

## T.S.I. AGAR to E.P.

Differential medium for enterobacteria identification, according to European Pharmacopoeia.

### TYPICAL FORMULA (g/L)

Meat Extract	3.0
Peptone	20.0
Yeast Extract	3.0
Sodium Chloride	5.0
Lactose	10.0
Glucose	1.0
Saccharose	10.0
Neutral Red	0.03
Sodium Thiosulphate	0.3
Ammonium Ferric Citrate	0.3
Agar	15.0
Final pH = 7.4 ± 0.2 at 25°C.	

### DESCRIPTION

**T.S.I. AGAR acc. to E.P.** is a medium recommended for the detection and enumeration of enterobacteria, formulated according to European Pharmacopoeia.

### PRINCIPLE

Meat Extract and Peptone provide nitrogen and other nutrient to support microbial growth. Yeast Extract provides amino acids and vitamins of group B. Sodium Chloride maintains the osmotic balance of the medium. Lactose, glucose and saccharose are a source of energy which allows the differentiation of microorganisms. Neutral Red is a pH indicator. Sodium thiosulphate and ammonium ferric citrate are the substrate for the production of H<sub>2</sub>S. Agar is the solidifying agent.

### PREPARATION

Suspend 68.0 g of powder in 1 litre of distilled or deionized water. Heat until completely dissolved. Sterilize in the autoclave at 121 °C for 15 minutes. Cool down to 45-50 °C. Dispense in final tubes and allow to solidify in a slant position.

### TECHNIQUE

Touch a well-isolated colony to test using an inoculum needle. Inoculate the medium by stabbing the butt and streaking the slope. Incubate the tubes at 36 ± 1 °C for 24-48 hours, with the caps loosened to favour gas exchange.

### INTERPRETATION OF RESULTS

Fermentation of the sugars is shown with change to yellow of phenol red indicator. The glucose concentration is 1/10 of that lactose and saccharose, for an earlier detection of bacteria that ferment only glucose. Fermentation of glucose determines on surface (where are aerobic conditions) a production of ammonium ions and a red colour (alkaline pH) of phenol red indicator; while in the butt, where are anaerobic conditions, the glucose fermentation determines the production of acids and change to yellow (acid pH) of phenol red indicator. Fermentation of lactose and saccharose determines an acid reaction on the surface. saccharose is added to T.S.I. Agar to eliminate some saccharose-fermenting lactose non-fermenting organisms such as *Proteus* and *Citrobacter spp.* Sodium thiosulphate is reduced to hydrogen sulphide which then reacts with an iron salt yielding the typical black iron sulphide. Gas production is determined by the formation of bubbles up to a more or less severe fragmentation of the agar.

### STORAGE

The powder is very hygroscopic: store the powder at 10-30 °C, in a dry environment, in its original container tightly closed and use it before the expiry date on the label or until signs of deterioration or contamination are evident.  
Store prepared media at 2-8°C.

### WARNING and PRECAUTIONS

The product is not classified as hazardous by current legislation and does not contain harmful substances in concentrations of ≥1%. It is nevertheless recommended that the Safety Data Sheet be consulted on its correct use. The product must be used only by properly trained operators.

### DISPOSAL of WASTE

Disposal of waste must be carried out according to national and local regulations in force.

### REFERENCES

1. European Pharmacopoeia II, Chapter VIII, 10.
2. HAJNA, A.A.: Triple-Sugar Iron Medium for the identification of the intestinal group of bacteria. - J. Bact., 49; 516-517 (1945).
3. International Organization for Standardization: Meat and meat products. - Detection of Salmonella (Reference method). - International Standard ISO 3565 (1975).



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## PRODUCT SPECIFICATIONS

### NAME

T.S.I. AGAR acc. to E.P.

### PRESENTATION

Dehydrated culture medium

### STORAGE

10-30°C

### PACKAGING

Code	Content	Packaging
610339	500 g	500 g of powder in plastic bottle

### pH OF THE MEDIUM

7.4 ± 0.2

### USE

T.S.I. AGAR acc. to E.P. is a medium recommended for the detection and enumeration of enterobacteria, formulated according to European Pharmacopoeia.

### TECHNIQUE

Refer to technical sheet of the product.

### APPEARANCE of the MEDIUM

#### Dehydrated medium

Appearance: free-flowing, homogeneous.

Colour: pink

#### Prepared medium

Appearance: slightly opalescent.

Colour: red.

### SHELF LIFE







4 years

### QUALITY CONTROL

- Control of general characteristics, label and print
- Sterility control  
7 days at 25 ± 1°C, in aerobiosis  
7 days at 36 ± 1°C, in aerobiosis
- Microbiological control  
Inoculum for productivity: 10-100 UFC/ml  
Inoculum for selectivity: 10<sup>4</sup>-10<sup>5</sup> UFC/ml  
Inoculum for specificity: ≤ 10<sup>4</sup> UFC/ml  
Incubation conditions: 18-48 hours at 36 ± 1°C, in aerobiosis

Microorganism	ATCC	Growth	Acid	Gas	H <sub>2</sub> S
<i>Escherichia coli</i>	25922	good	+	+	-
<i>Salmonella enteritidis</i>	13076	good	+/-	+	+
<i>Pseudomonas aeruginosa</i>	9027	good	-	-	-
<i>Shigella flexneri</i>	12022	good	+/-	-	-

### TABLE OF SYMBOLS

<b>LOT</b> Batch code	 Temperature limitation	 Manufacturer	 Contains sufficient for <n> tests
<b>REF</b> Catalogue number	 Keep away from heat	 Use by	 Caution, consult accompanying documents



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