Urea Agar Base (Christensen) ISO

Cat. 2180

For the confirmation of Enterobacteriaceae on the basis of urease production.

Practical information

Aplications	Categories
Confirmation	Enterobacteria
Confirmation	Salmonella
Differentiation	Enterobacteria

Industry: Water / Food

Regulations: ISO 10273 / ISO 19250 / ISO 21567 / ISO 6579

Principles and uses

Urea Agar Base (Christensen) may be used as an aid in the differentiation of microorganisms, particularly enteric Gram-negative Enterobacteria, on the basis of urea hydrolysis, from clinical samples and other materials. The formula is according to ISO 6579, and ISO 19250.

Urea Agar Base, with TSI Agar (Cat. 1046), may be used as a screening medium for the selection of Salmonella and Shigella. Urea Agar Base is used in spot tests for the rapid detection of urease activity and, when combined with results of other quick screening tests, it is the most common method to detect urease production by Enterobacteria. It is particularly recommended for the differentiation of members of the genus Proteus from those of Salmonella and Shigella in the diagnosis of enteric infections.

Gelatin peptone provides nitrogen, vitamins, minerals and amino acids essential for growth. Dextrose is the fermentable carbohydrate providing carbon and energy. Sodium chloride maintains the osmotic balance. Monopotassium phosphate provides buffering capacity. Urea is a source of nitrogen for those organisms producing urease. Phenol red is the pH indicator.

Formula in g/L

Dextrose	1	Bacteriological agar	15
Gelatin peptone	1	Monopotassium phosphate	2
Phenol red	0,012	Sodium chloride	5

Typical formula g/L * Adjusted and/or supplemented as required to meet performance criteria.

Preparation

Dissolve 24 grams of the medium in 950 ml of distilled water. Sterilize in autoclave at 121 ºC for 15 minutes. Cool to 50 ºC and add 50 ml of the Urea 40% Solution (Cat. 5100). Mix well and dispense aseptically in sterile tubes. Leave the medium to set in a slanted position so as to obtain deep butts. Do not overheat and do not remelt the slanted agar.

Instructions for use

For the confirmation of Salmonella spp. according to ISO 6579 and ISO 19250, Shigella spp. acording to ISO 21567 :
- Streak the agar slant surface.
- Incubate at 37 ºC for 24 hours. Examine at intervals.
- If the reaction is positive, urea is hydrolyzed, liberating ammonia. This changes the color of phenol red to rose-pink and later to deep cerise.
- Typical Salmonella cultures does not hydrolyze urea so that the color of the urea agar will remain unchanged.

Quality control

Solubility	Appareance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)
w/o rests	Fine powder	Orange-red	Light pinkish-yellow	6,8±0,2

Microbiological test

Incubation conditions: (37 ºC / 24 h)
Inoculation conditions: Confirmation (isolated colony)

Microorganisms	Characteristic reaction
Salmonella enteritidis ATCC 13076	Urease (-): No liberation of ammonia, no change of colour
Salmonella typhimurium ATCC 14028	Urease (-): No liberation of ammonia, no change of colour
Escherichia coli ATCC 25922	Urease (-): No liberation of ammonia, no change of colour
Shigella flexneri ATCC 29903	Urease (-): No liberation of ammonia, no change of colour
Proteus mirabilis ATCC 29906	Urease (+): Liberation of ammonia with colour change to rose/rose-pink/deep cerise

Storage

Temp. Min.:2 ºC
Temp. Max.:8 ºC

Bibliography

Christensen J. Bact. 52:641. 1946. Thal and Chen J. Bact. 69:10. 1955. Ewing Enterobacteriaceae. USPHS, Publication 734.
ISO 6579. Microbiology of food and animal feeding stuffs. Horizontal method for the detection of Salmonella spp.
ISO 19250 water quality-detection of Salmonella spp