Lecture 10

I. Biochemical tests for Gram positives continued

A. Review:

Coagulase is a definitive test for which organism?

_____

B. Review

Taxos A is used for what type of organisms? Taxos P?

_____

C. Catalase test

1. Catalase is an enzyme that breaks down toxic H_2O_2 into H_2O and O_2 gas.
2. A positive result is indicated by the production of _____

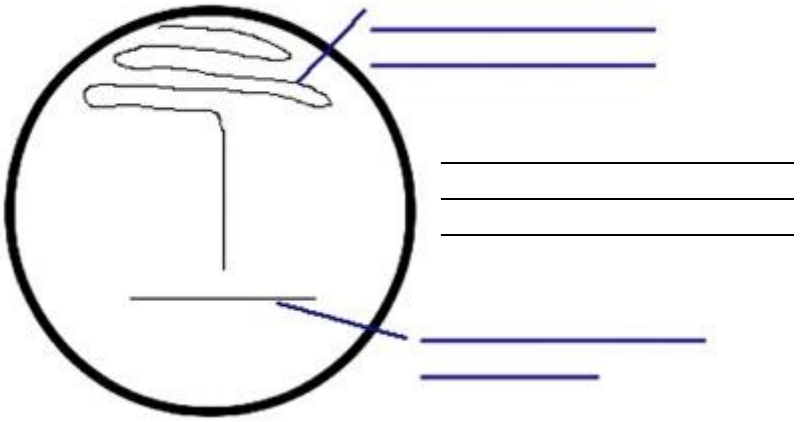
_____ Catalase → _____ + _____

D. Bile Esculin Agar

1. Is a _____ medium used to identify the *Enterococcus* spp. (*Enterococcus faecium* and *Enterococcus faecalis*)
   i. _____inhibits the growth of most Gram-positives (enterococci excepted). Sodium azide inhibits the growth of _____.
   ii. The differential ingredient is esculin. If an organism can hydrolyze esculin in the presence of bile, the product esculetin in formed. Esculetin reacts with the medium, turning the slant _____.

E. CAMP Test

1. Tests for the ability of an organism to produce the CAMP factor, as _____.
2. Synergistic test between _____and _____ _____.
   i. The two bacteria are streaked _____ to one another. They do NOT touch.



ii. The CAMP protein, _____of *S. aureus* by binding to already damaged red blood cells and leading to complete lysis. As a result, _____of enhanced hemolysis is produced between the two streaks. The test is _____ *S. agalactiae.*

II. Biochemical testing for Gram negative organisms continued

A. Review:

What type of organisms will grow on a MacConkey plate?
How will these organisms appear if they can ferment lactose?

B.

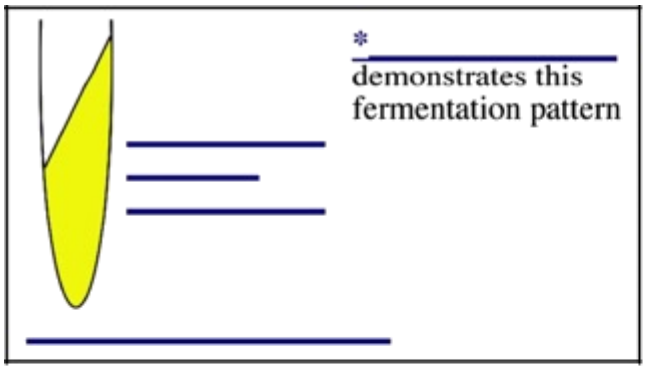
Review: Is the organism used to inoculate this glucose tube — which is yellow in color — capable of fermenting the sugar glucose?

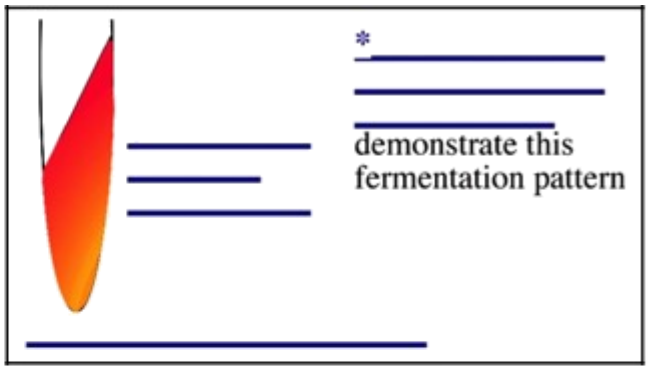
C. Review:

