

FILTER PROBLEMS!!

You have just been briefed on how exactly a kidney dialysis machine works. Edward Hospital has been having trouble with its dialysis machines lately and suspects faulty tubing as the culprit. In order for the dialysis machines to work properly, the dialysis tubing in the machines must be semipermeable. In other words, the tubing must prevent large molecules such as red blood cells from exiting the blood and the tubing must allow small molecules like salt or urea to leave the blood. Tests on recent patients after dialysis have shown high levels of both salt and urea in the patient's blood after dialysis. Edward hospital would like you to test their dialysis tubing for defects. They have sent samples of their tubing over and expect to hear from you with results by week's end. Good Luck!!

You must then send a detailed report back to Edwards hospital with your recommendation. Is the tubing faulty or is the machine to blame? In your report you must defend your choice with a detailed explanation of what you did (your experiment), show comprehensive data to back your conclusion and give a scientific explanation of your results to defend your conclusion.

PURPOSE

Provide evidence of defective dialysis tubing to the doctors from Edward Hospital.

HYPOTHESIS (This will help you set up your experiment)

Write the hypothesis that you will be testing with experimentation in this lab below. Be sure to use proper format when writing the hypothesis.

PROCEDURE (Needs to be Ok'd by me before you start your experiment)

Create a procedure that would be easy to follow for anyone conducting your experiment. Use a diagram or pictorial to display the setup of your experiment. (Yes, you can use the camera on your electronic device) Be sure to supplement or enhance your diagram/pictorial with captions explaining what you will do in the experiment.

RESULTS (This goes in your report)

Using a diagram, pictorial, and/or data table, display the results of your experiment. You may use a combination of diagrams, pictures, or data tables in this section. Whatever you choose must clearly represent your findings to a person unfamiliar with the experiment.

CONCLUSION (This goes in your report)

- To answer this question you must make specific references to your data.
- Provide a scientific explanation defending your conclusion
- Based upon your results, is the Edward Hospital dialysis tubing defective? Explain to them why or why not using references to your results.
- Cite at least 2 sources.

The defining property of dialysis tubing is that it is semi-permeable. What molecule was the tubing permeable to in this lab? Why was the tubing permeable to this molecule and not the other molecule tested? (**The answer to this question requires cited research. In other words, find out the size difference between monosaccharides and starch.**) Use this information to help your conclusion

Materials Available:

- Dialysis tubing
- String
- Scissors
- Glassware – beakers, test tubes, droppers, funnel
- Water, Starch Solution, Glucose Solution
- Iodine: an indicator that turns from reddish orange to blue-black in the presence of starch molecules (instant result)
- Benedict Solution: an indicator that turns from blue to orange in the presence of sugar molecules (must be heated 2-3 minutes)
- Hot plate, test tube tongs and rack
- Others? (on request)

Ultimately you will decide how many points this lab is worth. As a group, discuss how many points you believe each section below should be worth.

_____ Hypothesis

_____ Procedure

_____ Results

_____ Conclusion

_____ Total

I will look at every groups decision and will decide on the amount of points based on that.