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 $\text{H}_2\text{O}_2$ into $\text{H}_2\text{O}$ and $\text{O}_2$ gas.

2. A positive result is indicated by the production of __________________________

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 is 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

* demonstrates this fermentation pattern

* demonstrates this fermentation pattern

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* produces H₂S.
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 (NH₃) 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.

\[ \text{Nitratase} \quad 2e^- \rightarrow \quad \text{Other } e^- \text{ transfers} \quad \text{Other nitrogenous compounds (e.g. N}_2(g) \]

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\textsubscript{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.