51463 Urea Broth

Differential medium for the detection of urea-utilizing microorganisms, acc. to Rustigian and Stuart (1941).

Composition:

Ingredients	Grams/Litre
Yeast extract	0.1
Dipotassium hydrogen phosphate	9.5
Potassium dihydrogen phosphate	9.1
Urea	20.0
Phenol red	0.01

Final pH 6.8 ± 0.2(at 25°C)

Store prepared media below 8°C, protected from direct light. Store dehydrated powder, in a dry place, in tightly-sealed containers at 2-25°C.

Directions:
Dissolve 38.7 g in 1 litre distilled water and filter sterilize. This medium must NOT be heated.

Principle and Interpretation:
Urea Broth is a highly buffered urea medium prepared according to the formula of Stuart, Van Stratum and Rustigian (2). Stuart et al. (2) noted that by decreasing the amount of buffer the incubation time for Proteus could be decreased from 12-48 hours to 2-4 hours. The detection of urease production is an important test for the differentiation of bacteria.
Yeast Extract provides vitamins and cofactors required for growth and as an additional source of nitrogen and carbon. The potassium phosphates provide buffering capability. Urea provides a source of nitrogen for those organisms producing urease. The cleavage of urea liberates ammonia, which is indicated by a color change of the pH indicator, Phenol Red, from yellow (pH 6.8) to red to pink-red (pH 8.1).

Cultural characteristics after 18-24 hours at 35-37°C.

Organisms (ATCC)	Growth	Urease
Enterobacter aerogenes (13048)	+++	-
Escherichia coli (25922)	+++	-
Klebsiella pneumoniae (13883)	+++	+
Proteus vulgaris (13315)	+++	+
S. serotype typhimurium (14028)	+++	-

References:
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3. W.B. Christensen, Urea decomposition as a means of differentiating Proteus and paracolon cultures from each other and from Salmonella and Shigella types, J. Bacteriol., 52, 461 (1946)
4. W.H. Ewing, An additional Shigella paradysenteriae serotype, J. Bacteriol., 51, 433-445 (1946)
5. W.H. Ewing, D.W. Bruner, Selection of Salmonella and Shigella cultures for serologic classification, Am. J. Clin. Path., 17, 1-12 (1947)
6. J.F. Mac Faddin, Biochemical Tests for the identification of Medical Bacteria, 2nd ed., Baltimore, MD.: Williams & Wilkins (1980)
7. C. Vanderzant, D.F. Splittstösser, Compendium of methods for the microbiological examination of foods, 3rd ed., American Public Health Assoc., Washington, D.C. (1992)
8. R.T. Marshall (ed.), Standard methods for the examination of dairy products, 16th ed., American Public Health Assoc., Washington, D.C. (1993)
9. W.H. Ewing, Edwards and Ewing's Identification of Enterobacteriaceae, 4th ed., Elsevier Science Publishing Co., Inc., New York, NY (1986)

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.