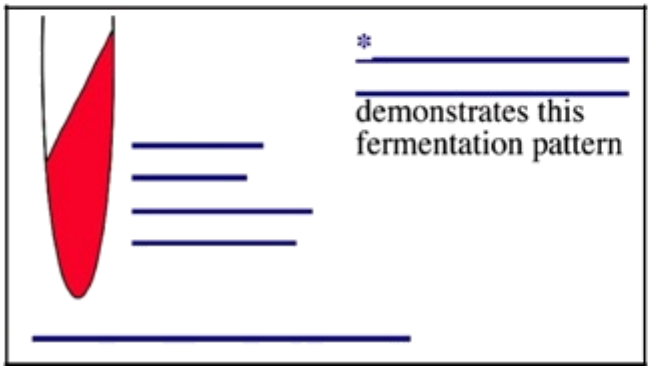
A SIM tubes tests for which three properties?

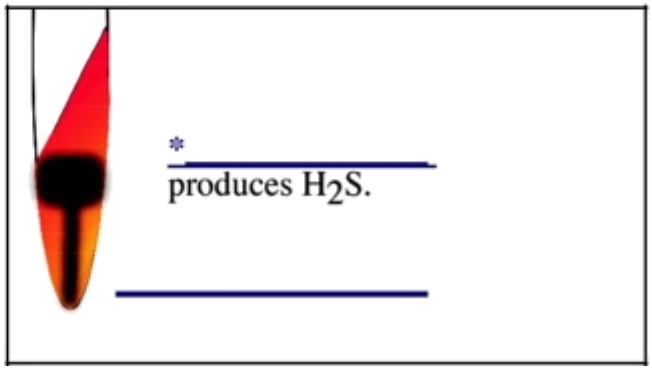
D. Kligler's Iron Agar (KIA)

How Does It Work?
Deciphering KIA data









E. Oxidase test

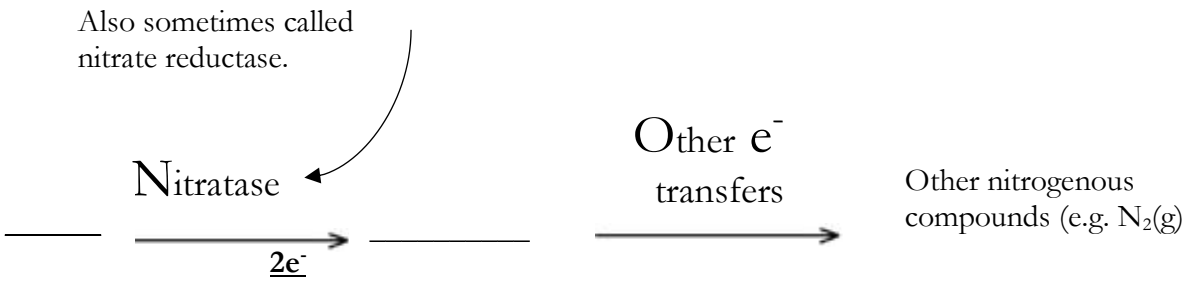
1. Detects the enzyme _____, an important catalyst in the electron transport chain of some organisms.
2. This test is done by smearing a colony onto filter paper and adding oxidase reagent. If the bacteria produce cytochrome oxidase, the colony will turn _____.
3. *Pseudomonas* and *Neisseria* are oxidase _____.

F. Urease test.

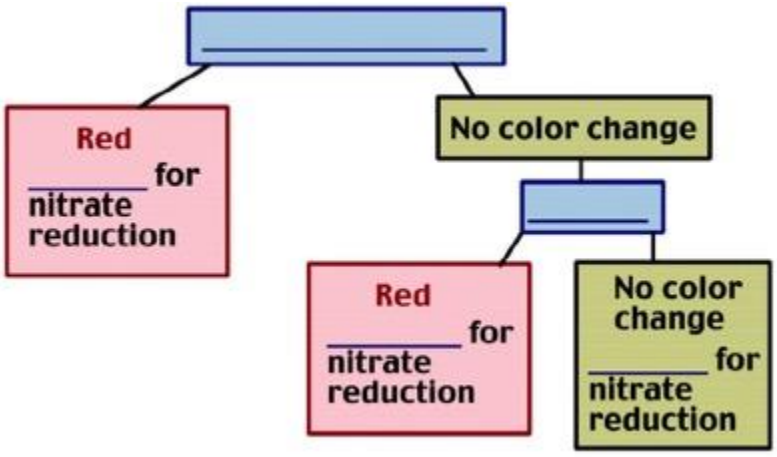
1. Urea broth is used to test for the enzyme urease. _____. Since ammonia (NH_3) is alkaline, the pH indicator will produce a _____.
2. Members of the genus _____are urease positive.

