4.8 ± 0.2 at 25°C (before adding the homogenate).

Preparation from dehydrated Powder

Suspend 37.5 g in 0.6 litre purified water, if required add 12 ml glycerol, mix thoroughly and autoclave for 15 min at 121 °C. Cool to about 50 °C, add 1 litre whole-egg homogenate prepared from fresh hen eggs under sterile conditions; stir to give a homogeneous mixture avoiding formation of bubbles. Dispense into sterile test tubes and allow to coagulate in a slant position by heating for 45minutes at 85 °C in an inspissator saturated with water vapour or in free-flowing steam. The culture medium should be heated once more in this way after about 24 hours to guarantee its sterility.

Quality Control

Dehydrated Appearance: Greenish blue to peacock blue homogeneous, homogeneous.

Prepared Appearance: pale bluish green, opaque.

Reaction of 3.75 gr / 600 ml Solution at 25°C: pH 4.8 ± 0.2

Cultural Response

Cultural response was observed after incubation at 35 ˚C with 5 – 10% CO_2 for up to 2 – 4 weeks.

Organism (ATCC*)	Growth
Mycobacterium tuberculosis (25618)	Good
Mycobacterium kansasii (12478)	Good
Mycobacterium gordonae (14470)	Good
Mycobacterium avium (25291)	Good
Mycobacterium smegmatis (14468)	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.