Simmons Citrate Agar Slant

Intended Use
Simmons Citrate Agar Slant is used for the differentiation of Gram-negative bacteria on the basis of citrate utilization.

Summary
Simmons Citrate Agar is recommended by APHA and is used for the differentiation of *Enterobacteriaceae* and members of the *aerogenes* group on the basis of citrate utilization. Kosher developed a liquid medium containing ammonium salt as the only source of nitrogen, and citrate as the only source of carbon to differentiate between *Escherichia coli* and *Klebsiella aerogenes* based on the IMViC reactions. Simmons later on, modified this medium with the addition of agar and bromothymol blue. Organisms capable of utilizing citrate grow well on this medium. Simmons Citrate Agar is included in the Bacteriological Analytical Manual for food and cosmetics analysis.

Principle
Ammonium dihydrogen phosphate and sodium citrate serve as the sole nitrogen and carbon source respectively while bromothymol blue is the pH indicator. Organisms able to utilize the above compounds as sole source of nitrogen and carbon, grow on this medium and produce an alkaline reaction as indicated by the change in colour of bromothymol blue indicator from green (neutral) to blue (alkaline).

Formula*

Ingredients	g/L
Sodium Chloride	5.0
Sodium Citrate	2.0
Dipotassium Phosphate	1.0
Ammonium Dihydrogen Phosphate	1.0
Magnesium Sulphate	0.2
Bromothymol Blue	0.08
Agar	15.0
Final pH (at 25°C)	6.8 ± 0.2

*Adjusted to suit performance parameters.

Directions
1. Bring the Simmons Citrate Agar Slant to the room temperature 22°C-30°C.
2. Use Simmons Citrate Agar Slant as per required application.

Quality Control
Appearance: Forest green coloured, smooth slant.
Cultural Response: Cultural characteristics observed after an incubation of 18-24 hours at 30°C-35°C.

Organism (ATCC)	Growth	Colour of Medium	Citrate Utilization
Klebsiella aerogenes (13048)	Good	Blue	+
Klebsiella pneumoniae subsp. *pneumoniae* (10031)	Good	Blue	+
Salmonella enterica subsp. *enterica* serovar *Typhimurium* (14028)	Good	Blue	+
Escherichia coli (25922)	Inhibited	Green	-

Storage and Stability
1. Store the ready to use Simmons Citrate Agar Slant at 15°C-25°C in a cool, dry place away from light.
2. Stability of the kit is as per expiry date mentioned on the label.

Limitations
Do not carry over any nutrients into the medium as it may lead to false positive results. Dilute the inoculum before inoculating the medium to avoid a carryover of other carbon sources. Use a light inoculum while streaking.

Warranty

This product is designed to perform as described on the label and package insert. The manufacturer disclaims any implied warranty of use and sale for any other purpose.

Reference

1. Downes and Ito (ed.) 2001, Compendium of Methods for The Microbiological Examination Of Foods, 4th edition, APHA Washington DC.
2. H. Wehr and J. Frank, 2004, Std. Methods for The Examination of Dairy Products, 17th Edition; APHA, Washington, DC.
3. Koser, 1923, J. Bact; 8:493.
4. Simmons, 1926, J. Infec. Dis; 39: 209.
5. US Food and Drug Adm; 1998, Bacteriological Analytical Manual, 8th Ed; Rev. A, AOAC, International, Gaithersburg, Md.
6. Data on file: Microxpress®, A Division of Tulip Diagnostics (P) Ltd.

Product Presentation:

Cat No.	Product description	Pack Size
203190540012	Ready Prepared Slant	12 Slants