G. The Nitrate Test

1. Determines an organism's ability to reduce _____ using the enzyme nitratase.



2. This test is used for both Gram-positive and Gram-negative organisms.
3. Procedure



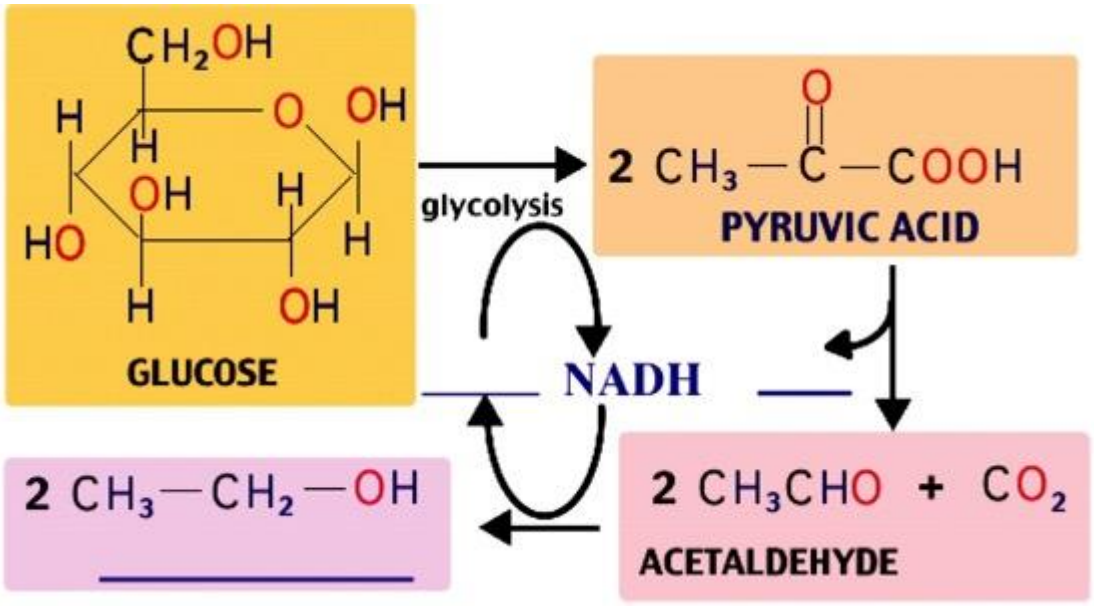
*Note: There are _____ for an organism to be positive for nitrate reduction and only _____ to be negative.

III. Preparation of wine

A. Wine is made from a _____; a juice of anything that can be fermented, including _____ or even some flowers.

B. Fermentation

1. An _____ that uses an organic molecule as the final **electron acceptor** in order to _____ (NAD'). This allows glycolysis to continue and ___ to be produced.
2. In wine fermentation, *Saccharomyces cerevisiae* var. *elliposoides* (wine yeast) enzymatically _____ _____ (glucose and fructose) to acetaldehyde, then to _____.



C. The concentration of alcohol in wine is a function of the _____ in the must and the _____ _____. That is, the yeast produce alcohol until they can't handle any more (generally 12-14%).

D. Factors affecting the taste of wine

1. The _____ of fruit
2. The inclusion of _____(white wine vs. red wine)
3. The fermentation _____
4. The _____ in the must
5. The _____of yeast

E. The procedure

1. Add a _____to sterilized or pasteurized juice. During the early growth phase, yeast grow _____.
2. Later, as the O_2 is used up, anaerobic conditions result and _____.
3. The amount of ethanol produced can be measured by comparing _____ readings.
   i. Specific gravity is the ratio of the density of a substance to the density of a reference standard (water). In this case we are actually measuring the amount of sugar in our wine. As ethanol is produce sugar is used up. Specific gravity will decrease as fermentation takes place.