XLT4 AGAR BASE

CAT Nº: 1159

For the selective isolation of pathogenic Enterobacteria, especially *Salmonella*

FORMULA IN g/l

Lactose	7.50	Yeast Extract	3.00
Sucrose	7.50	Proteose Peptone nº 3	1.60
Sodium Thiosulfate	6.80	Ferric Ammonium Citrate	0.80
L-Lysine	5.00	Phenol Red	0.08
Sodium Chloride	5.00	Bacteriological Agar	18.00
Xylose	3.75		

Final pH 7.4 ± 0.2 at 25°C

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-methyl4-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. The prepared medium should be store at 8-15°C. The color is orange- red.

The dehydrated medium should be homogeneous, free-flowing and pinkish-beige in color. If there are any physical changes, discard the medium.

USES

XLT4 AGAR BASE with Tergitol 4 supplement, was used in 1990 by Miller and Tate, is a highly selective medium for isolating *Salmonella* from competing bacteria such as *Proteus*. They reported 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.*

The 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. H_2S production is detected by the reaction of the iron salt, colonies appearing black or black-centered. Sodium thiosulfate and Ferric ammonium citrate are the H_2S 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 is added to inhibit the growth of non-*Salmonella* organisms.

Typical *Salmonella* colonies (H_2S-positive) appear black or black-centered with a yellow periphery after 18 – 48 hours of incubation at a temperature of 35 ± 2°C. Upon continued incubation, the colonies become entirely black or pink to red with black centers. Colonies of H_2S-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 do grow 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.

MICROBIOLOGICAL TEST

The following results were obtained in the performance of the medium from type cultures, with the supplement added after incubation at a temperature of 35 ± 2°C and observed after 18 - 48 hours.

Microorganisms	Growth	Colony Color
Enterobacter aerogenes ATCC 13048	Moderate	Yellow
Escherichia coli ATCC 25922	Moderate	Yellow
Proteus mirabilis ATCC 14273	Inhibited	Yellow
Salmonella typhimurium ATCC 14028	Good	Black center
Salmonella enteritidis ATCC 13076	Good	Black center
Shigella sonnei ATCC 11060	Partially Inhibited	Red
Shigella flexneri ATCC 12022	Partially Inhibited	Red

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

STORAGE

Once opened keep powdered medium closed to avoid hydration.