

CHRISTENSEN UREA BROTH

(CUB)

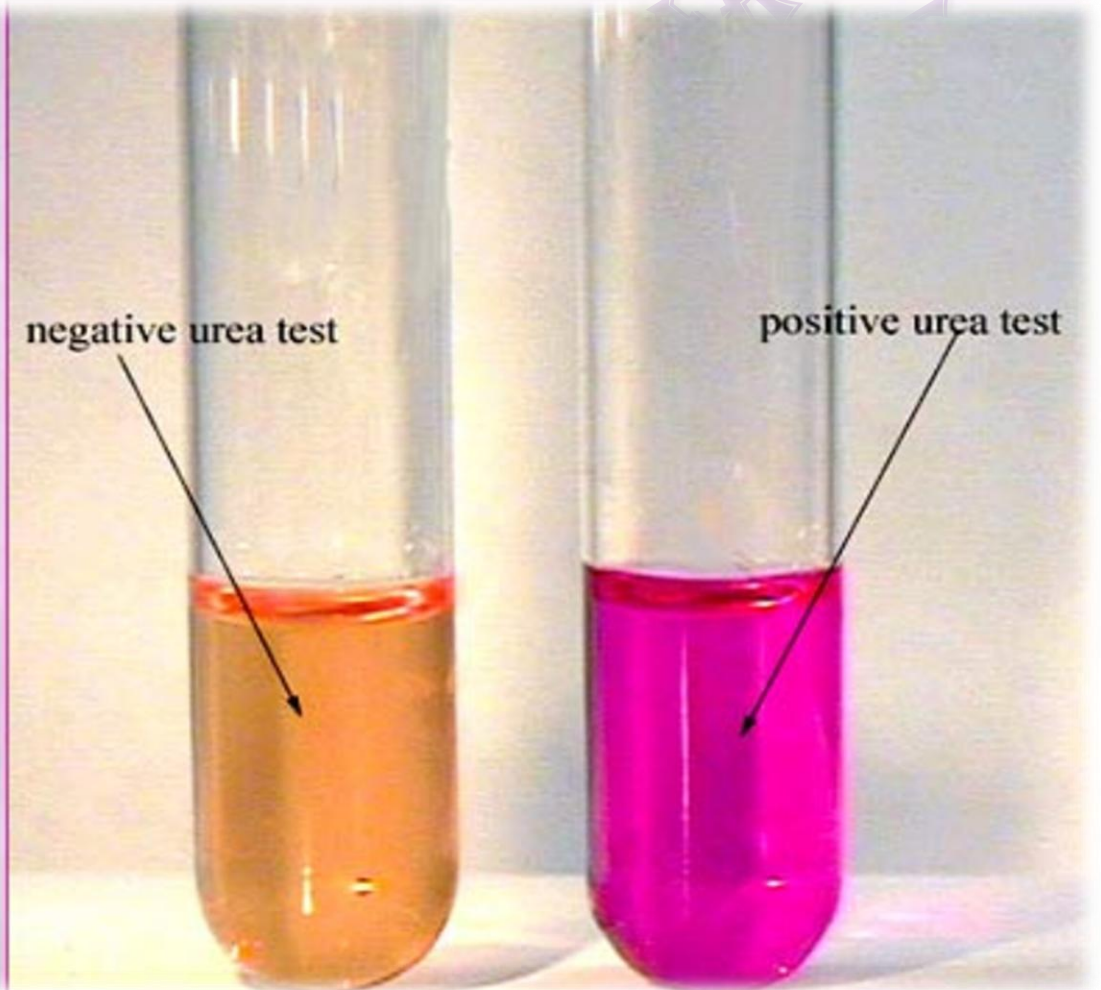
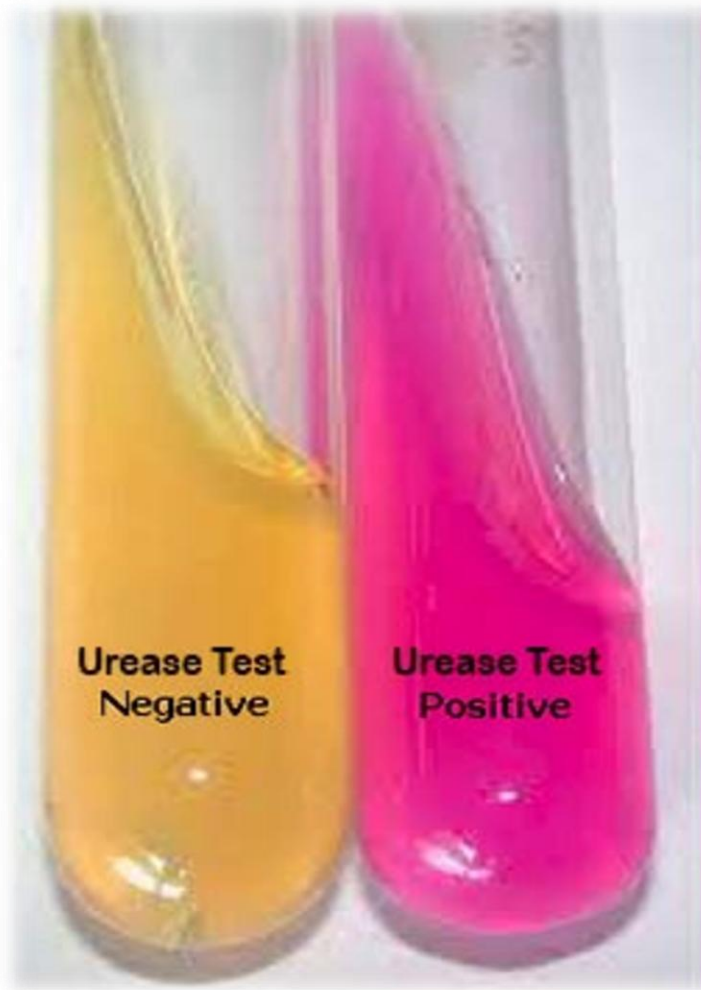
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Urea Agar was developed by Christensen in 1946 for differentiation of enteric bacilli. The urease test is used to determine the ability of an organism to split urea, through the production of the enzyme urease.

