

Gas Production by Yeast.

First Experiment

Apparatus

The apparatus we used in the first experiment are as follows: Syringe, fresh yeast, three solutions of glucose at concentrations of 1%, 5% and 10%, enamel dish, boss head, small crystallising dish, glass rod, spatula, 10cm measuring cylinder, stop clock, thermometers and a water bath.

Prediction

I predict that as I increase the concentration of glucose, the more bubbles will be produced.

Method

My partner and I placed one spatula of fresh yeast into a glass beaker, 5cm³ of 1% glucose was added to the beaker slowly bit at a time, my partner and I mixed the two together thoroughly. When the glucose and yeast were mixed together well, we drew 5cm³ of the mixture into a syringe we then made sure that the mixture was not near the nozzle by pulling the plunger back as far as it could go. We both filled a water bath with warm water at a temp of 35°C and placed the syringe in the bath, a boss head was used to hold the syringe down. My partner then started the stop clock and I was on hand to count the number of bubbles produced each minute. I intended to work out an average number of three readings. After washing the equipment out we intended to repeat the experiment with 5% and 10% concentrations of glucose.

Results

I could not get results out of the experiments undertaken, due to the fact that the mixture in the syringe was leaking out. This effected my counting of any bubbles.

Evaluation

The reason my experiment did not work that well and I could not get reliable results was, because the syringe was placed under the water and the boss head was placed on it, the solution was leaking and effecting my counting of bubbles. I intend to improve my experiment by raising the level of the nozzle by placing a bung under the nozzle to stop the solution from leaking. Hopefully by doing this, my partner and I should be able to get a reliable set of results.

Second Experiment

In this experiment I am going to put right what went wrong in the first experiment, I am also going to see if changing the solution of glucose affects the way the yeast respire.

Prediction

I predict that as I increase the concentration of glucose, the more bubbles will be produced.

Apparatus

My partner and I, first decided on the apparatus we are going to use and we both came up with the following: Pestle and mortar, one spatula, yeast, syringe, 10ml measuring cylinder, warm water, tub, cork/bung, glucose solutions 1% 5% 10% 15% 20% concentrations, petri dish, thermometer, glass rod.

Plan

In the experiment we are going to undergo, my partner and I aim to find out how quickly yeast respire with 1% 5% 10% 15% 20% concentrations of glucose. We will find this information out by counting the number of bubbles produced each minute by the yeast. My partner and I can control variables by the amount of water, amount of yeast, time spent in the water bath at a temperature of 35°C and the volume of the glucose. The things that I am going to change from the first experiment are as follows; I am going to raise the syringe while it is in the water bath, I will do this by placing a bung under the syringe, and this will prevent the mixture from leaking out of the end of the syringe. My partner and I will also grind down the yeast before mixing it together with the glucose. We will add two more concentrations of glucose one 15% and the other 20% this will hopefully give us a wider range of results and make the results more reliable.

In this experiment I can now measure the dependent variable, which is the number of bubbles of carbon dioxide produced each minute. This should give us a better set of results.

Method

My partner and I will put one spatula of yeast into the mortar and we will grind it down with a pestle then put in a beaker, 5cm of 1% glucose was added to the yeast, we both mixed it thoroughly until it dissolved. Draw back the solution we just made into a syringe and pulled it all the way back so it does not leak when put into the waterbath. We fill up a water bath ½ full with water at a temperature of 35°C. The syringe with the solution in it was placed into the bath, a bung was placed underneath the syringe to make sure the solution does not leak a pestle was then placed on top of the syringe to hold it in

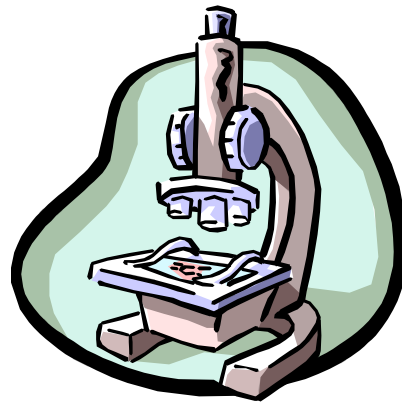
place. My partner started the stop-clock and I was waiting to count the bubbles produced, we waited for four minutes. The apparatus was then washed out and the experiment was repeated with 5% 10% 15% 20% concentrations of glucose.

Results

Glucose solution	Number Of Bubbles Produced Each Minute				
	1 st Min	2 nd Min	3 rd Min	4 th Min	5 th Min
1%	1	0	0	0	2
5%	4	2	2	2	2
10%	2	1	3	3	2
15%	5	4	2	2	3
20%	3	2	1	1	1

Evaluation

The reason my experiment worked this time and not in my first experiment was; I placed a bung underneath the syringe, by doing this my syringe did not leak any mixture, my partner and I also ground down the yeast before mixing the yeast and glucose together. Mt partner and I also used to more solutions of glucose at concentrations of 15% and 20% to make my results more reliable.



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