XLT4 Agar Base

Cat. 1159

For the selective isolation of pathogenic enterobacteria, especially Salmonella.

Practical information

Aplications	Categories
Selective isolation	Enterobacteria
Selective isolation	Salmonella

Industry: Clinical / Food

Principles and uses

XLT4 Agar Base with Tergitol 4 supplement, was developed in 1990 by Miller and Tate. It is a highly selective medium for isolating Salmonella from competing bacteria such as Proteus. They reported the isolation of non-typhi Salmonella from chicken and farm environmental drag-swab samples from heavily contaminated samples.

XLT4 Agar can be used clinically to screen stool samples for non-typhoid Salmonella.

This medium allows the optimum growth of Salmonella. Differentiation of Salmonella from other organisms in this medium is based on the fermentation of carbohydrates (Lactose, Xylose, Sucrose) with the resulting production of hydrogen sulfide. H2S production is detected by the reaction of the iron salt, colonies appearing black or black-centered. Sodium thiosulfate and ferric ammonium citrate are the H2S indicators. The bacteria that decarboxylate the L-Lysine to cadaverine are identified by the presence of a purple-red color around the colonies due to the elevation of the pH. Phenol red is the pH indicator. Sodium thiosulfate is also added as a source of inorganic sulfur. Yeast extract and peptone are a nitrogen and amino acids source. Bacteriological agar is the solidifying agent. XLT4 Supplement (Cat. 6062) is added to inhibit the growth of non-Salmonella organisms.

Typical Salmonella colonies (H2S-positive) appear black or black-centered with a yellow halo after 18-48 hours of incubation at a temperature of 35±2 ºC. Upon continued incubation, the colonies become entirely black or pink to red with black centers. Colonies of H2S-negative Salmonella strains appear pink-yellow.

Most Citrobacter colonies are yellow without evidence of blackening. The growth of Enterobacter aerogenes and Escherichia coli is markedly inhibited; colonies that grow in this medium appear yellow without evidence of blackening. The growth of Proteus, Pseudomonas and Yersinia enterocolitica is markedly to completely inhibited. Shigella species are partially inhibited and colonies appear red.

Formula in g/L

Bacteriological agar	18	Ferric ammonium citrate	0,8
Lactose	7,5	L-Lysine	5
Phenol red	0,08	Proteose peptone	1,6
Sodium chloride	5	Sodium thiosulfate	6,8
Sucrose	7,5	Xylose	3,75
Yeast extract	3		

Typical formula g/L * Adjusted and/or supplemented as required to meet performance criteria.

Preparation

Suspend 59 grams of the medium in one liter of distilled water. Add 4,6 ml of XLT4 Supplement (Cat. 6062) (26-28% solution of 7-ethyl-2-methyl-4-undecanol hydrogen sulfate, sodium salt; formerly Tergitol 4). Mix well and heat with frequent agitation until completely dissolved. Boil for one minute. AVOID OVERHEATING. DO NOT AUTOCLAVE. Distribute into sterile Petri dishes.

Instructions for use

- Inoculate the sample in a pre-enrichment medium, such as Tetrathionate Broth (Cat. 1114).
- Incubate at 35±2 ºC for 18-24 hours.
- Spread or streak the sample from the enrichment medium on the surface of the XLT4 Agar Base.
- Incubate aerobically at a temperature of 35±2 ºC for 18-48 hours.

Quality control

Solubility	Appareance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)
w/o rests	Fine powder	Pinkish-beige	Orange-red	7,4±0,2

Microbiological test

Incubation conditions: (35±2 ºC / 18-48 h).

Microorganisms	Specification	Characteristic reaction
Shigella sonnei ATCC 11060	Partially inhibited growth	Colony color Red
Shigella flexneri ATCC 12022	Partially inhibited growth	Colony color Red
Klebsiella aerogenes ATCC 13048	Moderate growth	Colony color Yellow
Salmonella enteritidis ATCC 13076	Good growth	Colony color Black center
Salmonella typhimurium ATCC 14028	Good growth	Colony color Black center
Escherichia coli ATCC 25922	Moderate growth	Colony color Yellow
Proteus mirabilis ATCC 25933	Inhibited growth	

Storage

Temp. Min.:2 ºC
Temp. Max.:25 ºC

Bibliography

Miller, R. G., and C. R. Tate. 1990. XLT4: A highly selective plating medium for the isolation of Salmonella. The Maryland Poultryman, April:2-7.
Tate, C. R., R. G. Miller, and E. T. Mallinson. 1992. Evaluation of two isolation and two non-isolation methods for detecting naturally occurring salmonellae from broiler flock environmental drag-swab samples. J. Food Prot. 55:964-967.
Dusch, H., and M. Altwegg. 1995. Evaluation of five new plating media for the isolation of Salmonella species. J. Clin. Microbiol. 33:802-804.