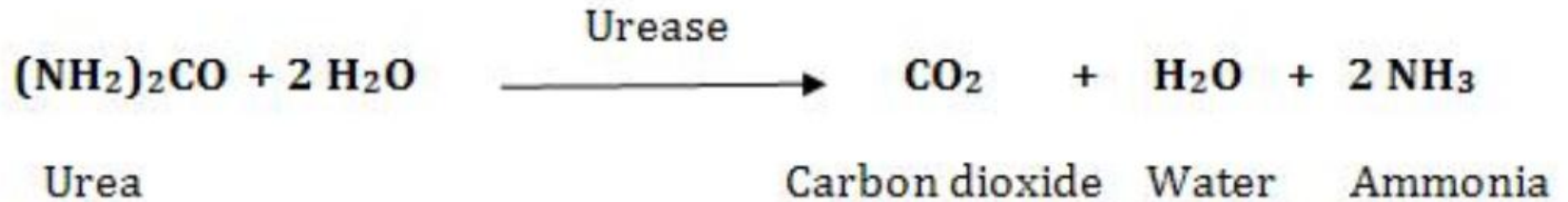
Principle

Urease broth is a differential medium that tests the ability of an organism to produce an exoenzyme, called urease, that hydrolyzes urea to ammonia and carbon dioxide. The broth contains two pH buffers, urea, a very small amount of nutrients for the bacteria, and the pH indicator phenol red. Phenol red turns yellow in an acidic environment and pink in an alkaline environment. If the urea in the broth is degraded and ammonia is produced, an alkaline environment is created, and the media turns pink.

Many enterics can hydrolyze urea; however, only a few can degrade urea rapidly. These are known as “rapid urease-positive” organisms. Members of the genus *Proteus* are included among these organism



Reaction



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Media Composition

Urea	20.0 gm
Sodium chloride	5.0 gm
Monopotassium phosphate	2.0gm
Peptone	1.0 gm
Dextrose	1.0 gm
Phenol red	0.012 gm
Agar	15.0 gm

pH 6.7+/-0.2 at 25 degrees

Uses of Urease Test

1. This test is used to differentiate organisms based on their ability to hydrolyze urea with the enzyme urease .
2. This test can be used as part of the identification of several genera and species of Enterobacteriaceae , including Proteus , Klebsiella , and some Citrobacter species , as well as some Cynobacterium species
3. It is also useful to identify Cryptococcus spp, Helicobacter and many other bacteria which produce urease enzyme .

1. Example of positive test of urease

Proteus spp, cryptococcus spp, Corynebacterium spp
, helicobacter pylori etc

2. Example of negative test of urease

Escherichia spp, Shigella , Salmonella , etc