**Donald Frank**

**Lab 7: Antimicrobial Agents** (20 points)

**Answer the following questions:**

1. List the four substances (household reagents) that you are using for this experiment (1 point)?

a. **tab – cola**

b. **bleach**

c. **hand-soap**

d. **peppermint – essential oil**

1. State two hypotheses (or best guesses) about how your household reagents will affect the yeast. Specifically, state here:
2. Which of your household reagents do YOU THINK (or guess) will interfere MOST with the yeast’s activity to make foam (in other words, which will have the least foam)?
3. **bleach**
4. **peppermint – essential oil**
5. Which of your household reagents do YOU THINK (or guess) will interfere the LEAST, or maybe even help the yeast grow? Note: There are no right or wrong hypotheses (2 points)!!
6. **hand-soap**
7. **tab – cola**
8. Data chart to fill in (2 points):

If you made any inadvertent modifications to the procedure, make a note below the table – please indicate if you used a heating pad or not

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Height of foam after 10 minutes | Height of foam after 20 minutes | Height of foam after 30 minutes | Height of foam after 60 minutes |
| Control | **15 mm** | **25 mm** | **30 mm** | **50 mm**  **(Top of container)** |
| Reagent #1 =  **cola** | **7 mm** | **25 mm** | **30 mm** | **50 mm**  **(Top of container)** |
| Reagent #2 = **bleach** | **0 mm** | **0 mm** | **0 mm** | **0 mm** |
| Reagent #3 = **essential oil** | **0 mm** | **0 mm** | **0 mm** | **0 mm** |
| Reagent #4 = **hand-soap** | **3 mm** | **3 mm** | **4 mm** | **5 mm** |

1. What is the purpose of the control glass (1 point)?

**The purpose of the control glass is to indicate what metabolism occurs without the presence of any household reagents.**

1. If the yeast was prevented from growing, what happened to the foam (1 point)?

**There was less foam or no foam.**

1. Which substances were most effective in limiting the growth of yeast? Which substances did not limit the growth of yeast? How do you account for the differences in the amount of foam produced (2 point)?

**Bleach and peppermint were most effective at limiting the growth of yeast, hand-soap limited growth, and cola increased the growth of yeast. I accounted for the difference of foam produced by the rate of yeast metabolism in each solution.**

1. Based on your data, explain whether either of the hypotheses are true? If so, which? (Note: It’s not better or worse if they were; it is just interesting to see how actual data can provide support for your guesses (1 point).

**Both hypotheses were true.**

1. Write at least THREE questions that come from your results. (You may want to include things you don’t understand or that don’t make sense based on your data. 3 points)
2. **Does stirring the solution effect the foam production?**
3. **How long will yeast growth occur without the presence of antiseptics or sterilization?**
4. **What effect did the caffeine – if any – have in yeast growth?**
5. For this question, remember what the data mean: In general, more foam indicates yeast activity, and more yeast activity *generally* indicates more yeast.
   1. Do you think the substances killed ALL the yeast in the containers (1 point)?

**No**

* 1. How could you test to see if any yeast survived in the experimental group (1 point)?

**Take a sample from the each experimental container and attempt to grow yeast on an algar plate using incubation.**

* 1. Why might some yeast survive and some die (1 point)?

**Some of the household reagents are antiseptics (hand-soap); whereas bleach is sterilant.**

1. Describe two ways in which this lab is related to other microbiology topics we’ve discussed so far or how this activity relates to your life (2 points)?
2. **Microbe metabolism / respiration**
3. **The need for antiseptics, disinfectants, and sterilization in society to combat microbe infestation.**

11. What are TWO factors that influence populations of microorganisms (2 points)?

1. **temperature**
2. **food source**