**Investigation into the respiration rate of *Saccharomyces cerevisiae* STUDENT**

**Introduction**

Respiration rate in yeast is affected by a number of factors e.g. substrate, temperature, availability of oxygen.

This is an opportunity to design a short investigation of your own working independently or in a group. Make sure you know what equipment and how much lab time are available to you and plan accordingly.

**Aim**

* To use respiration rate of *Saccharomyces cerevisiae* to develop a short investigation*.*

**Intended class time**

* 2 - 4 hours

**Chemicals**

|  |  |
| --- | --- |
| 20% Sugar solutions (glucose, fructose, sucrose, lactose) | No known hazard |
| Yeast | No known hazard |

**Equipment available (per group)**

* Computer and textbooks
* Yeast (15g)
* 20% Sugar solutions (glucose, fructose, sucrose, lactose)
* Measuring cylinder
* Gas syringe
* Plastic syringes fitted with tubing
* Thermometer
* Flask with stopper and tubing
* Water bath
* Beaker
* Distilled water
* Ice
* Stopwatch/timer

**Health and Safety**

* If you incorporate the water bath into your investigation be careful as this presents a scalding hazard.

**Procedure**

1. First, conduct some research on the factors that can affect the respiration rate in yeast. Use a variety of sources of information e.g. textbooks, websites and reviews. (This information can be used later to write a short introduction to your experiment).
2. Decide on the factor you will investigate.
3. Working individually or in a small group, develop the method you will use to investigate the effect of your chosen factor on respiration rate.
4. Carry out your experiments using the apparatus available and record your data appropriately. Each student in a group should take turns to set up, measure and record readings.
5. Process and present your data appropriately.
6. Finally, write up your experiments as a short investigation. Include an introduction, aim, hypothesis, procedure, results, conclusion and evaluation. References should be clearly cited. This may be done using a word processor.

**Extension questions**

Your teacher will tell you whether you should answer these questions separately or include consideration of these issues within your investigation write up.

1. Why would the factor you have chosen affect the rate of respiration in yeast?
2. Would your practical procedure be reproducible?
3. Have the variables and limitations of your experiment been considered?

**What to record**

As evidence for the Practical Endorsement, you need to have evidence of the research you conducted and the raw data collected from your experiment. You also need to have written this experiment up as a short investigation, including an introduction, aim, hypothesis, procedure, results, conclusion and evaluation. References should be clearly cited. This may be done using a word processor. **All work should be clearly dated.**

In addition you should have considered the above questions as the answers to these questions will aid you in preparation for your written examinations.