

Triple Sugar Iron Agar

Catalog : HB4088-12

Triple Sugar Iron Agar (TSI Agar) is used for the differentiation of gram-negative enteric bacilli based on carbohydrate fermentation and the production of hydrogen sulfide.

Approximate Formula (gm/liter):

Pancreatic Digest of Casein	15.0	Dextrose	1.0
Beef Extract	3.0	Sucrose	10.0
Yeast Extract	3.0	Phenol Red	0.025
Sodium Chloride	5.0	Ferrous Sulfate	0.2
Proteose Peptone	5.0	Sodium Thiosulfate	0.3
Lactose	10.0	Agar	12.0
Final pH 7.4±0.2 at 25°C			

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

Directions:

Suspend 64.5 g of the powder in 1 L of purified water. Mix thoroughly. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder. Dispense into tubes and autoclave at 121° C for 15 minutes. Cool in a slanted position so that deep butts are formed.

Principle and Interpretation:

TSI Agar contains three sugars (dextrose, lactose and sucrose), phenol red for detecting carbohydrate fermentation and ferrous ammonium sulfate for detection of hydrogen sulfide production (indicated by blackening in the butt of the tube). Carbohydrate fermentation is indicated by the production of gas and a change in the color of the pH indicator from red to yellow. To facilitate the detection of organisms that only ferment dextrose, the dextrose concentration is one-tenth the concentration of lactose or sucrose. The small amount of acid produced in the slant of the tube during dextrose fermentation oxidizes rapidly, causing the medium to remain red or revert to an alkaline pH. In contrast, the acid reaction (yellow) is maintained in the butt of the tube because it is under lower oxygen tension.

After depletion of the limited dextrose, organisms able to do so will begin to utilize the lactose or sucrose.

Appearance: Dehydrated medium is a free-flowing light red powder. The prepared medium is a kind of red gel.

Precautions: This medium is for laboratory use only. Dried medium which is caking or color variation cannot be used.

Storage conditions and Shelf life:

Triple Sugar Iron Agar must be stored tightly capped in the original container at 5-30°C. The dehydrated medium has a shelf life of 3 years from date of manufacturing. Prepared medium may be stored, out of direct light at 2-8°C.

Quality control: Inoculate and incubate at 36 ± 1°C for 18-24 hours.

Microorganism	Strains Number	Growth	Slant	Butt	H ₂ S
<i>Escherichia coli</i>	ATCC 25922	luxuriant	Acid	Acid with gas	-
<i>Shigella flexneri</i>	ATCC 12022	luxuriant	Alkaline	Acid without gas	-
<i>Proteus vulgaris</i>	ATCC 13315	luxuriant	Acid	Acid with gas	+
<i>Salmonella typhimurium</i>	ATCC 14028	luxuriant	Alkaline	Acid with gas	+
<i>Pseudomonas aeruginosa</i>	ATCC 27853	luxuriant	Alkaline	Alkaline without gas	-

Reference:

- GB4789.28-2013 People's Republic of China food safety national standard food microbiology test medium and reagent quality requirements.
- MacFaddin. 1985. Media for isolation-cultivation-identification-maintenance of medical bacteria, vol. Williams & Wilkins, Baltimore, Md.