GRADING CRITERIA FOR FERMENTATION IN YEAST LABORATORY

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Every job is a self portrait of the person who did it. Let your signature be excellence.
Lee Martin

• Laboratory reports are individual writing assignments, not group projects, so do all your own calculations, graphing and writing or it will be considered plagiarism.
• Laboratory reports must be typed not handwritten
• You are expected to use proper grammar and correct spelling
• Each section should be written up as a clear, concise essay, not a list of answers to the points listed under each section. The listed points are merely to show you what should be included in your report.
• The hypotheses and predictions are done before you do the experiment, so don't see what you got for results and then write your hypotheses to fit.
• For the Results section do not turn in handwritten data on torn out lab manual pages or from the handout. Retype these tables for your results.
• Proofread your report before handing it in.

TITLE - 6 points total
- Have a separate title page.
- Is the title informative, complete and comprehensible? – 1 point
- The variables being tested to see their effect on fermentation - 4 points
- Genus and species name of organism used - 1 point

ABSTRACT - 10 points total
- Is the abstract well organized, and easily understandable by the reader? Does it cover all the necessary information? (see below) – 2 points
- Briefly what was the purpose of this experiment and how did you do it? – 3 points
- What was the effect of pH on *Saccharomyces cerevisiae* fermentation rate - 1 point
- What was the effect of MgCl$_2$ on *Saccharomyces cerevisiae* fermentation rate - 1 point
- What was the effect of NaF on *Saccharomyces cerevisiae* fermentation rate - 1 point
- What was the effect of using lactose as a substrate instead of glucose on fermentation rate - 1 point
- What was the effect of temperature on *Saccharomyces cerevisiae* fermentation rate - 1 point
INTRODUCTION - 24 points total

• Is the purpose of the current work clearly stated? – 2 points
• Does the introduction present the necessary background information in a clear, concise, well organized manner? (See background material to be included below.) – 2 points
  1. What are the differences and similarities between aerobic respiration and ethanol fermentation, a type of anaerobic respiration? Compare the processes present in aerobic respiration with those present in fermentation. – 3 points
  2. Discuss obligate versus facultative anaerobes. What type is yeast? - 1 point
  3. What is the purpose of fermentation? - 1 point
  4. What are the final products? - 2 points
  5. Compare total ATP production in fermentation with that in aerobic respiration - 2 points

Hypotheses and predictions

1. Effect of pH on fermentation - 2 points
2. Effect of substrate on fermentation - 2 points
3. Effect of MgCl₂ on fermentation - 2 points
4. Effect of NaF on fermentation - 2 points
5. Effect of temperature on fermentation - 3 points

MATERIALS AND METHODS - 2 points total

• Source of lab protocol
• Any changes to the lab protocol

RESULTS - 33 points total

• For fermentation experiment there should be four tables, one for each graph - 2 points each
• For fermentation experiment there should be four graphs
  1. one four line linear regression graph for the effect of the three pHs and the absence of yeast - 6 points
  2. one four line linear regression graph for the effect of lactose, NaF, MgCl₂ and the tube you think is the control tube for these three variables - 6 points
  3. one five line linear regression graph for the effect of temperature - 6 points
  4. one derivative graph of fermentation rate versus temperature - 4 points
• Brief verbal description of what your graphs showed - 4 points
• What compound do you smell in the tube containing the most CO₂ - 1 point

DISCUSSION - 17 points total

• Was the discussion clear and organized? Did the results support the initial hypotheses or not? The discussion should include the author’s reasoning for
why he/she got the results he/she did. Remember that a discussion is not just a repeat of the results. (See below for items that should have been covered in this report.) – 3 points

- How did the various pHs affect fermentation rate and why? - 2 points
- How did MgCl₂ affect fermentation rate and why? - 2 points
- How did using lactose as the substrate instead of glucose affect fermentation rate and why? - 2 points
- How did NaF affect fermentation rate and why? Answer question at end of lab handout on why you think fluoride is added to toothpastes - 2 points
- How did the various temperatures affect fermentation rate and why? (What occurs at low temperatures, what occurs as the temperature rises?) - 5 points
- Any ideas for future work on this topic that would continue the current work. – 1 point

CITATIONS - 2 points
- Your citations follow the format in Appendix D of your lab manual.

WRITING - 6 points
- Your sentences make sense and you were concise. - 2 points
- You proofread your lab report and have no more than 5 misspelling, grammar, typographical or punctuation errors - 4 points