



Reference : 01-708

Scharlau Microbiology - Technical data sheet

Product :
XLT4 AGAR BASE

Also known as

Xylose Lysine Tergitol™ 4 Agar Base

Specification

Solid culture medium for the selective and differential isolation of Salmonella spp., (Except *S.typhi* and *S.paratyphi*).

Formula * in g/L

Proteose peptone No 3	1,60	Sodium thiosulphate.....	6,80
Yeast extract.....	3,00	Ferric ammonium citrate.....	0,80
Xylose.....	3,75	Phenol red	0,08
Lactose.....	7,50	Agar.....	15,00
Sucrose.....	7,50		
L-Lysine HCl.....	5,00	Final pH 7,4 ±0,2 at 25 °C	
Sodium chloride.....	5,00		

* Adjusted and /or supplemented as required to meet performance criteria

Directions

Suspend 56 g of powder in one litre of distilled water containing 4 mL of Tergitol®4 (or Niaproof® 4). Heat gently, stirring constantly until boiling or totally dissolved. Do not overheat or autoclave. Cool to approx. 50°C and pour plates. The medium when ready for use is clear and red.

NOTE: Excessive or prolonged heating may cause precipitation, therefore re-melting solidified medium or maintenance of the medium at melting temperatures (> 45 ° C) for more than an hour is not recommended.

Description

This medium was developed in 1990 by Miller and Tate as a modification of XLD agar for the isolation of non-typhoid Salmonella species in samples from poultry farms.

The replacement of deoxycholate by the tensioactive anionic Tergitol® 4 (tetradecyl sodium sulphate, sodium salt 7-ethyl-2-methyl-4-undecanol or Niaproof® 4) provides for greater selectivity, inhibiting most strains of Proteus, Providencia Pseudomonas and accompanying microflora.

The differential diagnostic features of the culture medium is based on the simultaneous use of three indicator systems: The utilization of xylose, lactose and sucrose as indicated by phenol red, which also allows recognition of the decarboxylation of lysine and thirdly the production of H₂S from thiosulphate which is manifested by a black precipitate of iron sulphide. Later, in 1995, the same authors were able to enhance the latter feature by adding a small amount of peptone medium allowing faster growth of black colonies.

Technique

For enumeration, The dry surface of the culture medium may be inoculated by, spreading 0.1 mL of sample, but if a count is not required it is more desirable to carry out pre-enrichment in an appropriate broth and then streak the sample on the XLT4 agar plate to obtain isolated colonies. The inoculated plates are incubated at 35-37 ° C and growth is observed at 18-24 hours, with additional observations at 48 h if the results are negative.

After 24 hours of incubation typical colonies of Salmonella appear totally black or with a black core and coloured periphery, usually yellow or red. The non-H₂S producing Salmonella spp colonies are normal and yellow-pink in colour. The other gram-negative bacteria are either inhibited or grow poorly, giving rise to small yellow, or red-pink colonies, but never black in colour.

Limitations:

This media is designed for the detection and isolation of Salmonella based on selectivity and typical colonial characteristics, especially the production of H₂S. The existence of non-producing strains of H₂S can cause the appearance of false negative colonies. Also, some strains of bacteria such as Citrobacter and Escherichia that grow well in this medium and produce yellow colonies can be found however they are easily differentiated from salmonella. It is recommended that presumptive colonies are confirmed by biochemical or immunological methods.

In certain circumstances, multicoloured crystals or precipitates with a metallic finish may appear on the surface of the prepared medium, however they do not interfere with the behavior of the medium.

The plates of medium can be used for up to three months after preparation if the prepared medium is stored, away from light, refrigerated and water loss prevented, although it is advisable to use them within fifteen days.



Reference : 01-708

Scharlau Microbiology - Technical data sheet

Product :
XLT4 AGAR BASE

Quality control

Incubation temperature: 36°C ±2,0

Incubation time: 24 ± 3h

Inoculum: Practical range 100 ± 20 CFU. Min. 50 CFU (Productivity) / 10⁴-10⁶ CFU (Selectivity) / ≥ 10³ CFU (specificity) according to ISO 11133:2014/Amd 1:2018 .. Spiral plate Methods.

Microorganism

Salmonella enteritidis ATCC® 13076

Salmonella typhimurium ATCC® 14028

Escherichia coli ATCC® 25922

Enterococcus faecalis ATCC® 29212

Growth

Productivity > 0.50

Productivity > 0.50

Poor to good

Inhibited

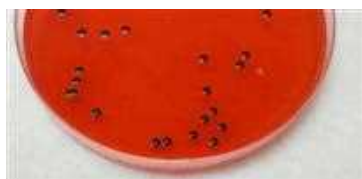
Remarks

red colonies / Black center (H₂S⁺)

red colonies / Black center (H₂S⁺)

Yellow colonies

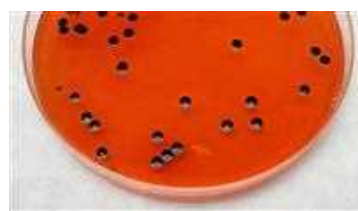
-



Salmonella typhimurium ATCC 14028



uninoculated plate



Salmonella enterica ATCC 13076

References

CORRY, J.E.L., G.D.W. CURTIS y R.M. BAIRD (2003) Handbook of culture media for food microbiology. Elsevier Science.

DUSCH, H. y M. ALTWEGG (1995) Evaluation of five Plating Media for isolation of Salmonella species. J. Clin. Microbiol. 33(4):802-804.

ISO 11133:2014/ Adm 1:2018. Microbiology of food, animal feed and water. Preparation, production, storage and performance testing of culture media.

MILLER, R.G. y C.R. TATE (1990) XLT4 : A highly selective plating medium for the isolation of Salmonella. The Maryland Poultryman, April 2-7

MILLER, R.G., C.R. TATE, E.T. MALLINSON y J.A. SCHERRER (1991) Xylose-Lysine-Tergitol 4: An improved selective agar medium for the isolation of Salmonella. Poult Sci 70(12):2429-2432

MILLER, R.G., C.R. TATE, E.T. MALLINSON y J.A. SCHERRER (1991) Erratum. Xylose-Lysine-Tergitol 4: An improved selective agar medium for the isolation of Salmonella. Poult Sci 71(2):398

MILLER, R.G., C.R. TATE y E.T. MALLINSON (1995) Improved XLT4 Agar: small addition of peptone to promote stronger production of hydrogen-sulfide by Salmonellae. J. Food Protect. 58:115-119

VAN DER ZEE, H. (2003) Media for the isolation of Salmonella, en Handbook of culture media for food microbiology. J. E.L. Corry et al. (Eds.) Elsevier Science.

YUÑO, M.M., H.R. TERZOLO, H.D. FERNANDEZ, R.C. MALENA y M.E. ALTUNA (1995) Evaluación de medios de cultivo selectivos para el aislamiento de salmonelas en muestras de volatería. Rev. Argent. Microbiol. 27(2):57-69.

Storage

For laboratory use only. Keep tightly closed, away from bright light, in a cool dry place (+4 °C to 30 °C).