Northeast Laboratory Services

P.O. Box 788
Waterville, Maine 04903-0788
227 China Road
Winslow, Maine 04901

Administrative Offices
Phone: 207-873-7711
Fax: 207-873-7022

Customer Service
Phone: 1-800-244-8378
Fax: 207-873-7022

TECHNICAL PRODUCT INFORMATION

P1750 XLT4 Agar

INTENDED USE:
XLT4 Agar base is a selective medium for the isolation of non-typhi *Salmonella*.

HISTORY/SUMMARY:
In 1990, Miller and Tate described the XLT4 Agar for isolating *Salmonella*. Selectivity of the media was established through evaluation using pure cultures from a variety of enteric organisms. The sensitivity in detecting and isolating *Salmonella* was evaluated using fecal-contaminated farm samples which contained high numbers of competing bacteria. It was shown the XLT4 Agar significantly improved the recovery of non-typhi *Salmonella* from chicken and farm environmental drag-swab samples.

PRINCIPLES:
XLT4 Agar Base contains peptone as a source of complex nitrogen compounds. Yeast extract is added as a source of vitamins and other cofactors. Differentiation of *Salmonella* from other organisms that grow on this medium is based on fermentation of xylose, lactose and sucrose, decarboxylation of lysine and the production of hydrogen sulfide. Hydrogen sulfide is detected by the addition of ferric ions. Sodium thiosulfate is added as a source of inorganic sulfur. Sodium chloride maintains the osmotic balance of the medium and agar is the solidifying agent. Phenol red is the indicator of pH changes which result from fermentation and decarboxylation reactions. The supplement is added to inhibit growth of non-*Salmonella* organisms.

FORMULA:

INGREDIENTS PER LITER OF PURIFIED WATER	AMOUNT
Proteose Peptone #3	1.6 g
Yeast Extract	3.0 g
L-Lysine	5.0 g
Xylose	3.75 g
Lactose	7.5 g
Saccharose	7.5 g
Ferric Ammonium Citrate	0.8 g
Sodium thiosulfate	6.8 g
Sodium Chloride	5.0 g
Agar	18.0 g
Phenol Red	0.08 g
SUPPLEMENT	
Tergitol 4	4.6 mL

Final pH: 7.4 ± 0.2 @ 25°C

PRECAUTIONS:
Since living organisms used with this material can be infectious to the user, proper handling and disposal methods should be established by the laboratory director. This product is for Laboratory Use Only.

STORAGE:
This medium should be stored at 2 to 8°C. Adequate storage prolongs the shelf life and quality of this medium. Media should not be used beyond its expiration date. Expiration dates apply to unopened packages of media properly stored. Plates should be stored with agar side up.

SPECIMEN COLLECTION:
For sample collection refer to appropriate regulatory documentation for food, poultry, meat or environmental testing

PROCEDURE:
1. Inoculate a *Salmonella* enrichment broth (such as Tetrithionate Broth), incubate for 18-24 hours at 35°C.
2. Following enrichment, subculture onto XLT4 Agar, streak for isolation.
3. Incubate plates aerobically at 35 ± 2°C.
4. Examine for growth after 18-24 and 48 hours incubation.

QUALITY CONTROL:
It is recommended that the user confirm the performance characteristics of this medium. Careful selection of test organisms must be made so maximum information is obtained.

PERFORMANCE CHARACTERISTICS:
Approval by NEL of each lot of XLD Agar is based on results obtained on a number of tests, among them bacteriological performance with known microorganisms such as described below:

ORGANISMS	**RESULTS**
ATCC# 29212 *Enterococcus faecalis*	Marked inhibition
ATCC# 25922 *Escherichia coli*	Partial inhibition, yellow colonies
ATCC# 25933 *Proteus mirabilis*	Inhibition
ATCC# 14028 *Salmonella typhimurium*	Good growth, yellow to red colonies with black centers

EXPECTED RESULTS: [8]
Typical Salmonella colonies (Hydrogen Sulfide-H_2S positive) appear black or black centered with a yellow periphery after 18-24 hours of incubation. With prolonged incubation, the colonies become entirely black or pink to red with black centers.
H_2S negative *Salmonella* strains appear pinkish-yellow.
Most *Citrobacter* colonies appear yellow without evidence of blackening.
Enterobacter aerogenes and *Escherichia coli* is markedly inhibited, growth will appear yellow without blackening.
Pseudomonas, Proteus, Providencia, Alteromonas putrefaciens, Yersinia enterocolitica and Acinetobacter calcoaceticus are markedly to completely inhibited.
Shigella species are partially inhibited and appear red.

LIMITATIONS: [8]
XLT-4 Agar is intended for detecting and isolating *Salmonella* based on selectivity and colony appearance. Any suspected *Salmonella* colonies must be confirmed by biochemical and/or serology testing.
Non-*Salmonella* strains which are not completely inhibited on this medium must be differentiated from *Salmonella* species.
Freshly inoculated plates and plates held for several days may develop multicolored, metallic looking crystals or flecks on the surface. These crystals or flecks will not interfere with the medium performance.

REFERENCES:

1) AJCP 44:471-475, 1965.
2) Applied Microbiology 27:197-121, 1974.
3) AJCP 44:467-479, 1965.
4) AJCP 64:399-44, 1975.
5) Technical Bulletin Registry Medical Tech., 39:8-10, 1969
6) ASM Manual of Clinical Microbiology, 2nd Edition, 1974.
7) Edwards and Ewings Identification of Enterobacteriaceae, Publishers Minneapolis, Minnesota, 1962
8) Difco & BBL Manual, Manual of Microbiological Culture Media, 2003 pages 628-630