CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
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Project Number
S1309

Project Title
S. cerevisiae, Bioindicator of the 21st Century: How Safe Is Our Water Supply?

Abstract

Objectives/Goals
The objective of the project is to discover if S. cerevisiae can be a bio indicater to different toxins that can be found in polluted water such as ash, fire retardant or pesticides.

Methods/Materials
1. Make a soluton of 3g yeastand 1g of sugar into 150ml of distilled water-this is your control.THis is called a 1:3 solutin.
2. Make 3 solutions of pesticides in one 1:3 solution, 5g of fire reatardant in the second and dg of ash in the third.
3. Repeat steps 1 and two 4 times for repetition.
4. Take pH of each solution and find that ash, pesticides and the yeast control are acids and the fire retardant is a base.
5. Take the initial hemacytometer test to see how many per mL are alive. With the same sample make sure that you take the percentage of dead cells.
6.Repeat steps 4-5 for the next two days. Attention: DO NOT TAKE DATA AFTER THREE DAYS DUE TO AUTOLYSIS!

Results
The results show that because of the excessive amounts of live cells in the pesticides and the excessively dead cells in the fire retardant indicates that S. cerevisiae is an indicator significantly of pesticides and fire retardant. Results show that there is a chance that s. cerevisiae can be an indicator to ash but the comparison to the control is to similar.

Conclusions/Discussion
The pesticides made the S. cerevisiae grow excessively because of the high acidic leval in the solution and because of the extra traces of glucose in the ingrediants of the pesticides. The yeast can act as an indicator to fire retardant as well because of the low traces of glucose and the weight of the solution tended to suffocate the cells and they could not respirate, arobically or anerobically.The results supported my hypothesis, though the hypothesis stated that ash would be indicated by the yeast, but the results were not significantly varied from the control so the results were not reliable. The results helped me to indicate what types of toxins that the yeast is sensitive to . The next step in this study is to take water samples from the community and apply the results to the results in this study and take the results to dicipher the water quality of the local water.

Summary Statement
The experiment is exposing S. cerevisiae to ash, fire retardant and pesticides to see which toxin has the greatest affect on the life cycle of the cell.

Help Received
Dr. Melitz of UCI gave supplies, Father helped transport the equiptment, Ms. Jimenez provided supervision.