Koser Citrate Medium

M069

Koser Citrate Medium is used to differentiate *Escherichia coli* from *Enterobacter aerogenes* on the basis of citrate utilization

Composition**

Ingredients	Gms / Litre
Sodium ammonium phosphate	1.500
Monopotassium phosphate	1.000
Magnesium sulphate	0.200
Sodium citrate	3.000
Final pH (at 25°C)	6.7±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 5.7 grams in 1000 ml distilled water. Dispense into tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes.

Principle And Interpretation

Coliform bacteria serve as bacterial indicators of sanitary quality of food and water. These bacteria are normally found in the intestinal tract of humans and many warm-blooded animals (1). Coliforms encompasses mostly of *Enterobacteriaceae* from the genera *Enterobacter, Klebsiella, Escherichia* , and *Citrobacter* . The characteristics of the members of *Enterobacteriaceae* are that they are gram-negative rods and ferment glucose to form acid along with gas production (2). Two important members of the *Enterobacteriaceae* family are *Escherichia coli* and *Enterobacter aerogenes* . Both can be differentiated on the basis of IMViC test. *Enterobacter* species are able to utilize sodium citrate as the sole carbon source while *E.coli* fail to do so. This property is used to differentiate the coli-aerogenes group (3). Koser Citrate Medium is used as a base for studying citrate utilization tests. This medium is recommended by APHA, and others, to presumptively identify coliforms encountered in the food and dairy industry (3-7).

The various salts used serve as source of carbon and nitrogen to the organisms. Citric acid or its sodium salt is utilized as a sole source of carbon and ammonium salt as the sole source of nitrogen by *E.aerogenes* while *E.coli* does not utilize these salts and hence fail to grow. Koser Citrate Medium may be used in place of Simmon Citrate Agar (M099). Inoculating into Koser Citrate Medium further identifies coli-like colonies from Endo or EMB Agar plates. After 24-48 hours incubation, tubes showing marked turbidity may be assumed to contain organisms from aerogenes group and if the medium remains clear it may be considered as coli. Presumptive positive organisms identified on this medium should be further confirmed by performing the biochemical tests.

Quality Control

Appearance
White to cream homogeneous free flowing powder

Colour and Clarity of prepared medium
Colourless, clear solution without any precipitate

Reaction
Reaction of 0.57 w/v aqueous solution at 25°C. pH : 6.7±0.2

pH
6.50-6.90

Cultural Response
M069: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Citrate Utilisation

Cultural Response

Enterobacter aerogenes ATCC 13048	50-100	luxuriant	positive reaction,turbidity
Enterobacter cloacae ATCC 23355	50-100	luxuriant	positive reaction,turbidity
Escherichia coli ATCC 25922	50-100	none-poor	negative reaction, no turbidity
Klebsiella pneumoniae ATCC 13883	50-100	luxuriant	positive reaction,turbidity

Storage and Shelf Life

Store below 30°C in tightly closed container and prepared medium at 2-8°C. Use before expiry period on the label.

Reference

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